

## MINISTRY OF EMERGENCY MANAGEMENT AND CLIMATE READINESS

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### FLOODS – AN EMERGING ECONOMIC THREAT REQUIRING ACTION

#### Issue

British Columbia has several thousand kilometres of coastline along which communities are located. Likewise, the Fraser River and other rivers flow through BC communities that are vulnerable to flooding. Floods from rivers and oceans could destroy or affect residential, commercial, industrial, and agricultural properties as well as affect transportation means (roads, highways, bridges) and cause widespread disruption to day-to-day living requiring significant expenditure to restore areas back to pre-flood conditions.

The damage to the economy and businesses due to floods are significant, in the hundreds of million dollars. The Fraser Valley has already experienced two catastrophic floods within a 20-year span (1990 & 2021). Flood protection structures, measures such as dikes and associated infrastructure (pump stations, flood boxes, rip rap and relief wells) throughout BC need to be upgraded to combat the threat of sea level rise of up to 1 m by 2,100. Significant time-bound expenditures are needed to upgrade flood protection infrastructure throughout BC.<sup>9</sup>

#### Background

Climate change leading to melting ice caps in the North and South poles is causing sea level rise. The BC Ministry of Environment and Climate Change Strategy has directed cities to prepare for a 1m rise in sea levels by 2100. Extreme weather events such as atmospheric rivers causing significant rainfall/snowfall and river levels rising beyond diking or natural levels are being seen in BC communities. Forest fires and heat domes that are experienced more often in BC further challenge the environment and predispose land to flooding by destroying trees and vegetation that normally play a water absorption role. This can cause significant flooding of rivers flowing through BC. Flooding poses catastrophic risks to BC's economic vitality, safety, environment, property owners and communities.

Although cities have been directed to prepare for sea level rise and river body risks, there remains the need for significant dollars (running into billions) to upgrade dikes and associated infrastructure over the coming years to prepare adequately for such flooding events. There is a 0.5% chance of an extreme flood today while there is a 50% chance of an extreme flood by 2100 C.E.<sup>10</sup> Complete restoration of coastal and river boundary communities and infrastructure following a major flood event could take several years causing severe disruption to the economy resulting in losses of several hundreds of million dollars. To help prevent damage and losses, flood prevention infrastructure across BC must be upgraded in a timely manner and in a priority sequence.

As part of its long-term flood adaptation strategy, the City of Surrey embarked upon a full review of existing dike infrastructure throughout the City limits and has identified priority areas around rivers (Nicomekl, Serpentine) and the coastline (Boundary Bay) requiring significant investment for upgrades over the next several years for which both provincial and federal funding will be required in addition to city funding.<sup>11</sup>

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<sup>9</sup> 2019, Surrey Coastal Flood Adaptation Strategy – Presentation to the Surrey Board of Trade Environment Team by the City of Surrey Environment and Drainage Manager <https://businessinsurrey.com/wp-content/uploads/2019/02/CFAS-Surrey-BOT-Feb-14-2019-compressed.pdf>

<sup>10</sup> <https://www.ducks.ca/stories/conservator/rising-sea-levels-on-canadas-coasts/>

<sup>11</sup> Serpentine and Nikomekl Lowlands – City of Surrey <https://www.surrey.ca/city-services/3654.aspx>

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The City of Abbotsford has long been advocating for upgrades to diking and drainage infrastructure and more predictable funding arrangements with the province and federal government, given historical flooding vulnerability from the Nooksack River and major flooding events, more recently in 1990 and with the 2021 disaster. The City of Abbotsford's key focus in the months ahead is to ensure federal and provincial support is provided to upgrade the Sumas and Matsqui dikes as well as the required infrastructure upgrades at the Barrowtown pump station.

Former Abbotsford Mayor Henry Braun warns the disaster in Sumas Prairie will pale by comparison if the Matsqui dike breaches. The Fraser River is 10 times larger and more powerful than the Nooksack River and will wreak havoc on our economy and infrastructure if it overtops the substandard dikes that are in place.<sup>12</sup> The BC Chamber of Commerce estimates that the economic impact of a Fraser River flood event on Matsqui Prairie to be approximately \$30 billion.

Current drainage infrastructure urgently requires upgrading given the time-sensitive implications with respect to sea level rise.<sup>13</sup> A report (2015) released by the BC Ministry of Forests, Lands and Natural Resources found that 71% of lower mainland dikes were vulnerable to failure by overtopping, where floodwaters breach the top of the dike resulting in a flood. Directing water out of the farmland, and out of the region depends on the effectiveness of regional drainage systems, requiring the Province to approach upgrading from a regional perspective, working with municipalities. Only 4% of dikes in BC met provincial standards.<sup>14</sup>

With a focus on food security and the protection of food sources, the Province must rethink infrastructure investments to prevent a greater disaster that may be just around the corner. Abbotsford is the top agriculture producing jurisdiction in the country on a per-hectare basis with sales of \$1 billion per year according to the 2016 census and it also produces 50% of all the milk, chicken, turkey and eggs consumed in the province. The Abbotsford case illustrates the importance of protecting our food supply and major supply chain routes against natural disaster in the interests of the entire province and country.

Local governments simply cannot afford to fund what is needed to upgrade such critical infrastructure. For example, \$1 billion is needed to rebuild both dikes in Abbotsford to today's standard. Similar upgrade requirements and high costs have been identified in municipalities from Richmond to Chilliwack, and in a number of northern communities with similar flood potential.

It is understood that dike inventory maps, designs, etc. have been prepared by the Provincial Government and that funding for upgrades from both the federal and provincial governments has arrived in pockets over the years since at least 2014. Currently, the federal government is undertaking a more comprehensive analysis and mapping of flood risk areas across Canada to support emergency preparedness and in coordination with the provincial government.

There is also a significant risk associated with "orphaned" infrastructure. Flood infrastructure currently built and relied upon has no jurisdiction responsible for maintenance or upgrade. Much of the infrastructure built in past flooding emergencies has no "owner" and is still critical to providing flood protection on the Fraser River (and tributaries). Any effective provincial diking program must address the challenge of orphaned infrastructure.

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<sup>12</sup> <https://globalnews.ca/news/8441820/abbotsford-bc-flood-update-dec-10/>

<sup>13</sup> Flood protection structures in BC <https://www2.gov.bc.ca/gov/content/environment/air-land-water/water/drought-flooding-dikes-dams/integrated-flood-hazard-management/governance/dike-management/flood-protection-structures>

<sup>14</sup> <https://vancouversun.com/news/province-was-studying-dike-integrity-but-data-not-to-be-available-until-next-month>

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Natural disasters such as floods pose a huge economic risk when key supply chain and transportation routes are impacted. It is of paramount importance to protect our trade-enabling infrastructure as well as the connectivity of people and goods in BC and Canada. The impact of the flooding in Abbotsford, the epicentre of the recent flood disaster in BC, is a critical example of how, as a result, BC and regions within the province were disconnected from each other to agri-foods and the rest of the lower mainland due to the floods. This impacted food security, trade and connectivity among people. With the Lower Mainland being the Asia Pacific Gateway, the consequences of poor infrastructure and emergency preparedness come at a high economic and human cost. The Port of Vancouver trades approximately \$200 billion in goods with more than 170 trading economies.<sup>15</sup> The Port of Metro Vancouver is the #1 in Canada and #2 in terms of total foreign exports.<sup>16</sup>

The BC Government is not adequately managing the current and future risks posed by climate change to invest in necessary infrastructure and sustainability. Key climate-driven risk areas, like flooding and wildfires, require additional attention. Adaptation is not just a provincial government issue. Local governments are on the front lines, but we heard that they are challenged to effectively take action. This includes a lack of financial support, reliable data and knowledge, and policies at the provincial level. Furthermore, the provincial government has not yet significantly involved First Nations in provincial action.

### The 2021 Context

BC experienced severe weather patterns in 2021 that resulted in devastating flooding across the province. Vital road, rail, and port links were severed for weeks, and farms, homes and businesses were destroyed. It is estimated that 15,000 people were forced to evacuate their homes, countless crops were lost, and over 600,000 farm animals perished. In addition, the Trans Mountain Pipeline was shut down, resulting in a fuel shortage in the Lower Mainland. Sections of Highway 1 and other areas across the province were closed to traffic, supplies and people. Ken Peacock, former Senior Vice-President and Chief Economist at the Business Council of BC, estimated that the weather disaster resulted in lost economic output for the province ranging from \$250 million to \$400 million.

In the BC flood disaster of November 2021 that impacted communities across the province, the City of Abbotsford's Sumas Prairie was hardest hit with the impact of a record-breaking atmospheric river that fell on Southern BC and caused Washington State's Nooksack River to overflow across the border into the Sumas Prairie. The economic toll of the major flooding events is still not fully quantified. However, data collected from the Abbotsford flooding disaster from impacted farmers and businesses revealed millions of dollars in damages and long-term damage, particularly in the organics and berry sectors.

There was little in the way of a coordinated approach to minimize the damage from the floods. The weaknesses of the flood mitigation strategies have been exposed, and it is evident that when a disaster occurs, a federal-provincial-municipal response is needed.

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<sup>15</sup> Reporting, statistics and resources (Port of Vancouver) <https://www.portvancouver.com/about/reports-and-resources>

<sup>16</sup> <https://www.portvancouver.com/sites/default/files/2024-08/2021-Port-of-Vancouver-Economic-Impact-Study-EXEC-SUMMARY-25Jun2024.pdf>

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### **THE CHAMBER RECOMMENDS**

That the Provincial Government:

1. Increase the priority to establish provincial funding contribution and work with the federal government and BC municipalities to review municipal feedback to determine the amount of provincial funding that should be committed through a strategic plan over 5 years to ensure upgrades to flood mitigation infrastructure and related transportation investments.
2. Partner with the Federal Government to develop a modernized emergency flood mitigation program in consultation with local governments and the business community.
3. Participate as a leader with the Federal government in international discussions with the United States on cross-border flood risk mitigation.
4. Engage in direct flood mitigation discussions and planning with Washington and the mutual interest regarding flooding risks and responsibilities.
5. Work with the federal government to establish private insurance options and the Canadian banking sectors to plan for future natural disaster emergencies for better access to emergency coverage and mechanisms during crisis situations.