

BC Flood Strategy Intentions Paper

A Practitioner Perspective



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Cover photo: Sumas Lake looking west November 2021. Ebbwater Consulting Inc Image.

This document has been prepared at the Ebbwater offices, which are located which are located on unceded and Traditional Territories of the the x^wməθk^wəy̓əm ([Musqueam](#)), Sk̓wxwú7mesh Úxwumixw ([Squamish Nation](#)), and səlilwətał ([Tseil-Waututh](#)) Nations.

1 Introduction

Floods are a naturally occurring phenomena that have in large part shaped British Columbia (BC). Sediment drawn from the mountains during flood events is deposited in the many great valleys of the Province creating fertile soils and vibrant ecosystems. The natural ebb and flow of water running from mountains to the ocean signals salmon to migrate and people to harvest foods. Simply, our rivers and coasts, and their natural rhythms are part of us and the land we live on.

Our floodplains are also the commercial, social, ecological, and cultural arteries of the province. The assets and the communities they support, that sit on these floodplains are subject to damage and disruption when floods occur. In the last decade this interaction of the flood as a hazard with the things we care about on the floodplain has become more prescient, with significant events in 2016, 2017, 2018, 2020 and 2021.

Our damages and risks have been great, in part because of a broken flood governance system in the province (Ebbwater Consulting Inc. and Pinna Sustainability, 2021), and because climate and other pressures are exacerbating the hazards and risks (Associated Engineering Ltd., 2021). These will get worse if we don't change course.

Changing course is challenging in large part because of the wicked¹ and systemic² nature of flood risk. The Province of BC have begun a journey to better manage and plan for flood in future through the development of *From Flood Risk to Resilience in BC: An Intentions Paper*. This document builds on a number of public and private investigations into the current obstacles and opportunities to reduce flood risk and reflects the current policy and mandate of the government. It describes a proposed strategic framework for flood resilience in BC.

This document provides commentary on the intentions paper from the perspective of a private sector flood specialist practitioner perspective.

2 Response

The direction laid out in the intentions paper is a huge shift from the status quo towards best practice; we applaud the Province on the overall direction. Of course, the hard work

¹ A wicked problem in policy, planning, or natural resource management is one that is difficult or impossible to solve. Where competing interests mean that there is no single solution, and because of complex interdependencies, solving one part of the problem will worsen or create other problems.

Who are we?

[Ebbwater Consulting Inc](#) is a boutique flood specialist firm based in Vancouver. Our team has decades of experience working on-the-ground with communities in BC to mitigate flood risks as well as working with the Province and Canada on strategic flood mitigation initiatives.

We bring a somewhat unique perspective in that we work at the nexus of science, engineering, policy, and planning and are strong proponents of inter-disciplinary and genuinely integrated approaches to disaster risk reduction.

of implementation is yet to come, and it is only in the implementation that risk will be reduced and resilience increased across the province.

We provide specific comments on each section of the intentions paper below.

2.1 General Background

We applaud the Province on the title of the report – *From Flood Risk to Resilience* as well a commitment to develop a Flood Resilience Plan in the [2022 Ministry of Forests mandate letter](#). However “resilience” is not defined early in the intentions paper, nor is its essence – the consideration of recovery, capacity, and barriers to capacity - explicitly expressed in the intentions paper. Resilience is not reflected in the proposed vision or objectives.

We also note that the vision does not include any concepts related to governance. As noted above, without a robust understanding of who is making decisions and how those decisions are being made all other actions and goals will likely fail over time.

2.1.1 Flood Hazard Types

We laud the inclusion of background information on the flood types in the document. We do encourage the Province to review the list to be more comprehensive, for example we note that lacustrian (lake) floods, as well as seiching and landslide generated flooding (on inland lakes) are missing from the list. A peer-reviewed list of hazard types is included

² In this instance the term ‘systemic’ is used to describe the widespread impacts of flood that can affect all parts of society, are widespread, and can persist for long periods of time.

in the draft Flood Mapping Guidelines for BC (Ebbwater Consulting Inc., 2022).

We also encourage the Province to consider explicitly expanding the list to include secondary flood hazards (fluvial geohazards like erosion and avulsion). These should also be more explicitly considered throughout the framework.

Finally, we encourage the Province to recognise and consider the important linkages between natural hazards such as the propensity of flood following drought (and drought following flood) and of flood following wildfire. Connections to other hazards and risks are not clear in the framework.

2.2 Strategic Framework

2.2.1 Vision Components

As noted above, we feel that the vision needs to include a component related to governance – otherwise, what is going to keep this strategic vision on track, and accountable, etc.? The BC Flood Investigation Series papers include principles for governance that could be leveraged (Ebbwater Consulting Inc. and Pinna Sustainability, 2021).

2.2.2 Principles

The high level principles outlined in the paper generally reflect best practice and align with senior government mandates and direction. This is a very positive evolution for the Province.

We do however note that although the intention paper includes a priority action related to understanding risk, there is no risk-based principle in the list. And, further, if the Province truly wishes to move towards a resilience based model as the title of the document suggests, this missing principle could in fact be related to the strategy being “resilience-based”.

Further, we note that the principles do not reflect any connection to other hazards, natural or man-made. A recognition that the strategy needs to work within a world where multiple hazards exist, and where maladaptation can happen, should be explicit.

2.3 Priority Program Areas and Actions

2.3.1 Understanding Risk

We are heartened to see that “understanding” and hopefully acting on risk is a core tenet of the framework. The introductory section highlights some of the messiness of risk including the issue of current inequities. However, we note that although these are mentioned at the outset, the

concepts are not really drawn through the actions. Further, we encourage the Province to explicitly consider what baseline of risk we should be understanding? Specifically if we should understand risk as the risk that exists today OR if we should understand risk as the risk that existed prior to colonial settlement (e.g., should the existence of a pipeline become a determining factor in the development of a flood plan?)

As alluded to above, we encourage the Province to consider a shift towards resilience over risk reduction, which could be reflected in the overall program area and action title. However, this should not just be tokenistic, but should include specific actions related to measuring and growing resilience capacity (using an equity-informed lens).

Additional considerations by action include:

Action 1:

- consider making a stronger commitment to fluvial geohazards.
- consider the inclusion of flood protection infrastructure, with details on fragility (i.e., likelihood of failure) to present a more fulsome picture of hazard.
- consider making accessibility to flood mapping a priority and commitment; there is strong evidence that making flood maps themselves doesn’t reduce risk, they need to be used.

Action 2:

- A province wide risk assessment needs to explicitly address the core principles of the strategy, specifically the commitment to a holistic approach and fairness (i.e., consideration of vulnerability and equity).
- Further, we recommend the Province consider progressing this assessment to a resilience assessment to include capacity (and barriers to capacity).
- The Province must also recognise the regional and local nature of flood risk and resilience and tie any provincial-scale work to local scale assessments (and vice-versa).

Action 3: There should be a direct linkage between any new information or changes to flood protection infrastructure and earlier actions (i.e., dike information should feed into flood maps and risk assessments).

Action 4: This is an important action. However, we feel it needs to be bolder. Consider mandatory disclosure through a change regulation/legislation. There is strong evidence that disclosure is an important piece of an all-of-society approach to risk reduction (Lyle, Hund, and Fang 2023. Forthcoming).

2.3.2 Strengthening Flood Risk Governance

As noted earlier we feel there is a large gap in the framework related to the future leadership from the Province and the need to build capacity to support accountability and action in the long-run. We recommend that an action specific to building internal capacity (leadership, policy, technical, etc.) at the Province be considered. Strong support for this is recorded through the [BC Flood Investigations Series](#). In the same vein, the figure in this section limits the Province's role to co-ordination, we strongly believe that the Province's role should be broader than this and include being knowledge holders (i.e. support) and regulators.

In general, we are in agreement with the proposed guidelines. However, we note that it is incredibly important to **develop capacity in people** as well as developing documents. This includes capacity in government (provincial, local and First Nation) but also in the private sector.

Action 1:

- Overall we applaud this action.
- This action should be expanded to explicitly acknowledge equity issues and capacity gap.
- Should also describe the need for carrots and sticks for Local Governments to move forward with this new reality. Many are currently struggling to understand their new relationships and roles (see for example (Ebbwater Consulting Inc. and Ursus Resilience, 2022)

Action 2: Add the need to revise the *Local Government Act* Section 524 (7) to adjust the requirement for a "geotechnical" engineer to conduct flood assessments.

Action 3:

- Flood Hazard Area Land Use: The intent of this action is good. However, the description and objective of this action needs to be revised to an actual focus on land use (as opposed to infrastructure).
- Local Flood Risk Assessment: Ensure that these guidelines align with provincial risk and ideally shift to include resilience.
- Integrated Flood Planning Guidelines: Ensure that planning guidelines focus on setting the context for planning and provide guidance on how to govern and make decisions, and not just a focus on potential mitigation actions: doing the right project is more important than doing the project right.

- Local Authority Guidance: Expand these to guidance to include DPAs and bylaws as well as other non regulatory tools.

2.3.3 Enhancing Flood Preparedness, Response, and Recovery

We are in general agreement with the direction and actions in this priority program area, and applaud the Province in bringing mitigation planning and emergency response together under one strategy.

Action 1:

- Expand to include related geohazards .
- Explicitly consider the importance of good communication of warning systems.

Action 2: This action needs to be explicitly tied back to the principles so that vulnerable populations, etc. are actively recognised here.

Action 3:

- With the ambition to strive for best practice, we plead with the Province to stop promoting the use of sandbags except as the worst last resort tool for temporary flood protection.
- We also encourage the Province to consider all-of-society approaches within this action, to include for example resources (guidance, incentives, etc.) for individuals to make their homes and families flood-resilient.

2.3.4 Investing for Flood Resilience

Within this program area, we note that although 'resilience' is in the action title, it is not reflected in the details. Resilience should be the goal, and therefore the actions need to include consideration of overall capacity, place-based capacity and barriers to these.

We also feel that there is a missing action related to the development of tools to support good decision-making. The promotion of non-structural alternatives is laudable, but these will be less likely to be implemented if communities aren't encouraged to move through planning and decision processes that also reflect best practice.

Action 1: Consider expanding to protection of upper watersheds as a mechanism to reduce hazard severity/power.

Action 2: Work to expand toolbox of options by working with the federal government and through the building code as

well as involving suppliers and local government regulators to consider flood-resilient and flood-resistant building materials.

Action 3: A whole watershed approach needs to be considered under this action. Slowing the flow through protection and ecological restoration is an easy win.

Action 4: We are in strong agreement with this action, but it needs to be fleshed out as it doesn't currently read like an action. Further, it needs to explicitly consider the principles related to fairness.

2.4 Conclusions

We are pleased to see that accountability measures and review period are mentioned in the conclusions but note that these aren't reflected explicitly anywhere else in the framework.

3 Conclusions

In general, we are very excited about the new direction that the Province is taking with this framework. However, as reflected in the comments above there are some important adjustments that we feel need to be made. Most importantly we encourage the Province to consider how will build out their own internal leadership, accountability, and technical capacities. It is well documented that the under resourced, underfunded and polycentric system at the Province is a failure. Simply, the Province needs to make sure they have the scaffold in place before trying to build out this program, or it will fail.

4 Citations

Associated Engineering Ltd. (2021) 'Investigations in Support of Flood Strategy Development in British Columbia. Issue B-1: Climate Change'. Prepared for the Fraser Basin Council.

Ebbwater Consulting Inc. (2022) 'Flood Hazard Mapping Guidelines for British Columbia. Draft Report.'

Ebbwater Consulting Inc. and Pinna Sustainability (2021) 'Investigations in Support of Flood Strategy Development in British Columbia. Issue A: Flood Risk Governance'. Prepared for the Fraser Basin Council.

Ebbwater Consulting Inc. and Ursus Resilience (2022) *Disaster Mitigation Funding: Leading and Best Practices, and Barriers to Implementation in British Columbia.*

Lyle, Hund, and Fang 2023. Implications of disclosure and non-disclosure of flood hazard maps in Canada: A literature review.