



Building Back Better, Together

Actions towards integrated flood recovery in British Columbia

March 2022

The dramatic flood events in B.C. in November 2021 confirm that existing approaches to prepare for and manage floods are inadequate. We are now at a crossroads. We can ignore the clear messages of these events, or we can move forward with recovery in a way that supports public safety, healthy communities and ecosystems, and B.C.'s *Declaration on the Rights of Indigenous Peoples Act* (DRIPA) commitments. The umbrella of “Building Back Better, Together” offers principles that can get us on track. Over the longer term this means a shift to integrated flood management that yields resilience and multiple co-benefits. In the short term this means clear commitments from federal and provincial leadership, support for strategic action, and immediate attention to funding criteria and programs. In seeking these actions we aim to uphold First Nations leadership and priorities in flood recovery and management.

This technical briefing note has been prepared by an emerging group of B.C.-based organizations and experts with the shared goal of helping B.C.'s upcoming flood recovery and management efforts achieve the best possible outcomes. We offer support from a diverse range of interests, experience and networks, including Indigenous groups, conservationists, farmers, environmental legal specialists, researchers and natural resource professionals. We have seen firsthand how conventional approaches have not ensured public safety, and note that climate change and current land use practices will only increase risk in the future. We came together in the wake of the November 2021 flooding but have long-standing interests in seeing B.C. move towards a more holistic, collaborative approach to flood management that benefits people and other species, like salmon.

We call for two short-term actions to guide recovery efforts and spending, with First Nations leadership centred in all decision-making processes, including support for First Nations' capacity to engage in those processes.

Action 1: Commit to Building Back Better Together, work with EPS and this group to develop an inclusive and productive process

Recovery efforts must be guided by inclusive and transparent decision making based on a shared definition of “Building Back Better, Together” (BBBT) for the region. We propose to hold a gathering with provincial representatives, First Nations representatives and local governments with support from members of this group, to

discuss recovery efforts and begin development of shared principles for BBBT and a framework to implement them.

Action 2: Develop new short-term funding criteria to Build Back Better, Together

Recovery funding must consider both short- and long-term needs and objectives. Funding criteria can target fish-friendly infrastructure, nature-based approaches, models of resilience, place-based collaboration and consideration of multiple objectives including floodplain management. These types of flood risk reduction options are grounded in international best practice. We call for the inclusion of federal funding already designed to support BBBT (Mitigation Enhancement and Innovative Recovery Solutions) in distribution of Disaster Financial Assistance to local governments. We also recommend that B.C. adopt specific funding criteria to incentivize BBBT approaches, and further note the example of innovation incentives within the federal Disaster Mitigation and Adaptation Fund. Finally, funding of “emergency” repair or upgrade of existing flood infrastructure needs to be carefully defined and managed to ensure First Nations decision making is centred.

Supporting Documents:

Attachment 1: Building Back Better, Together - What does it mean for B.C.?

Attachment 2: Examples of integrated floodplain management from other jurisdictions

Attachment 3: Additional considerations, B.C context

Attachment 1: Building Back Better, Together - What Does It Mean for B.C.

The Government of Canada and the Province of British Columbia have adopted the United Nations' Sendai Framework on Disaster Risk Reduction¹ to guide disaster risk reduction. A key concept of the Framework is to “build back better” during recovery to reduce future risk and enhance resilience.

In B.C., the November flooding events only confirmed the inadequacies of existing flood management approaches. Many of these inadequacies had already been documented in professional assessments prepared for the Province and other governments.² Building Back Better Together will include learning from these events and these assessments.

Examples of principles for Building Back Better, Together in B.C. would include:

- Understanding and reducing risk;
- Advancing reconciliation. Building Back Better, Together must align with DRIPA commitments related to decision-making and First Nations capacity building, and cultural and economic security, including consideration of impacts on salmon habitat and fisheries for food, social, and ceremonial purposes;
- Protecting, enhancing and reconnecting floodplain habitat for salmon and other at-risk fish and wildlife populations;
- Supporting and enhancing sustainable livelihoods and community resilience; and
- Supporting collaborative work that achieves multiple benefits.

Short-term action to Build Back Better, Together

In this recovery stage, short-term flood mitigation and repairs to existing infrastructure should be undertaken in a way that recognizes longer-term risk reduction, and objectives that reflect Build Back Better, Together principles (e.g. climate change adaptation, watershed planning, ecosystem health, First Nations capacity building). This also brings opportunities for multiple benefits that include ecosystem recovery and food and cultural security. While acknowledging that flood recovery funds will in part be directed to repairs and remediation, investments in Building Back Better, Together are also necessary, and possible. In order to avoid locking in current deficiencies, we strongly recommend updates to funding criteria and funding program design, including:

- Funding criteria with a weighted points system and an expedited approval process to prioritize projects that include fish-friendly infrastructure, nature-based solutions, First Nations-led and place-based collaboration, multiple benefits, climate change preparedness, and larger-scale planning for floodplain management.
- Programs that recognize the time and funding needed for relationship building, both when assessing risk and moving to mitigation, and which could include “seed grants” to develop projects.

¹ [Sendai Framework for Disaster Risk Reduction](#)

² [Ministry of Forests, Lands and Natural Resource Operations, Lower Mainland Dike Assessment, Final Report \(July 2015\)](#) ; [Nooksack River Overflow Flood Mitigation Plan \(2020\)](#)

- Prioritization for First Nations-led projects, including recovery and capacity building.
- Enhanced rigour in the assessment of funding for proposed “emergency” works by local governments and other entities, including consideration of longer-term needs and impacts, and proactive engagement with First Nations.
- Targeted investments in the four Sendai pillars as identified in the Federal/Provincial recovery plans – including support services for evacuees, capacity development, changes to the core funding model, and better communications - must also consider impacts or opportunities for fish and the environment.

Medium and Longer-Term Action to Build Back Better, Together

Short-term actions will help initiate a necessary shift towards more holistic and integrated floodplain management. Over the medium to longer term, we need a vision for the shared landscape that supports respectful collaboration based on agreement about key guiding principles. We see the development of this vision as an urgent priority that can be initiated immediately, as described in Action 1 above, but understand that it will come to life with ongoing engagement, relationship building, and application.

Development and implementation of the shared vision and integrated floodplain management will include:

- Developing frameworks for cross-jurisdictional cooperation and decision-making about flood management.
 - Collaborative examples that can be built upon include: the Emergency Planning Secretariat, who are coordinating 31 Nations on flood planning and response work; the Farmland Advantage Program, which supports farmers to build resilience; the Resilient Waters program which has prioritized critical infrastructure that needs to be upgraded for wild salmon; and the Living Dike Pilot Projects in Boundary Bay that include collaborative processes with rights-holders and regulators as well as ecosystem restoration and flood management.
- Improved coordination across the landscape, including:
 - Alignment with climate adaptation and mitigation strategies;
 - Alignment with watershed security plans;
 - Environmental and Fisheries Enhancements and
 - Coordination with critical infrastructure planning and management.
- Fostering an interdisciplinary approach to inform decision-making that addresses the management of multiple, sometimes conflicting, objectives. This will include collaboration and sharing of resources among different actors (including NGOs and academic institutions) upstream and downstream.
- Designing the process to learn what works in different contexts, why, and what can be learned from challenges and successes.

Attachment 2: Examples of integrated floodplain management from other jurisdictions

A key objective of integrated floodplain management (IFM) is to balance interests of flood risk reduction, ecosystem recovery, and agricultural viability. It seeks to improve floodplain health and takes a “whole of valley” approach to ensure that vulnerable watersheds are treated as systems and that risk is not simply transferred downstream. IFM can include floodplain reconnection to give rivers more room to flood naturally, reducing peak water levels while restoring natural processes such as sediment movement. To be successful, IFM requires a participatory planning approach that is inclusive and culturally specific.

Integrated floodplain management is successfully underway in Washington State (Floodplains by Design, Floodplains for the Future), the Netherlands (Room for the River), and other parts of the world. Integrated floodplain management efforts in Washington State are supported by a state-developed guidebook, “Comprehensive Planning for Flood Hazard Management.”³

Washington State

Floodplains by Design is a private-public partnership led by The Puget Sound Partnership, The Nature Conservancy and the Department of Ecology of the State of Washington. The State of Washington has been investing in projects using the Floodplains by Design approach since 2013. Flood risk is reduced by seeking solutions through a collaborative floodplain-scale approach. Floodplains are reconnected while protecting communities and prime agricultural lands

A related initiative is Floodplains for the Future: a partnership of stakeholders in the Puyallup watershed in Washington State, working to advance integrated floodplain management solutions. They are implementing a long-term vision that seeks to improve salmon habitat, protect communities and infrastructure, and preserve agricultural lands. They are led by Pierce County with funding and support from the Washington State Department of Ecology, the Nature Conservancy, and Puget Sound Partnership.

The Netherlands

Room for the River is a program implemented in the Netherlands that included land use changes around rivers as well as deepening channels, relocating dikes, and strengthening dikes. The program objective was to safely cope with 1-in-1,250 year high flows without flooding, while enhancing the spatial and ecological quality of the river landscape. The program was officially completed in 2019, protecting four million people from rising waters. Some residents were moved to higher ground, recognizing that the overall cost to society was much less than trying to maintain defences that would fail in the long run.

³ [Comprehensive Planning for Flood Hazard Management: A Guidebook](#)

Attachment 3: Additional Considerations

B.C.'s Watershed Security Strategy and Fund

British Columbia's Watershed Security Strategy and Fund will provide an avenue to implement important flood management solutions. A Watershed Security Fund would build on investments made in nature-based projects through the Healthy Watersheds Initiative and target climate resilience to floods and droughts as a key outcome. The Watershed Security Strategy will support greater integration of landscape-level planning and management at the watershed scale, including floodplain management. As an example, the Nicola Watershed Governance Project, a partnership between the Provincial Government and five Nicola Nations, is playing a key role in coordinating restoration efforts as the Nicola region recovers from the devastating impacts of flooding. The Watershed Security Strategy and Fund will support and enable this kind of place-based collaboration.

Local government support for integrated floodplain management

In 2020/2021, the Union of B.C. Municipalities passed a resolution asking for federal and provincial support for flood risk mitigation through green infrastructure and natural assets (Resolution NR16). The resolution requested that "the federal and provincial governments remove constraints and implement requirements for incorporating green infrastructure and nature-based solutions in flood management to ensure effective flood risk mitigation while maintaining or restoring social, cultural and ecological co-benefits for these systems," and that "the federal and provincial governments promote natural assets as a viable emergency planning solution and provide appropriate funding through the Disaster Mitigation Adaptation Fund, Investing in Canada Infrastructure Program, Community Emergency Preparedness Fund, Emergency Management BC and other similar emergency planning and mitigation funds."

This resolution followed a 2018 resolution (Resolution B119) asking the province to include fish-friendly infrastructure and ecological health in their priorities for flood infrastructure funding, as follows: "Therefore be it resolved that the provincial government be requested to improve their oversight of flood infrastructure maintenance and improvements, to include consideration of ecological connectivity and aquatic ecosystem health; And be it further resolved that the provincial government initiate infrastructure funding priorities and partnerships that support the installation of fish-friendly infrastructure in those locations where ageing or inadequate infrastructure requires upgrading or replacement."

Flood control impacts on wild salmon

Flood control efforts, both historical and modern-day, have degraded vast quantities of salmon habitat in B.C. Thousands of kilometres of formerly high-value salmon waterways are now fully or partially blocked by flood control infrastructure, including floodgates that rarely open, and pumps that kill fish. Closed floodgates also contribute to harmful high temperatures and low oxygen levels in upstream waterways. Fish-friendly technologies are now readily available, and municipalities are asking for technical and funding support in order to adopt them. Clear guidance and funding criteria can make fish-friendly infrastructure

a standard practice in British Columbia, ensuring that public funds are not spent on renewed fish barriers or on pumps that kill fish.

In response to this issue, fish-friendly flood control and restoration of affected waterways was highlighted as a priority initiative by the provincial government's Wild Salmon Advisory Council in their 2019 report: *Recommendations for a Made-in-B.C. Wild Salmon Strategy*.⁴

A June 2021 report from the federal Standing Committee on Fisheries and Oceans includes the following recommendation for federal involvement in flood control upgrades and coastal restoration: "Recommendation 4: That the Government of Canada, the Province of British Columbia and, where appropriate, First Nation communities review the state of flood control/mitigation systems along the lower Fraser River and their impact on wild salmon, and co-develop a program to update pumping stations and other components, as necessary, to remove risks to wild salmon runs."

Current examples of regional cooperation for flood management

The Emergency Planning Secretariat is coordinating 31 Nations on flood planning and response work. The Farmland Advantage Program is supporting farmers to build resilience, including conserving and enhancing critical natural values.

The Resilient Waters project, funded by the B.C. Salmon Restoration and Innovation Fund (SRIF), is assessing lower Fraser flood control structures, and identifying the best opportunities for wild salmon habitat restoration and salmon-safe flood infrastructure upgrades. Their April 2020 mapping⁵ identifies 27 priority projects, at least five of which are suited for near-term initiation. Resilient Waters is currently finalizing BC SRIF funding for roughly \$2.5 million over three years for planning, design, and construction of salmon-safe flood infrastructure upgrades.

Who We Are

- Emergency Planning Secretariat is an a-political organization created to support a coordinated mainland Coast Salish-led flood management strategy, from Yale to Tsawwassen to Squamish.
- Watershed Watch Salmon Society is a science-based charity working to defend and rebuild B.C.'s wild salmon. We tackle the complex issues facing wild salmon through collaboration with other organizations and community groups.
- West Coast Environmental Law transforms environmental decision-making and strengthens legal protection for the environment through collaborative legal strategies that bridge Indigenous and Canadian law.
- Farmland Advantage is a research and development program that works with farmers to protect and conserve critical, natural lands, streams and habitats in British Columbia.

⁴ [Recommendations for a Made-in-B.C. Wild Salmon Strategy](#)

⁵ [Resilient Waters - maps of short listed sites in the lower Fraser region](#)

- School of Architecture and Landscape Architecture, UBC is deeply committed to the quality of the built and natural environment, facilitated by our multidisciplinary approach to effective learning and collaborations.
- Ebbwater Consulting is a Vancouver-based company that focuses on providing its clients with intelligent, thoughtful and complete flood management solutions.
- Kerr Wood Leidal Consulting Engineers create water, community, and energy infrastructure solutions in balance with nature that make the world a safer, better place.
- Resilient Waters supports communities to prepare for climate change and reconnect vital wild salmon habitat by advancing collaborative efforts to upgrade flood control infrastructure in the Lower Fraser watershed.