FORTY FOURTH EDITION – FALL 2024

Look beyond AI, Artificial Intelligence, to solve your problems

By Kim Stephens, Executive Director of the Partnership for Water Sustainability in BC, in collaboration and conversation with Michael Blackstock, co-founder of the Blue Ecology Institute Foundation.

Editor's Note: This article is extracted from an interview published in a recent edition of Waterbucket eNews. It previews a new paradigm called Natural Intelligence. Michael Blackstock will build to this concept in his keynote address at the upcoming annual conference.

"There is untapped intelligence out there in nature. It is on our doorstep, but we are tapping it even less because we are so focused on AI." - Michael Blackstock.

Natural Intelligence: a new paradigm for water stewardship

Natural Intelligence, aka NI, has emerged from Blue Ecology which itself bridges Indigenous Wisdom and Western Science. Blue Ecology is about creating a new form of knowledge by interweaving useful threads from two cultures.

It's Conference Time!

See you there … Nov 5 – 7, 2024

“We need both a mindset change and an attitude switch to get through times of crisis. Weather extremes. Drying rivers. Frequent wildfires. Blue Ecology offers hope,” states Michael Blackstock.

"Blue Ecology points the way to water reconciliation between cultures...and with nature. Everyone seems to be focused on AI, computers and the wonders of all that. But on our doorstep all along is Natural Intelligence. It is ignored because it is not understood.”

"I am an implementer. That reflects my career history. Blue Ecology theory emerged from practice and from my experience on the frontlines as a forester and as a mediator and a negotiator for the provincial government and BC Hydro over the past 35 years."

"That is where I saw the gap and the need for Blue Ecology. And now I see the need for fusion of AI and NI through Blue Ecology. Fusion would address climate change and foster environmental sustainability."

“Natural Intelligence is the inherent wisdom and adaptability exhibited by nature’s ecosystems, enabling water to sustain life, maintain its purity, and flow in rhythm with the Earth’s natural cycles.”

Natural Intelligence: the paradigm-shift starts with a conversation!

In 2025, Bloomsbury is publishing the Bloomsbury Handbook to the Blue Humanities and Michael is contributing a 6000-word chapter on Blue Ecology. Turkish academic Dr. Serpil Oppermann is the catalyst behind the handbook and one of four co-editors. A gee-whiz fact is that Bloomsbury Publishing is the custodian of the Harry Potter series.

“I am very happy to have Michael Blackstock in the Bloomsbury Handbook to the Blue Humanities," says Serpil Oppermann. "I was overjoyed when he accepted our invitation. It was a most benevolent outcome for a positive response from such an important figure.”

"My chapter in the handbook will crescendo with the Natural Intelligence idea," Michael Blackstock explains. "Serpil Oppermann is the inspiration for the idea. It was that Zoom session when you interviewed her for Waterbucket eNews about her vision for the handbook that did it."

Articles in this Edition:

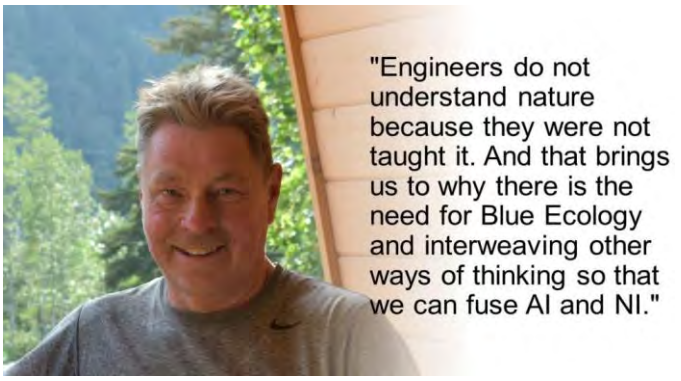
“During our conversation with Serpil, she emphasized that we have lost our connection to nature. I had read her published work. But it was listening to her that did it. The thread of my story is that, as I have been writing this chapter for Serpil, I came up with this idea of Natural Intelligence."

In her work, Serpil Oppermann explores the intersecting perspectives of natural sciences and environmental humanities. Her mission is to be a bridge between humanities and science studies.

Serpil Oppermann is Director of the Environmental Humanities Center at Cappadocia University (Turkey) and a past President of the European Association for the Study of Literature, Culture, and the Environment.

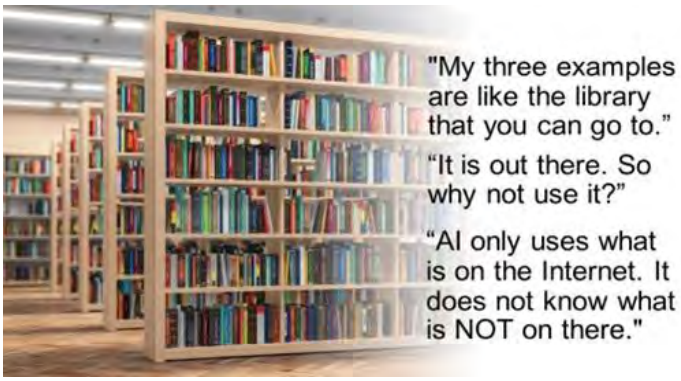
Nature's ecosystem engineers

At the Asset Management BC conference, Michael Blackstock understands that he will be speaking to an engineering-centric audience whose world revolves around numbers and inanimate objects such as pipes and pavement. Taking nature into account is not something that comes naturally to a municipal asset manager.



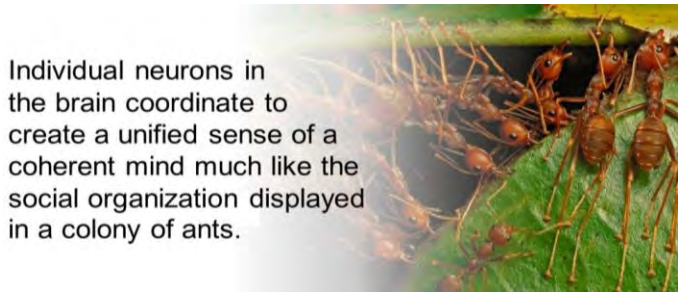
"The system is not set up to teach engineers how to understand nature, unfortunately," observes Michael Blackstock. "In my keynote, I will use three examples...ants, beavers and trees...to illustrate the potential for fusing Natural Intelligence and Artificial Intelligence. Academics refer to ants and beavers as ecosystem engineers."

“Look beyond AI to solve your problems. There is this vast amount of wisdom out there that Indigenous peoples have seen forever...and that is Natural Intelligence."

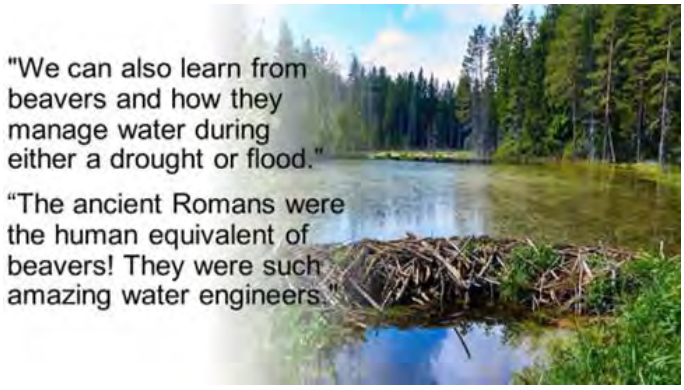


"These three examples answer two questions...why care? and what is the practical side of Natural Intelligence? We can learn from ants, beavers and trees. It is a starting point for doing more to interweave Natural Intelligence, especially since Indigenous knowledge has real respect for it."

"Ants are one of the roots of AI theory. In his book that won the Pulitzer Prize for non-fiction in 1979, Douglas Hofstadter uses ants to describe how he sees AI working. He equates an ant to the neuron in the human brain. He writes that he was inspired by natural intelligence. People have lost that link."



“What can we learn from the ants and how they manage, for example, the spread of disease in their colony. They can sense rain and build dams around the entrances to their colonies. How do they know?"



“Trees are witnesses to history and data recorders. They tell us what happened in the past. Trees are also like the canary in the coal mine to give us some idea of what will happen in the future and whether they will adapt or not."

"Climate scientists have caught on to using tree rings as a chronology to build a proxy of what happened in the past. They can see climate trends by looking at tree ring data. Trees as witnesses to history is definitely a Gitxsan concept in Northwest BC."

Interweaving of AI and NI

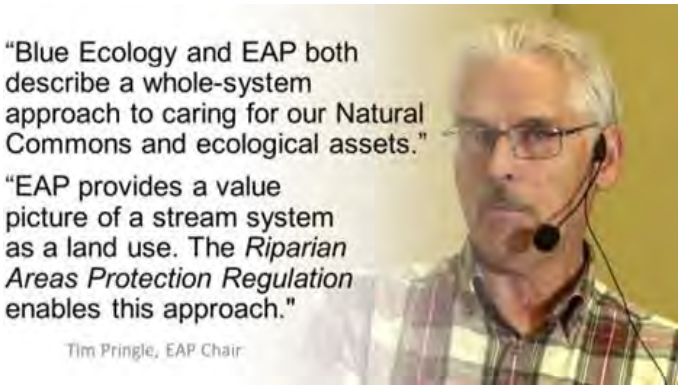
"The fusion of AI and NI would address climate change and foster environmental sustainability. AI's analytical prowess, combined with NI's ecological insights, can lead to innovative solutions that respect and enhance the natural world."

"The balance principle is central to NI and Blue Ecology. It calls for a narrative shift towards healing and giving back to the environment. This principle is about more than just sustainable practices; it is about creating a reciprocal relationship with nature."

Natural Intelligence is a call to action to give back in a reciprocal relationship

"Natural Intelligence, as I define it, is not just a concept; it is a call to action. It urges us to re-evaluate our relationship with water, to learn from its natural intelligence, and to adopt practices that are sustainable, equitable, and respectful."

"By integrating tools like the Ecological Accounting Process and embracing the give back aspect of the balance principle, we can ensure a thriving planet for generations to come," concludes Michael Blackstock.



AMBC is pleased to announce ……. our New Executive Director

Glen Brown, Chair of the Partnership Committee, is pleased to announce that Asset Management BC has retained a new full time Executive Director, Arnold Schwabe.

AMBC recognized that moving forward, there is a need for a full time Executive Director to continue to address initiatives such as training needs, knowledge transfer, providing information for our local governments and First nation communities, and the importance of implementing the BC Framework 'Asset Management for Sustainable Service Delivery'.

The workload at AMBC continues to increase with more training opportunities, our annual conference, our long-standing newsletter, ongoing participation with other agencies, and maintaining our network across Canada.

Arnold was recently Manager of Asset Management and Strategic Initiatives at qathet Regional District, and before that in various positions in Public Works with Town of Qualicum. Our first case study publish in 2011 in the Asset Management BC newsletter was written by Arnold telling the tale of Asset Management in Qualicum Beach.

Arnold comes to the position with a breadth of knowledge and experience gained from his work with local government (both municipal and regional district), public sector, and leading not-for-profit organizations. He is not only knowledgeable in asset management, but also brings a much-needed skill set in the development, administration, and successful delivery of both for-profit and not-for-profit organizations.

Arnold was instrumental in establishing the Vancouver Island Asset Management (Regional) Community of Practice, which represents local government and First Nations from the Vancouver Island and Sunshine Coast. The success of that regional group lead to the split of the group into two and the formation of the South Island group. The model established by those pioneering regional groups has now led to the formation of three other regional groups within the province, and with more to come.

Look for the feature article by Arnold Schwabe that will be coming in the Winter Edition (January 2025) of the AMBC newsletter, on his vision of asset management and the path forward. It is an exciting time. Contact Arnold at E-mail: ed@assetmanagementbc.ca or phone: 250-816-1897.

An AMBC THANK YOU ……. to Doug Allin

Asset Management BC says ' a large vote of THANKS - to Doug Allin', as co-chair of Asset Management BC for the last 5 years.

Doug has been an innovative and creative influence during his term. This is reflected in some of the major activities and issues we addressed.

Doug has been a member and participant in the AMBC Community of Practice since 2012.

In the photo you cam see Doug holding a sign that says "Spallumcheen Asset Management". As Chief Administrative Officer for the Township, Doug led the AM initiative and program that brought in training for staff and Council. He lived the Asset Management journey. Doug has used creative videos to explain projects to residents and he has progressed the Township and surrounding area toward sustainable service delivery**.**

Besides his role as the Township CAO, Doug is also Head Coach for the U-23 National softball Team for Canada. Before coming to Spallumcheen Township, Doug was CAO of the Town of Grand Forks. Previously he was employed as the head of Public Works in Peachland.

AMBC has greatly benefited from Doug's diverse background and skill set. Thank you, Doug and congratulations on a job well done.

Kelowna created a line of sight between community expectations and infrastructure and services. The infrastructure deficit and percent renewal in the capital program are tracked as a performance measures and reported to Council annually. Kelowna is also expanding Cityworks to support the newly adopted service-based budgeting approach.

The ultimate benchmark is strong financial management of public funds.

UBCM Community Excellence Award

City of Kelowna, September 2024

The City of Kelowna has advanced its asset management program significantly in the last 10-years, with the help of the AMBC Framework.

The framework guided Kelowna to establish the core elements of a robust asset management program, including asset management policy, plans and strategy, and, most recently, the adoption of an **enterprise asset management system (CMMS)**.

The CMMS oversees and maintains Kelowna's varied and valuable municipal assets, such as water, wastewater, drainage, transportation, recreation, and community infrastructure. This asset management platform based on GIS technology manages assets, field data, work activities, business processes and supports the City's vision of enhancing digital transformations and asset management practices.

The CMMS has improved efficiency, effectiveness, and cost management throughout the whole lifecycle of municipal assets. The CMMS is key to operationalizing asset.

There are many components of a successful asset management program including policy, strategy, plans and systems. Kelowna used the AMBC Framework to develop these components systematically and CMMS implementation was not initiated until policy, strategy and plans were in place. Asset management is an integrated business approach and change management is a huge and ongoing part of the asset management program. By integrating planning, finance, operations and engineering,

CASE STUDY:

City of Cranbrook Asset Management Strategy

Mike Matejka, Katelyn Pocha, City of Cranbrook

In 2024, the City of Cranbrook updated its Asset Management Policy and Procedure to support continuous improvement in asset management. To guide the implementation of the updated Asset Management Policy and Procedure, an Asset Management Strategy (Strategy) was developed. Asset management is supported by City Council in the 2024-2027 Strategic Plan; Council also endorsed the Asset Management Policy, Procedure and Strategy.

"…we fully understand the need to look after the physical assets we currently have. We also recognize that our infrastructure must remain reliable and safe. To that end, Council is focusing on ensuring that City assets are properly maintained and repaired or replaced if necessary…" – 2024 to 2027 Strategic Plan.

The purpose of the Asset Management Strategy is to provide a roadmap for asset management over the next five years. The Strategy provides an overview of the City's existing asset management progress; identifies standardized asset management practices to be used throughout the organization; and identifies next steps for continuous improvement in asset management.

Background

The City has been integrating asset management into long term capital and financial planning since 2009. Since this time, many accomplishments have been made including the development of asset management plans for the City's

water system and wastewater treatment system, the completion of asset inventory and condition assessments for natural assets, and the integration of asset information to Cityworks™ (see figure 1 below).

To develop the Asset Management Strategy, the City used best practice guidelines and frameworks from:

- FCM (How to Develop an Asset Management Policy, Strategy and Governance Framework);
- EGBC (Professional Practice Guidelines: Local Government Asset Management);
- PEMAC Asset Management Association of Canada & Toronto Metropolitan University (Leveraging Asset Master Data course);
- Several Asset Management BC Frameworks and Primers;
- Several documents and reports from Natural Assets Initiative;
- NAMSCanada; and
- Asset Management Ontario.

The City also reviewed the asset management strategies and progress achieved in other municipalities in BC (including the District of Saanich, District of Summerland, City of Prince George, and the City of New Westminster), and the City of Hamilton (in Ontario), to help guide development of their asset management processes.

Strategy Implementation & Next Steps

To effectively implement the Strategy, the City developed an 18-month timeline to focus efforts on improving asset inventories and data collection; reviewing procurement policies and asset renewal replacements to encourage the evaluation of full lifecycle costs and circular economy considerations; and reinstating a cross-functional asset management steering group.

Over the next 18 months, the City will be:

1. Updating Cityworks™ software to improve data collection.
   a) This will provide City staff with a user-friendly interface to collect inspection data, resulting in consistent and high quality information that can be used for long-term planning.
2. Training operations and maintenance staff on Cityworks™
   a) The City has committed to using NAMSCanada's ratings for maintenance inspections, and Pavement Condition Index for roads, sidewalks and active transportation inspections. Staff will be trained on these rating structures, so data

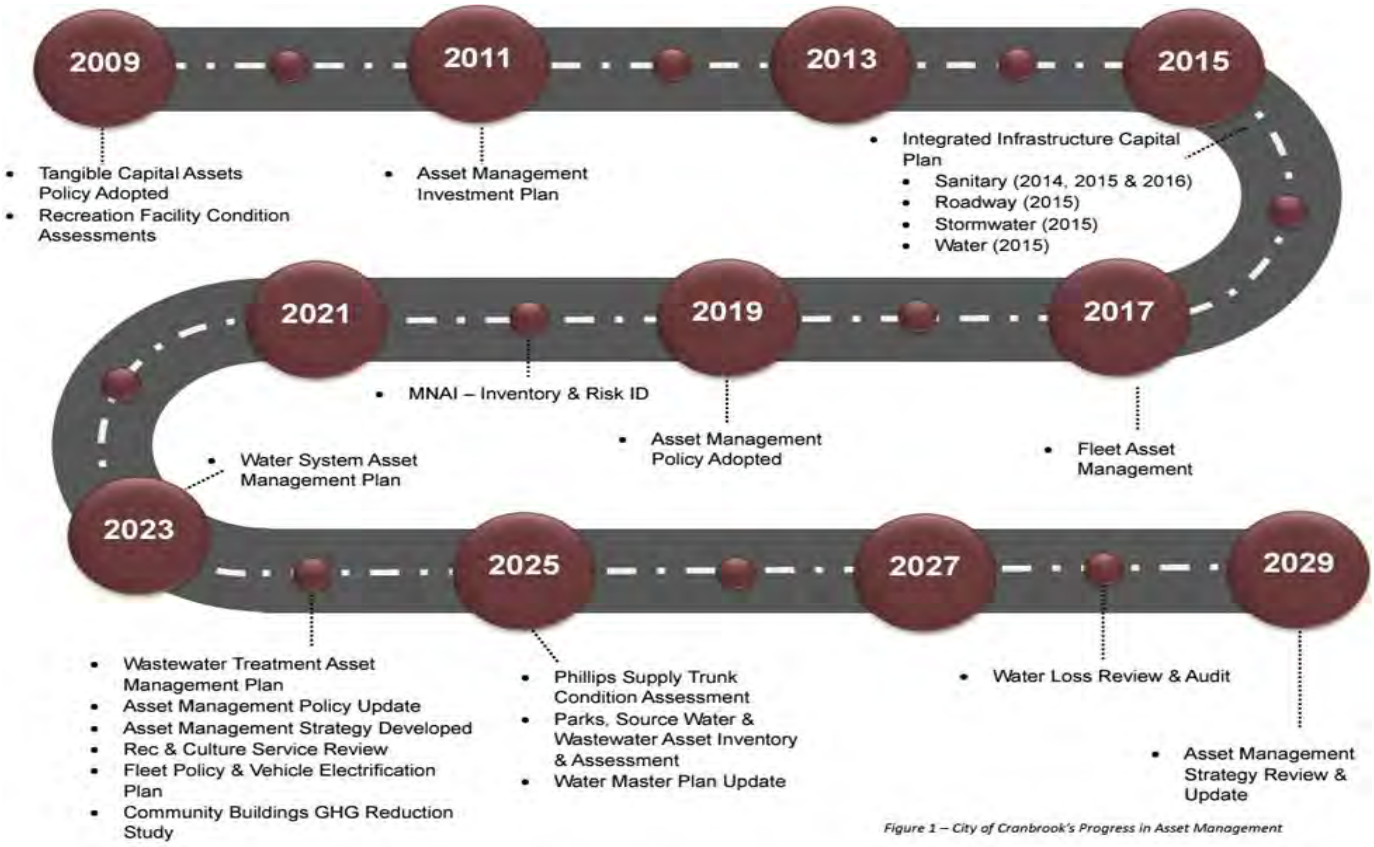


Figure 1: City of Cranbrook's Progress in Asset Management and Asset Management Roadmap

collection and asset inspections are standardized.

3. Participating in the NAI Natural Asset Management Roadmap
   a) The City is improving it's natural asset management inventory and is participating in Cohort 3 of the NAI Natural Asset Management Roadmap Project.
4. Implementing recommendations from the Water System Asset Management Plan and Wastewater Treatment Asset Management Plan
5. Bridging silos between departments with the cross-functional asset management steering group.
   a) The asset management steering group meets monthly to improve communication through all asset lifecycle stages.

By having an Asset Management Strategy that includes the entire organization, the City hopes to see long-term improvements in asset renewal and replacement programs that support sustainable service delivery for the entire community.

PROFILE: **Young Professionals**

Michael Mehni, City of Prince George

1. *You are an engineer. What made you decide to pursue a career in engineering? Where did you go to school and graduate from?*

I was born in a small town in southern Iran, where engineering careers were highly esteemed. From a young age, I was fascinated by designing cars and buildings and as I progressed through high school, my interest in mathematics and physics deepened. A combination of these factors leads me to decide to pursue engineering and witnessing a booming construction industry by the end of high school, further solidified my decision. After graduating high school, I enrolled in the Civil Engineering program at the Iran University of Science and Technology in the capital, Tehran. I then completed my Master's in Structural Engineering at Sharif University of Technology, the top engineering university in Iran.

2. *What was your initial career and what were your aspirations?*

After earning my Master's degree, I returned home and started working at an engineering firm. However, due to a downturn in the industry, I began to reevaluate my career direction. Motivated by a friend's positive experience with a PhD program in Calgary and captivated by Canada's natural beauty, I decided to explore opportunities there. After two years of work, I embarked on a journey to do my PhD program in Civil Engineering at the University of Waterloo.

3. *How did you learn about asset management? What interested you in the subject? What caught your attention? Once you had some sense of what asset management did, how did you pursue the subject and opportunity toward deciding there was a career choice there?*

During my Ph.D. research, I focused on modeling and mathematical analysis to optimize the balance between safety and costs in financial investments for infrastructure design and climate change adaptation. Although my work was closely related to asset management, I wasn't aware of the field by name until I attended the Canadian Society for Civil Engineering (CSCE) conference in 2021 in Whistler, BC. A conversation with another attendee introduced me to asset management, revealing its critical importance in engineering and its multidisciplinary nature. This sparked my interest, leading me to explore the field further by attending additional events and studying key resources like the IAM Anatomy document. I was particularly drawn to asset management because it integrates engineering, finance, project management, and data science, offering a diverse career that encompasses both fieldwork and office work.

4. *What attracted you to the position at the City of Prince George?*

Relocating from Waterloo to the City of Prince George was a significant decision for me. Waterloo had become a second home filled with cherished friendships; however, what attracted me most to this position was the city's forward-thinking approach to asset management. During the interview process, I was particularly impressed by the insightful and positive interaction with my manager. This experience reassured me that the role would provide ample opportunities for professional growth and allow me to make meaningful contributions.

5. *What is your current position and what are your responsibilities?*

I currently hold the position of Asset Management Engineering Assistant, where my responsibilities range from designing and streamlining the acquisition and

updating of asset data to applying this data for optimizing maintenance and capital planning decisions. What I have learned is that each stage of the process has a factor of human involvement and is rife with both challenges and opportunities for improvement.

6. *What are your career aspirations?*

In the coming years, I aim to expand my role and take on greater responsibilities within the asset management field. I am particularly interested in leading initiatives to optimize the asset management program by refining existing processes and implementing advanced data analysis and decision-making tools. My goal is to drive improvements that enhance both efficiency and effectiveness in asset management, leveraging data-driven insights to make more informed decisions.

The Role of Asset Management in Business Continuity Planning

Sandra Mayo, Manager of Risk Management Services, MIABC

In November 2023, the Province of BC updated its legislation to improve emergency management with the introduction of the Emergency and Disaster Management Act (EDMA). The EDMA replaces the Emergency Program Act and goes beyond traditional emergency management by specifically introducing business continuity requirements for local authorities and critical infrastructure providers.

The new requirements under the EDMA have a direct impact on the daily work of asset managers. Central to these requirements is business continuity, a key aspect of risk management. Business continuity is a powerful tool that helps you plan for potential disruptions and minimize their impacts before they occur.

Effectively managing your assets now and in the future is essential to mitigating risk exposures, particularly as they tie into your organization's business continuity planning. As you develop or refine your continuity plans, consider the following areas:

Inspection and Maintenance:

Regular inspection and maintenance are essential to maintaining the integrity of physical assets. Irregular inspection and poor maintenance can lead to more frequent or severe failures, operational disruptions, and unexpected repair costs. If repairs are needed, the reliability of suppliers and the availability of critical materials or components can further impact your ability to continue operations. Implementing preventative maintenance and condition monitoring are critical strategies to mitigate these risks. Additionally, identifying potential supply chain disruptions will help minimize delays and reduce associated costs.

Environmental and Regulatory Compliance:

There are complex regulations around pollution, waste management, and other environmental factors. Both compliance and non-compliance can cause operational disruptions. Non-compliance may result in fines, legal action, or reputational damage, while efforts to comply can lead to unexpected delays. Additionally, there is a growing focus on sustainability standards, which present their own set of challenges.

Natural Disaster and Climate Change:

Extreme weather events such as flooding, landslides, and wildfires continue to pose risks to assets in vulnerable locations. The resiliency of assets and investments in infrastructure that can withstand these events is now a higher priority.

Financial Impact:

Asset depreciation and inaccurate valuations can negatively affect financial performance and reporting. Inaccurate valuations of insurable assets may also hinder the ability to obtain replacement cost insurance, limiting your ability to transfer financial risk in the event of a covered loss.

While the introduction of EDMA has undoubtedly changed the landscape in BC, the full extent of these changes is not yet clear. As we await the Local Authority Regulation to support EDMA, this is a crucial time to assess how you manage asset-related risks and identify the critical services linked to these assets.

The MIABC is dedicated to supporting members throughout their business continuity planning journey. As part of this commitment, we offer a comprehensive Business Continuity Hub, featuring information, resources, and templates to help you get started. Additionally, our Learning Library provides a three-part series that guides local governments through the business continuity planning process. Members also have access to policy development toolkits that help identify risks through inspection and maintenance processes. Through our partnership with Suncorp Valuations, members can

also receive discounted appraisal services to ensure accurate replacement cost values for insurable assets.

As always, MIABC members can contact us at AskUsAnything@miabc.org for assistance and support.

CASE STUDY: Water is All

Integrated Water AM in the Regional District of Nanaimo

Kim Fowler, ??

SUMMARY

Water is an essential element for survival that shapes livelihoods, landscapes and ecosystems. Freshwater is increasingly under stress from land development and changing climate. Sea levels continue to rise, threatening shoreline development and impacting aquifers. The Regional District of Nanaimo has responded to these risks for water in three key integrated regional services of Drinking Water and Watershed Protection, Regional Growth Strategy and Climate Action Technical Advisory Committee. Water doesn't respect political or organizational boundaries, so neither should our planning and management of this essential resource.

Many people mistakenly believe they own the water on their property. In British Columbia (and generally in other provinces and territories in Canada), water is owned by the Crown on behalf of the residents of the province. A significant change enacted in the Water Sustainability Act (2016) requires landowners to obtain authorization to use groundwater for anything other than domestic use.

(ref: www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-licensing-rights)

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The majority of groundwater users, however, are domestic, and water licenses are not regularly checked for compliance, which is cause for concern, particularly with climate change impacts.

Like many regions in Canada, the Regional District of Nanaimo (RDN) is experiencing significant changes in climate, particularly:

- Longer, drier, and hotter summers that strain water resources for community use, agricultural irrigation, and temperatures and baseflows for fish
- More intense short-duration storm events bringing high volumes of precipitation causing flash flooding and land instability
- More precipitation falls as rain due to warmer winter temperatures, which results in less snowpack accumulation at elevation

The RDN has responded to these risks for water in three key integrated regional services of Drinking Water and Watershed Protection, Regional Growth Strategy, and Climate Action Technical Advisory Committee.

The Drinking Water and Watershed Protection (DWWP) service was created in 2009 to proactively address watershed challenges facing the region and the need for better water information to inform local decisions, and coordinate across jurisdictions (see Figure 1). Key priorities in the second-decade strategic plan are:

- integrate water information into key plans
- make progress towards rainwater management commitments
- develop targets for watershed function
- explore valuation of watershed natural assets
- model water availability
- continue to collect local water data to build long-term datasets.
- perform trend analysis to inform land use, water allocation, and infrastructure decisions

Continuing severe drought conditions and low streamflows in the summer are stressing aquatic species, and in some aquifers, declining levels foretell limits to water consumption and water quality concerns that will require collaboration across jurisdictions.

The Regional Growth Strategy (RGS) service, which sets regional land use planning, has policy that supports the creation of an aquifer protection development permit area (DPA) in Electoral Area F (EA-F), where residents and

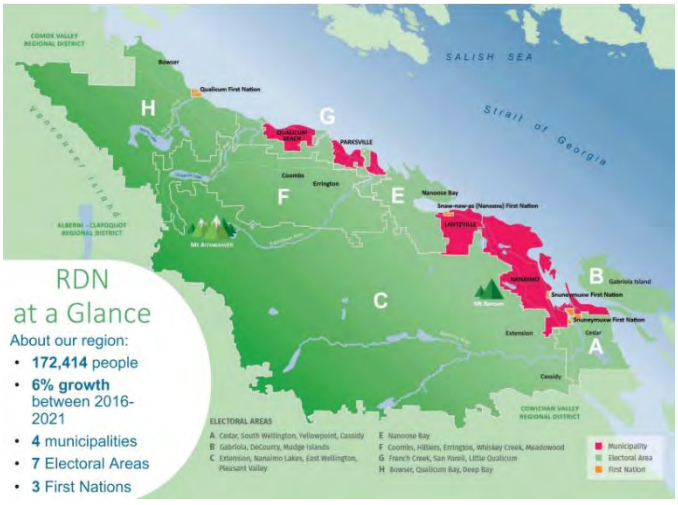


Figure 1: RDN at a Glance, Source: RDN

businesses rely on groundwater aquifers as their main water source, with approximately 1,000 known wells within the Plan Area. The DPA is based on DWWP information, rainwater targets, model rainwater management plan, and watershed targets, along with updated Provincial aquifer and groundwater well mapping and assessments. Land development interferes with natural hydrologic processes of infiltration, evaporation, and transpiration by replacing vegetation and soils with impervious surfaces (e.g., pavement and rooftops).

Population growth and climate change generate additional demands and stresses, on groundwater sources, prompting proactive land and water management to create a sustainable relationship with this limited resource. Some aquifers in EA-F are showing declining trends in water level and quality in recent years. *(ref: Water Quality and Quantity Risk Assessment for RDN Electoral Area F, GW Solutions Inc., June 2020. Available at www.rdn.bc.ca/sites/default/files/inline-files/GWS_RDN%20Area%20F_RevJune15_2020.pdf)*

The DPA manages land development overlying the most vulnerable sources of groundwater in two classes. The first class is intensive land use designations in the Official Community Plan, as the permitted uses within the Local Service Centre, Industrial, Mixed Use and Tourist Commercial designations often require larger volumes of groundwater supply, and pose potential water quality risks associated with contamination. The second class applies to lands residing atop aquifers rated as high-stress based on supply and demand and/or low productivity based on known well yields, and the inherent nature of the aquifer materials and their ability to store water. Based on their hydrogeology, the vulnerable aquifers are also susceptible to water quality risks associated with surface contamination and are within areas of increased groundwater demand.

A second DPA protects the natural assets of forests and wetlands as vital components of the overall landscape that provide ecosystem services supporting a healthy economy and social well-being. This designation was based on the Natural Asset Management program, which undertook a natural asset inventory, condition and risk assessment analysis and mapping. EA-F is within both the Coastal Douglas Fir and Coastal Western Hemlock Biogeoclimatic Zones that provide a home to a variety of rare ecosystems and endangered species. The Coastal Douglas Fir Biogeoclimatic Zone spans a narrow strip of southeast Vancouver Island, and is the most at-risk biogeoclimatic zone in British Columbia. Much of this zone has been altered due to human activity. In EA F, forests (including older forest, older second growth and woodland ecosystems) provide habitat for many species-at-risk, including the Marbled Murrelet and Townsend's Big-eared Bat.

Wetlands are vital ecosystems and productive natural environments, providing a range of ecosystem services and habitats for many species. Little Qualicum and Englishman River watersheds are both located within the Plan Area, encompassing numerous wetlands that provide habitat for many species of birds, amphibians, reptiles, insects, and fish, including Painted Turtles, Western Toad, and the Great Blue Heron. Electoral Area F also includes a portion of the Parksville-Qualicum Beach Wildlife Management Area (WMA), which has been designated to

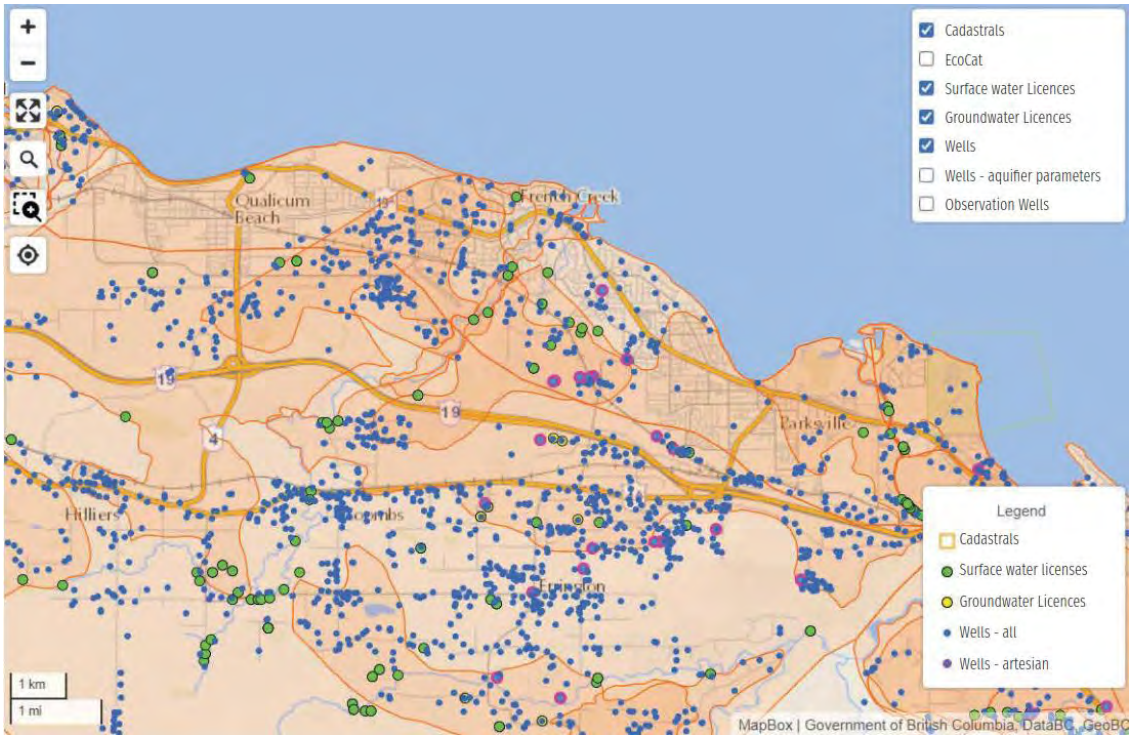


Figure 2: Aquifer and Groundwater Well Mapping, Province of BC, Area of Errington, Coombs, Whisky Creek, Qualicum Beach& Parksville.

conserve important habitats for waterfowl and fish. Wetland ecosystems in the WMA and elsewhere in EA-F provide both habitat and ecological services to the community, including freshwater supply and groundwater recharge, flood attenuation and erosion mitigation, water filtration, temperature regulation and climate change impact mitigation.

Another water-centric project under the RGS service is coastal and river floodplain mapping updates. The 188 km of shoreline was mapped with an analysis of sea level rise impacts under various scenarios. Existing river floodplain maps were also updated for the Englishman, Little Qualicum and Nanaimo rivers. Both of those projects generated amendments to the Floodplain Bylaw and related Board policy and the creation of a new coastal hazard DPA. The next project stages underway are a climate risk assessment for the coastal floodplain, and a geohazard risk prioritization study (see Figure 2).

In 2019, a Climate Action Technical Advisory Committee (CATAC) was created to provide advice and recommendations to the RDN Board on actions to address local impacts of global climate change. Comprised of seven diverse registered professionals and three RDN Board representatives, CATAC was tasked with preparing a Climate Adaptation and Mitigation strategy with recommendations to the Board for immediate action.

The first of three top priorities recommended to the RDN Board was water supply resilience supported by natural asset management. The goal was to ensure water services the RDN provides (both current and any proposed for the future) and areas within the RDN not served by community water systems have water supply resilience, including emergency back-up under expected future climate scenarios (an approximate 40–50-year time horizon).

A final report, approved by the RDN Board, developed best practices for climate-informed water supply planning. Current practices in the RDN were summarized, along with water supply profiles for the region's five local government water service providers. The direction of the final report is consistent with a recommendation from the Phase 3 Water Budget Model for French Creek Water Region report (prepared by the DWWP service) that the Board direct staff to write a letter on behalf of the RDN to the Ministry of Water, Land and Resource Stewardship formally requesting an appropriately resourced body be struck to initiate discussions on a regional water supply strategy for the French Creek Water Region/Oceanside Area.

We know water doesn't respect political or organizational boundaries, so neither should our planning and management of this essential resource, which is increasingly under stress. All living organisms rely on water, so it must be a strategic and operational priority, particularly in land use planning.

Water is all.

Kim Fowler is a professional planner and sustainability expert with over 30 years of experience working with local governments in Canada. The Planning Institute of BC awarded Kim the Individual Outstanding Achievement Award for Innovation and Advocacy in 2022.

Source to Sea: A Milestone in Natural Asset Management for the Town of Gibsons

Emily Sharma, Natural Assets Initiative

For the Town of Gibsons, integrating natural asset management (NAM) into core service delivery is not just an innovative approach — it's the new normal. The recent completion of the Source to Sea project marks a significant milestone for the town's natural asset journey and the practice of NAM as a whole.

Source to Sea is the latest evolution of NAM efforts in Gibsons, beginning with the Town's pioneering efforts in 2016. The three-year project, completed with the Natural Assets Initiative (NAI), provides insight into the role of nature in supporting critical water supplies, and marks the first time that marine-surface water interactions were explored in the contact of NAM. Given that 40% of the world's population lives within 100 km of a coast, building awareness of the connections between water systems is necessary as local governments address housing and development pressures against climate impacts.

Nature Has No Jurisdiction

As Gibsons' Natural Asset Technician Michelle Lewis explained, "What happens in the upper watershed impacts everything downstream, and understanding these interactions is key to safeguarding our environment and community."

The project focused on the entire Aquifer 560 watershed, which flows from the top of Mount Elphinstone, in and out of Town boundaries, the unceded territory of the Skwxwú7mesh Úxwumixw (Squamish Nation), and undeveloped lands claimed by the Crown and the

Sunshine Coast Regional District (SCRD), and finally out into the ocean.

Initially, approaching watershed-level management could present a jurisdictional nightmare, but investigating management through a NAM lens is critical, given that the aquifer supplies nearly 100% of the Town's drinking water. And the project findings provided further evidence to its importance:

- ~60% of the natural assets in Aquifer 560 Watershed are of high condition. Development pressure, deforestation and invasive plant species pose the highest risks to the health of the watershed.
- The total value of natural assets for a single service — stormwater management — is about $40 million, based on the capital cost to replicate their hydrological functions with conventional management and low-impact development solutions.
- The annual value of co-benefit services (specifically recreation, water quality regulation, carbon sequestration, and science and educational opportunities) totals about $4.4 million a year.

Some co-benefits are recognized qualitatively; understanding that the Aquifer 560 Watershed is integral to the culture, history, and heritage of the Squamish Nation, Gibsons worked with the Nation to recognize the cultural importance of the watershed to Indigenous peoples as part of the project. The efforts demonstrate the advantages of a NAM approach in addressing not only infrastructure needs, but also advancing local government priorities related to reconciliation and collaboration with First Nations.

Using Results in Gibsons and Beyond

Source to Sea made it clear: maintaining healthy natural assets in the watershed requires substantially lower lifecycle costs compared to relying on engineered solutions alone. And for a town of under 5,000 people, the costs associated with moving to solely engineered solutions are often not feasible.

For Gibsons, **the project provided a robust inventory of the natural assets and ecosystem services they rely on**, which can then be integrated into their asset management and development planning.

As for approaching management outside their jurisdiction, Gibsons is already making progress with the signing of the Aquifer 560 Agreement with SCRD. The Town is also working with SCRD to optimize their connected drinking water systems and water sharing to be able to supply water in times of drought.

Lewis also stressed the wider implications of the project as an example for others. This new evidence can be used to leverage initial scoping or grant-seeking efforts by other communities to begin their work in NAM, even providing an argument as to why they should invest in understanding and monitoring their own natural assets where current information may be lacking.

Said Lewis, **"The most important lesson is that this project can be a roadmap for other communities; they can learn from our journey."**

For asset managers, the opportunity to integrate natural assets into planning processes is one that brings both immediate and long-term benefits. Whether through improved water quality, reduced flood risks, or cost-effective service delivery, natural asset management provides a resilient, adaptable solution to the challenges faced by communities across British Columbia and beyond. The Town of Gibsons is showing that the best time to act is now, and the benefits of considering nature as infrastructure greatly outweigh the cost of losing these vital assets.

See the full report:

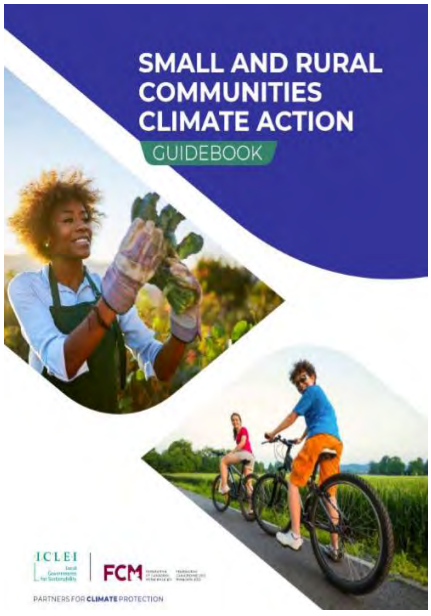
https://naturalassetsinitiative.ca/documents/from-source-to-sea-aquifer-560-watershed-natural-asset-management-project/

FCM issues Guide for Small Communities on Climate Action

Published with permission from Federation of Canadian Municipalities

Making up a major portion of Canada's population, small and rural communities are in the unique position of being able to make significant contributions to national, provincial and territorial greenhouse gas (GHG) emissions reduction targets. However, with limited financial and staffing resources, small and rural communities can face unique challenges when developing, implementing and delivering climate initiatives. Also, much of the conversation around local climate planning centers on the urban experience, leaving small and rural communities with few guides or tools to help them reduce emissions.

The ***Small and Rural Communities Climate Action Guidebook***, developed by ICLEI Canada and the Federation of Canada Municipalities (FCM) for the Partners for Climate Protection (PCP) program, is a direct response to the climate planning challenges faced by small and rural communities, offering local decision makers case studies and advice tailored to their experience.



Designed for municipal staff and decision makers in small and rural communities tasked with developing local climate initiatives or reducing GHG emissions, the guidebook can help municipalities:

- Develop realistic climate action policies
- Engage and collaborate with the public
- Build a GHG inventory baseline and data library
- Generate municipal revenue and local economic and wellbeing benefits through climate action
- Identify sector-specific climate challenges and identify solutions to overcome them.

For access to the Guide and download go to greenmunicipalfund.ca/resources/asset-management-resource-library.

MIABC - Liability risks of addressing climate change through natural asset management

Sandra Mayo, Manager of Risk Management Services, MIABC

Overview

It has been widely acknowledged that climate change is having an impact on local governments. Lately, much has been written advocating for the use of natural asset management to reduce the impacts of climate change. But every novel approach carries with it uncertainty about the potential for increased risks. So, the next question that is trending is: what are the liability risks of addressing climate change through natural asset management?

Negligence

Negligence is the law that attributes liability to those who knew, or ought to have known, that their actions or inaction could cause harm to another party. Where there is a duty, local governments must meet a reasonable standard of care, given not only what the local government knew, but also what it ought to have known.

A local government can defend a claim in negligence if it has a 'policy' in place. More specifically, a policy that includes core policy decisions. A 'policy' is a clear, definable procedure or system based on social, political or economic factors.

As experts confirm that natural asset management is a reasonably effective approach, and the community adopts this practice, there are several ways that natural asset management can be defended from a potential negligence claim:

1. a decision by a local government to adopt a climate adaptation plan that incorporates natural asset management (if done properly to meet the test) could be defended as a bona fide 'policy'; and
2. there will be support for the defence that the local government acted reasonably and without negligence

Nuisance

Nuisance is a substantial and unreasonable interference with the use and enjoyment of property. In the context of climate change, typical nuisance claims include flooding caused by infrastructure failures or limitations. Unlike negligence claims, it is no defence to a nuisance claim that the local government had a bona fide 'policy' in place or was not negligent.

There is case law that suggests that liability will only attach to those that cause or contribute to the nuisance. Therefore, generally speaking, a natural event like a deluge of rain will not attract liability in nuisance or negligence. However, a local government increases its risk of liability if it gets involved in some way that causes or contributes to the nuisance, such as approving a development that changes the direction of water. In the urban setting there is great potential for this type of liability exposure because local governments are involved with the building of roads, sidewalks and other infrastructure, such as storm sewer systems and culverts, that alter the flow of water and impact the pervious nature of the earth's surface.

Given that the risk of liability in nuisance increases the more a local government is involved in changes to the natural flow of water, it arguably follows that the reliance on natural assets, rather than engineered solutions, could conceivably reduce the risk of liability in nuisance. This would be welcome relief given the limited availability of defences for nuisance claims.

Regulatory Risks

Climate change can result in various types of regulatory risks under federal or provincial legislation, including flooding that may cause a deleterious substance to enter fish bearing water or a drinking water source. Recent provincial legislation requires local governments to adopt targets, policies and actions to reduce greenhouse gas emissions in the community, which creates more regulatory requirements and resulting risks for local governments.

To defend a regulatory charge, a local government must show that it acted with due diligence, or that reasonable steps were taken, considering what the local government knew or ought to have known.

Like potential negligence claims, expert evidence that supports the use of natural asset management as a reasonably effective approach will provide a potential due diligence defence to local governments.

Takeaway

As research confirms that natural asset management is at least equally as effective as engineered approaches, and as the use of natural asset management becomes accepted by mainstream experts and adopted by local governments, in time, we should find that the courts too will accept natural asset management as a reasonable approach. In fact, we may find that reliance on natural asset management may even decrease the risk of liability for nuisance claims. It is not often we find the potential for such a perfect storm (so to speak) of effectiveness, lower cost and lower liability risk. Let us hope for such a storm as local governments adapt to climate change.

Data and Sustainability Reporting – An Update

Allison Ashcroft, Director of Sustainability, Municipal Finance Authority of BC

Looking for a friendly implementation guide to serve as sherpa along your path to high quality, standardized, sustainability reporting? Trying to get ahead of disclosure standards that within a few years will be legislated, regulated, or otherwise mandated by a grantmaker or lender? **Save your consulting budget** because you and your team now have this short guide for getting started.

The International Financing Reporting Standard (IFRS) just released ***" International Sustainability Standards Board" - Voluntarily Applying ISSB Standards – a guide for preparers*** . The two ISSB standards for climate-related (S2) + other general sustainability matters (S1) have become the global baseline upon which to ground your approach to ID, assess, measure risks, impacts, the criteria and components for disclosing these material issues on how your organization is managing them.

- #TCFD framework is rolled into the S2 climate standard as are #SASB standards
- #GHGprotocol standards are incorporated by reference for GHG measurement and reporting
- #CDP has amended their 2024 corporate questionnaire to align with the ISSB standards - other sector questionnaires are coming.
- #GRI works well with the ISSB standards for those looking to augment the investor-focused, risk-centered ISSB standards.

And, of course, there are many other frameworks and standards that may be specific to your industry, or specific to other commitments. Your organization may have signed on to that stack nicely with the ISSB standards.

My personal favorite is #UNRISD and hashtag#AuthenticSustainabilityAssessment.

Is the public sector feeling left out?..... don't be. The International Public Sector Accounting Standards Board (IPSASB) has a draft climate disclosure standard ready to launch within the next week or two. The final global public sector standard is only 1 year away. IPSASB is using the IFRS S2 climate standard as its starting point and is adding some extra requirements in recognition of the broader role of the public sector and the material risks and impacts public policy can have on environment and society. While you wait for this IPSASB standard and implementation resources to arrive, this guide to voluntary disclosure of the ISSB standards definitely won't hurt you to read and incorporate into your processes for

a) assessing and disclosing the material climate-related financial risks to your organization, or for
b) measuring and disclosing the GHG impacts of your operations using the GHG Protocol's corporate and value chain standards.

https://lnkd.in/ga-kqATX Voluntarily applying ISSB Standards ifrs.org

Planning to report under IFRS in addition to some of the valuable Reporting under the Global Reporting Initiative (GRI) standards? GREAT! IFRS and GRI are still working out a few kinks but have issued this ***"Interoperability considerations for GHG emissions when applying GRI Standards and ISSB Standards"*** https://lnkd.in/g4K2uemu.

Additional information (update)

1. *The IPSASB broke new ground approving its first Sustainability Reporting Standard (IPSASB SRS™) Exposure Draft (ED) 1, Climate-related Disclosures.*

   The ED proposes disclosures for all public sector entities to report on their climate-related risks and opportunities, aligned with the private sector disclosures developed by the International Sustainability Standards Board.

   The proposals also include additional public sector disclosures for those select entities with the responsibility to develop climate-related policy programs by exercising their sovereign powers.

   The IPSASB expects to publish the ED by the end of October 2024 and then undertake a global consultation to seek feedback from constituents on the proposals.

2. *IPSASB approved ED 92, Tangible Natural Resources. This ED proposes guidance that fills a gap in the current literature for naturally occurring items with physical substance that embody service potential and/or the capability to generate economic benefits. ED 92 is expected to be published by the end of October 2024.*

CNAM News: Successful Fall Summit

Bernadette O'Connor, CNAM Immediate Past Chair

Shaping the Future – was the theme for the 2024 CNAM Virtual Fall Summit – and it was a fantastic event packed with ideas and opportunities to share and learn, and to connect with people from communities and organizations across the country. The format was varied with presentations, panel discussions, facilitated breakout groups for dynamic discussions on trends and hot topics, Q&A sessions, and summary report-backs on small and large group discussions.

Other News

Fall 2024 **CNAM newsletter** (CNAMer) is available with CNAM news and events cnam.ca/newsletter/.

CNAM's MAMP 4 Climate Knowledge Products and resources are now available in both French and English on CNAM's website **cnam.ca**.

Another CNAM Regional Meetup was held in Orangeville, Ontario on September 25th, and attracted participants from the surrounding area and as far away as South Bruce Peninsula. The attendees participated in engaging conversations with a range of topics discussed. The event was co-hosted with AMOntario and CNAM. More Meetups are planned for London, Calgary, GTA and more.

Coming Up

Conference 2025: Hold the dates to join us from **May 12th to May 15th in Laval, Quebec**, with the option to extend for a beautiful long weekend in la belle province!

Executive Director Vacancy: CNAM is looking to recruit a new Executive Director. More details available on the CNAM website and in the CNAMer Fall 2024 newsletter.

CNAM Awards: nominations for the 2025 CNAM Awards are now officially open!

Asset Management BC

Annual Conference
November 6 and 7, 2024

Have you registered for the conference yet? Are you coming to the pre-conference workshop on Level of Service or Long-Term Financial Planning? Have you booked your hotel room?

DO IT NOW ... !

The annual **Asset Management BC Conference** is AMBC's largest on-site signature event of the year, comprised of presentations, plenaries, social functions and a mini trade show of exhibitors and, oh yes, a great networking opportunity!

Today's Decisions-Tomorrow's Future **-** The decisions we make today significantly shape our future. Yet, it's not always easy. Asset management often requires making difficult decisions now, to ensure sustainable service delivery in the future. These decisions are key to ensuring our current community service needs, and how those services are delivered in a socially, economically, and environmentally responsible manner without compromising the ability of future generations to meet their own needs.

We have a diverse program covering many areas and disciplines within asset management and sustainable service delivery program. Again, this year we welcome our First Nations communities. Don't miss this opportunity to network and share ideas with asset management champions, sustainability experts, CAO's, Local Government decision makers, front line operators and our First Nations delegates. **Join the conversation** about your progress towards Sustainable Service Delivery. **Check back regularly** for updated conference information. The detailed program is posted on the AMBC website. Go to www.assetmanagementbc.ca for conference details.

Full Registration is $649. There will be no single day registration rate. Young professionals 30 and under is $449. Student registration is $199. GST is extra on all. Go to www.civicinfo.bc.ca under events for registration for both the conference and the pre-conference workshops.

Book your accommodation at the Radisson Vancouver Airport Hotel in Richmond. Call central reservations at 1-800-333-3333 or the hotel directly at (236) 305-5339, or email reservations@radissonvancouver.com.

Rates are $209 single/double occupancy plus taxes. Ask for the **special rate** for the Asset Management BC conference. For further information contact: **Arnold Schwabe**, AMBC Executive Director ed@assetmanagementbc.ca or **Wally Wells**, Coach and Mentor AMBC wwells@live.ca.

MFABC
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Upcoming Events

Asset Management BC
November 5, 2024
Pre-conference Workshops
- **Level of Service training**
- **How To Write an LTFP for Asset Management**
Radisson Vancouver Airport Hotel
Richmond BC
Registration open: civicinfo.bc.ca

Asset Management BC
November 6-7, 2024
Annual Asset Management Conference
Theme: Today's Decisions – Tomorrows Future
Radisson Vancouver Airport Hotel
Richmond BC
assetmanagementbc.ca
Registration open: civicinfo.bc.ca

Planning Institute of British Columbia (PIBC)
November 2, 2024
2024 World Town Planning Day
Pan Pacific Hotel,
Vancouver BC
pibc.bc.ca

Canadian Network of Asset Managers (CNAM)
May 12 – 15, 2025
Annual Conference and Trade Show
Sheraton Laval,
Laval QC
cnam.ca

Government Finance Officers Association, BC (GFOA - BC)
May 25-29, 2025
Annual Conference
Theme: Building Resilient Communities
Sheraton Wall Centre
Vancouver, BC
gfoabc.ca

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