



**LANDFORM  
DESIGN  
INSTITUTE**

Fall 2020

# Landform Design Quarterly

## Celebrating the Institute's first anniversary

In its first year of operation, the Landform Design Institute (LDI) completed several significant tasks, establishing a highly qualified Board and Technical Advisory Panel (TAP), identifying a set of operational and technical “gaps” that urgently require addressing to reshape mine reclamation, and — in response to the COVID-19 pandemic — producing a six-part virtual lecture series for the University of British Columbia (the first two available at [landformdesign.com](http://landformdesign.com)).

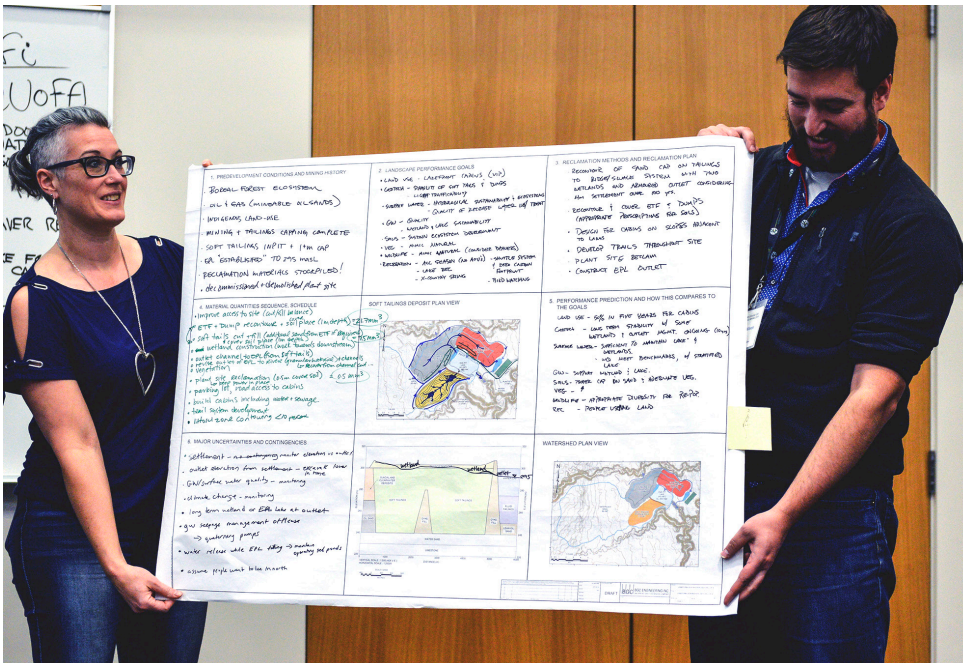
The gaps will be explored further in the new position paper on landform design slated for publication in November (page 4). It will be a landmark publication for the Institute.

A major milestone was the 40-hour landform design course held at the University of Alberta December 5 through 10, 2019, when more than 40 professional practitioners from Canada and abroad heard some of the world's leading experts describe revolutionary and sustainable new approaches to mine reclamation, and took

part in several landform design exercises.

As well, the chair of the TAP, Mike O'Kane, took the Institute's message on the road, describing its vision and mission in a lecture at the University of Minnesota prior to the coronavirus outbreak.

Recently, the Institute has focused on establishing a broad membership, with expanding the number of individual, student, and corporate membership becoming a key goal (page 2). Individual (\$90) and student (\$10) memberships are available at [landformdesign.com](http://landformdesign.com). LDI will soon launch a sponsorship drive to ensure the Institute becomes financially self-sufficient by its second anniversary.



Course participants present results of a landform design exercise.

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## Making landform design routine worldwide

The Landform Design Institute is dedicated to creating and supporting a community of landform design practitioners. Its intention is to help their teams design and build truly sustainable mining landscapes. Its mission is to make landform design routine in the mining industry worldwide by 2030.

# LDI membership list growing longer

The LDI membership drive got off to a solid start, quickly surpassing 10% of the initial goal, adding members consistently since then, and immediately drawing in corporate members. The Institute greatly appreciates this enthusiasm.

“Our ability to deliver on our mandate long-term absolutely depends on individual, student, and corporate membership, plus our drive starting in December to bring in major sponsors,” said LDI Chair Gord McKenna.

Membership is not only about supporting the Institute’s work, but is critical to the LDI mandate of building a “community of practitioners” working together to create truly sustainable mining landscapes.

Members are urged to invite others to join whom they feel would benefit from belonging to the LDI. Belonging to the

Institute connects members with colleagues in similar professions around the world, includes a 20% discount on future landform design courses and the upcoming case history symposia, and grants access to landform design tools and checklists, virtual landform design lectures, a growing case history database, and the landform design library (which will expand significantly thanks to the research now underway for the the Institute’s first position paper).

Membership also includes networking opportunities at virtual and — when they reconvene — in-person events.

For the Winter 2021 issue of the *Quarterly*, the LDI editor will be calling on LDI members to suggest story ideas or even provide summaries of their own landform design case histories for publication.

**Sign up now**

Select membership level • Mandatory fields

• **Membership level**

**Student - \$10.00 (CAD)**  
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Please contact us at [info@landformdesign.com](mailto:info@landformdesign.com) for a corporate membership or sponsorship package.

**NEXT**

Joining the LDI begins with a visit to [landformdesign.com](http://landformdesign.com)

## ... and looking forward to a second year of progress

*continued from page 1*

The Institute’s communications team has made the Getting Closure podcast series available on multiple platforms (page 4) and completed with this issue four editions of the *Quarterly* newsletter. Meanwhile, LDI members are contributing to major new publications on responsible mine reclamation (page 3).

When the Institute launched on Sept. 30, 2019, it was heralded by major figures in the industry as a well-warranted initiative worthy of wide support.

“Landscape design in support of mine closure is a highly interdisciplinary undertaking. As a result, its evolution has been challenging,” said Norbert Morgenstern, a Distinguished Professor (Emeritus) of civil engineering at the University of Alberta. “The formation of the Landform Design Institute promises to overcome these challenges and strengthen the role of landform design in sustainable closure of mine sites.”

Andrea McEachern, president of the Canadian Land Reclamation Association (CLRA), echoed those sentiments,

describing the LDI as “a great new way to bring attention to the need for more sustainable reclamation in the mining sector.”

In its second year, the Institute intends to build off the anticipated momentum of the position paper, acting on the major gaps identified by the Board and other experts. The LDI will continue to post new episodes of the podcast, develop more virtual lectures, begin releasing a series of discussion papers and technical reports, prepare the landform design textbook, and plan for the case history symposia (2022).

# A big step toward a global tailings standard

International benchmarks for the management of mine tailings are a step closer to widespread adoption thanks in part to two leading members of the LDI.

*Towards Zero Harm*, a compendium of papers in support of the new Global Industry Standard on Tailings Management, was released this summer by the International Council on Mining and Metals (ICMM), the United Nations Environment Programme (UNEP), and the Principles for Responsible Investment (PRI).

A chapter on “Closure and Reclamation” was written by LDI founder Gord McKenna and Dirk Van Zyl, a member of the Institute’s Technical Advisory Panel. Van Zyl also collaborated with Angela Küpper of BCG Engineering and John Thompson of PetraScience Consultants on the “Mine Tailings – A Systems Approach” chapter.

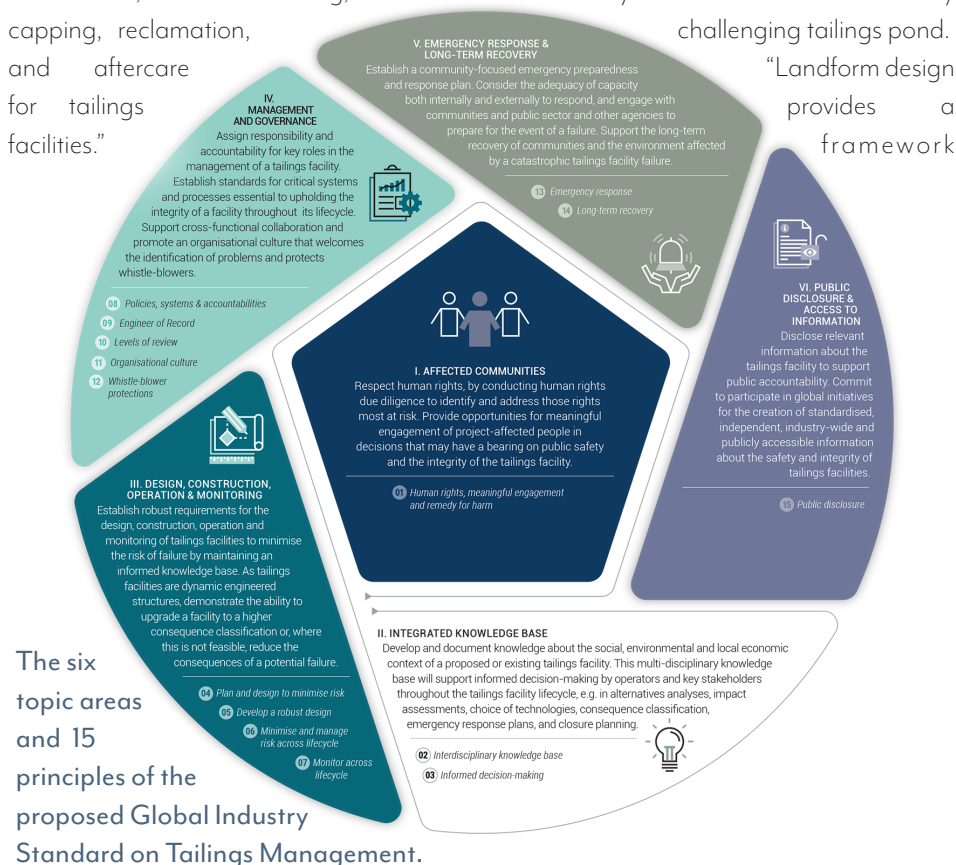
“Closure and Reclamation,” which draws on the philosophy underpinning the LDI, summarizes “leading practices for design, construction, deposition, stabilisation, decommissioning, capping, reclamation, and aftercare for tailings facilities.”

According to McKenna and Van Zyl, conventional mine planning, in which tailings facilities become post-mining landforms “at closure,” creates an artificial division between operational stages and long-term reclamation. They argue for an alternative in which “tailings facilities are each their own landform even during the planning phase, and certainly with the initial construction of the starter dam. One can argue that at any point in time, every square metre of the Earth’s surface belongs to a landform [that] allows the design to focus on long-term issues.”

The chapter calls for mine operators to embrace fatal-flaw analysis, failure modes assessment, and failure modes and effects analysis in life-of-mine plans, anticipate contingencies, and apply dam-monitoring practices to tailings management and reclamation. The authors use the example of Suncor Pond I, now known as Wapisiw Lookout, at the company’s oil sands operation in northern Alberta, as a case study in how to reclaim a technically challenging tailings pond.

for inclusion of all aspects of the life cycle of a tailings facility,” write McKenna and Van Zyl. “The process ideally begins with the initial designs of tailings landforms ... and continues long after operations have ceased.”

The Global Industry Standard was unveiled in August, along with calls for the establishment of an independent supervisory authority. More information, including a copy of *Towards Zero Harm*, is available at [globaltailingsreview.org](http://globaltailingsreview.org).



Wapisiw Lookout: A case history.

# Tune in to the Getting Closure podcast

The LDI is pleased to announce its new podcast series, **Getting Closure**, is now available on Apple Podcasts, Spotify, Stitcher, and Anchor.



In the first episode, TAP Chair Mike O'Kane discusses a range of approaches to landform design with LDI Chair Gord McKenna, as well as the origins, goals, and plans for the Institute.

In the second episode, Mike interviews California-based geochemistry and mineralogy specialist Mark Logsdon, who has worked on some 250 mining projects over a career spanning almost 50 years.

In the third episode, Mike speaks with Corinne Unger, an Australia-based specialist in mine rehabilitation and closure planning. Corinne has undertaken research on abandoned mines and post-mining land use around the world.

To listen and subscribe to future episodes search for "Getting Closure" on any of the podcasting services. Episodes can also be streamed through the LDI website.



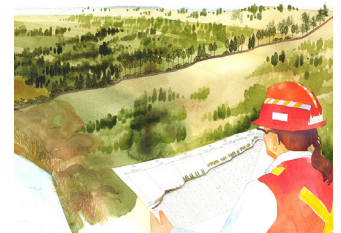
## Lessons brewed during a unique coffee experiment

The results from a first-of-its-kind experiment using coffee to demonstrate the physics of geotechnical processes involved in rainfall percolation through landform covers, led by LDI Chair Gord McKenna and TAP member Nick Beier, will be featured in a forthcoming issue of *Canadian Geotechnique*, the magazine produced by the Canadian Geotechnical Society.

The team also included research associate Ahlam Abdulnabi and co-op student Abby Paul, who worked over three days in the lab to complete (and sample) 28 coffee brewing trials using 10 different coffee grinds.

## A sneak peek at the position paper

The LDI will be publishing its landmark landform design position paper in November, describing the state of practice in the industry and identifying several gaps that need addressing to bring about effective and sustainable mine reclamation.



The paper will be based on interviews conducted by LDI Chair Gord McKenna with mine reclamation practitioners and other industry leaders from around the world. It will establish common goals in support of landform design and responsible mining, and set out a vision for where the industry needs to be in nine years to achieve successful mine reclamation.



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