From Flood Risk to Resilience in B.C.

Intentions Paper Summary

Indigenous Peoples and Flooding

First Nations have been disproportionately impacted by flood events in B.C. and have not always received appropriate funding and capacity to reduce flood impacts on their communities. To reverse damage and move forwards with reconciliation, First Nations' needs, values, and worldviews should be incorporated in flood management decisions. Reconciliation also means greater attention paid to environmental sustainability issues, and ecosystem-based approaches that realise the interconnectedness of water and the land. These also relate directly to many Indigenous rights. It is time for conventional planning and design practices for flood control to be better reconciled with Indigenous priorities, knowledge, and wisdom to achieve flood resilience.

The wisdom of Indigenous peoples - who have always viewed environmental sustainability as inseparable from economic stability and public health issues - is increasingly understood, embraced, and reflected in decision-making. The rights of Indigenous peoples and their traditional ways are protected on our pathway to reconciliation.

There is a strong need for respectful, reciprocal sharing of information and data to balance Western Science with Indigenous ways of knowing. The knowledge, practices, and values of First Nations - which are complex and deeply contextual – needs to be better respected alongside Western science to better understand flood risks.

Vision and Outcomes

Vision

Together, we are leaders in innovative, holistic flood risk management, enhancing B.C.'s flood resilience for the 21st century.

Enhanced Public Safety

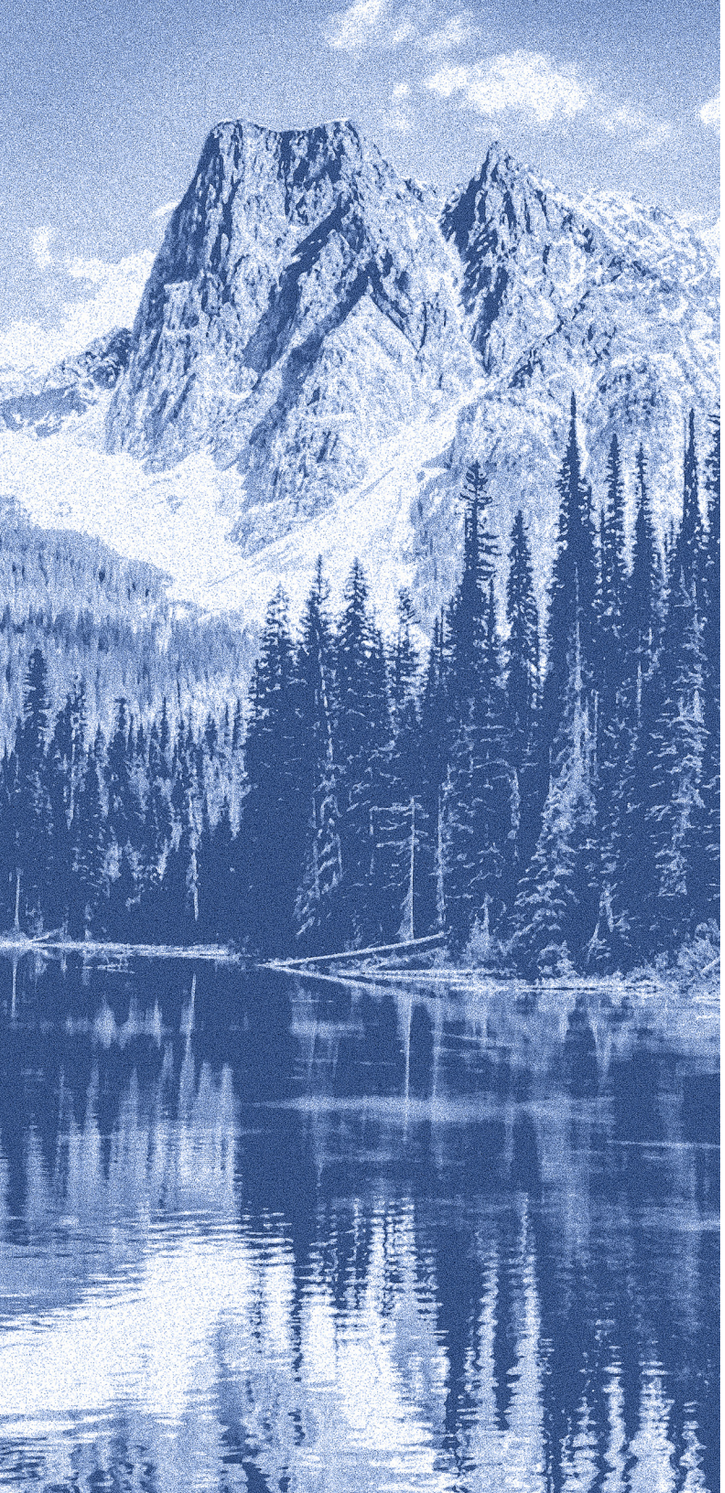
Communities are built/rebuilt and managed to allow "safe flooding" to prevent and minimize risk to public safety and public health, including death, injury, stress and social disruption caused by events.

Economic Stability

Provincial and local economies and critical infrastructure absorb flood shocks with less economic disruption and property damage and public investments in flood resilient infrastructure realize a high cost/benefit return.

Environmental Sustainability

Natural floodplains and green infrastructure provide a wide range of valued ecosystem services, including flood regulation, fish and wildlife habitat, clean water, open space amenities, recreation opportunities, and spiritual benefits.



Sendai Framework for Disaster Risk Reduction

The proposed strategic approach to developing B.C.'s Flood Strategy is anchored in the United Nation's Sendai Framework for Disaster Risk Reduction. It is based on 4 priorities:

1. Understanding disaster risk.
2. Strengthening disaster risk governance to manage disaster risk.
3. Investing in disaster risk reduction for resilience.
4. Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation, and reconstruction.

The Need for a B.C. Flood Strategy

3 Focus Areas

Provincial government mandates recognise the need for a modern B.C. Flood Strategy with a focus on the following:

Future-Proofing Our Ability to Respond to Crises: Both Canada and B.C. have signed the UN Sendai Framework for Disaster Risk Reduction, which includes four priorities related to knowledge, governance, funding, and disaster preparedness.

Preparing for Climate Change: Due to climate change:

- River flooding is expected to be at least 10-20% more frequent
- Local floods from heavy downpours are expected to be 40% more frequent
- Sea level rise of 1m or more is expected by the end of this century

Meaningful Indigenous Reconciliation: The B.C government also acknowledges the need for increased rights recognition, self-determination, and partnerships with B.C.'s Indigenous peoples, and is committed to bringing all provincial laws into harmony with the *Declaration on the Rights of Indigenous Peoples Act* (*Declaration Act*).

Program Area 1:

Understanding Flood Risks

Action 1.1: Work with other levels of government to advance flood maps to better inform flood construction levels and development decisions

Coordinating a provincial flood mapping program (including First Nations) to apply consistent standards and quality control processes. This will inform decisions on infrastructure investment and emergency management.

Action 1.2: Conduct a province-wide flood risk assessment

Creating an assessment based on available province-wide data would fill a gap in understanding and provide a more consistent provincial picture of flood risk.

Action 1.3: Strengthen dike regulatory programs

Developing a publicly accessible, central repository of up-to-date dike information will support:

- Regulatory and compliance
- Emergency planning, response and recovery
- Risk assessments
- Increased awareness

Action 1.4: Increase public and business awareness of flood risks

Ensuring that flood risk information is transparent, easily accessible and understandable will increase public safety and empower informed decision making.

Action 1.5: Support applied research and training

Complementing applied research, training and education with Indigenous ways of knowing will support increased awareness and capacity in flood resilience.

Program Area 2:

Strengthening Flood Risk Governance

Action 2.1: Improve First Nations' involvement in flood resilience decision-making

Strengthening disaster risk governance is a crucial part of reconciliation between Indigenous peoples and other governments and needs to prioritise Indigenous self-determination and the interests of First Nations.

Action 2.2: Review and modernise provincial legislation, regulations, and policies to address flood risks

Modernising legislation requires careful work to better address the growing risks, liabilities, and changing public values.

Action 2.3: Review and modernise provincial technical guidance

Ongoing improvements to technical guidance and standards are critical to enabling innovative and resilient flood infrastructure planning, design, and construction practices.

"The Sto:Lo worldview is similar to other First Nations – a worldview centred on water bodies – that's what needs to be incorporated into a B.C. Flood Strategy – A First Nations way of thinking for the future."

- Tyrone McNeil, Sto:Lo Tribal Chief

Program Area 3:

Enhancing Flood Preparedness, Response, and Recovery

Action 3.1: Enhance flood forecasting capabilities and early warning systems

Continuous improvements in flood modelling and forecasting services across B.C. ensures accurate, up to date flood advisories for the public and emergency responders to enable flood resilience.

Action 3.2: Enhance flood preparedness by developing and exercising flood emergency response plans at multiple scales

Business continuity planning (planning, testing, and validating plans) enables critical services to remain functional despite a disaster or disruption and enhances overall preparedness.

Action 3.3: Enhance emergency response activities

Ensuring an immediate and well-coordinated emergency response requires local governments, First Nations, and the Province to co-develop strategies for future resilience.

Action 3.4: Enhance pre-disaster recovery planning and post-disaster recovery, including "Build Back Better"

Defining community-based flood recovery blueprints before a flood disaster occurs is critical to improve the balance between reactive and proactive approaches.

Program Area 4:

Investing for Flood Resilience

Action 4.1: Enhance investments in flood avoidance

Designing future funding programs to support flood avoidance concepts, pilots, and approaches to enhance resilience while promoting environmental stewardship and deterring new flood exposure.

Action 4.2: Enhance investments in flood accommodation

Enhancing investment programs to reflect modern priorities including measures around tsunamis, communities with no means to relocate, flood proofing, and flood insurance coverage.

Action 4.3: Enhance investments in flood protection

Enhancing investments to reflect modern priorities include seeking co-benefits for flood protection, emphasising green infrastructure, ensuring archaeological resources and sites of Indigenous cultural significance are identified and protected, to name a few.

Action 4.4: Enhance investment in community-led retreat

Purposeful and proactive movement of people and infrastructure out of known high-risk floodplains requires collaboration between all levels of government, affected communities, and First Nations.

Flood Avoidance

Flood Accommodation

Flood Protection

Flood Retreat

Principles for Strategic Flood Resilience

Proactive: Flood resilience must be built before major floods occur–not reactively in response to flood disasters–to proactively protect people and property and enable nature-based solutions.

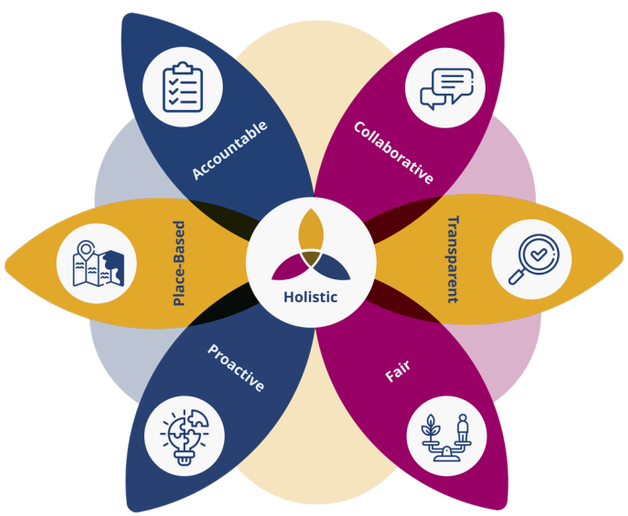
Place-Based: Decisions to reduce flood risks must be based on the best available place-based data and knowledge and reflect regional, watershed-based approaches including upstream and downstream connections. No single solution will work for every flood, requiring flexibility and diversity in solutions.

Accountable: Organisations and individuals must take responsibility for their decisions and actions to build greater flood resilience over time.

Collaborative: Reducing flood risks requires effective collaboration across diverse roles and responsibilities at all levels of governments (including First Nations), and include industries, businesses, communities, landowners, and the public.

Transparent: Flood resilience decisions and flood risk data must be open and accessible to all, enabling full, accurate, clear information on flood risks–including uncertainties.

Fair: Programs to reduce flood risk must be equitable and accessible to all people at risk–including Indigenous peoples–and must apply a GBA+ lens addressing race, culture, gender, sex, age, income, and ability, while respecting human rights and the rule of law.



Holistic: A holistic approach to flood management is interdisciplinary, balanced, and Indigenous-centred, and integrates across a network of relations within watersheds, ecosystems, land, and society.

Pre-Contact
First Nations' oral histories shape seasonal migration and other practices to co-exist with flooding

Pre-Contact
Inland and coast flood events

1894
Largest Fraser River flood on record post-contact

1948
Large flood on the Fraser River causes dike failures, Federal-Provincial Fraser River Board created

1948
Columbia River Flood destroys Vanport, Oregon

1953
Dike Maintenance Act passed to address dike failure issues

1961
Columbia River Treaty signed and helps address international food risks

1972
North Thompson River breaches dikes near Kamloops

1973
Agricultural Land Reserve legislation protects many floodplains from development

1974
B.C. launches Floodplain Development Control Program and floodplain mapping

Next Steps

Impact of having a flood strategy and collaboration

There is a need for collective leadership in innovative, holistic flood risk management to enhance B.C.'s flood resilience. By shifting to more proactive measures in collaboration with partners, we will be better prepared to reduce the number of people affected by flooding, while securing future growth and prosperity, avoiding cultural asset destruction, and improving our shared environments for the benefit of all. The Strategy will be future focused and meet government mandates: support communities to prepare for climate impacts; future-proof our province-wide ability to respond to flood crises; protect land and water; and invest in the infrastructure of tomorrow.

Call to Action

It is important that we hear from you:
BCFloodStrategy@gov.bc.ca

Together, we will define B.C.'s flood resilient future, then act accordingly to make that vision a reality. Thank you in advance for your feedback–it is highly valued and appreciated.

"When we take care of the land and water, the land and water take care of us."

- siwɬkʷ (water) Declaration

1990
Nooksack River Flood (Sumas Prairie, Abbotsford)

2003
Province removed from floodplain subdivision and bylaw approval process

2010
Major flood in Kingcome, central coast

2013
Severe floods in Calgary, AB and Toronto, ON

2015
National Disaster Mitigation Program created

2017
Okanagan and Interior floods

2018
B.C. adopts UN Sendai Framework for Disaster Risk Reduction

2018
Grand Forks flood

2019
Eastern Canada floods in Quebec, Ontario, New Brunswick

2020
Floods in Cowichan, Sooke, Port Coquitlam, Cariboo, Chilcotin, Nazko, Nicola, Kootenays, Kelowna, Vernon, Shuswap, McBride

2021
Atmospheric River flooding across Southern and South Central B.C. (Nooksack River, Abbotsford, Merritt, Princeton, Coquihalla Highway, Highway 8, Highway 1)

2022
Future Federal and Provincial flood programs and strategies evolve