

City of Maple Ridge

**COUNCIL WORKSHOP AGENDA**

**March 30, 2021**

**11:00 a.m.**

**Virtual Online Meeting including Council Chambers**

*The purpose of the Council Workshop is to review and discuss policies and other items of interest to Council. Although resolutions may be passed at this meeting, the intent is to make a consensus decision to send an item to Council for debate and vote or refer the item back to staff for more information or clarification. The meeting is live streamed and recorded by the City of Maple Ridge.*

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**REMINDER: Council Meeting – March 30, 2021 at 7:00 p.m.**

**1. APPROVAL OF THE AGENDA**

**2. ADOPTION OF MINUTES**

**2.1 Minutes of the March 9, 2021 Council Workshop Meeting**

**3. PRESENTATIONS AT THE REQUEST OF COUNCIL**

**4. UNFINISHED AND NEW BUSINESS**

**4.1 Online Permit Application Guide**

Staff presentation of the new Online Permit Application Guide that provides residents with an outline of documents and forms required to submit a building permit application.

**4.2 Thornhill Background Report**

Staff report dated March 30, 2021 recommending that staff prepare a Thornhill Employment Lands Scoping Report, which outlines the necessary background studies, estimated costs, and a timeline that indicates when an Area Plan process may commence.

**4.3 Fraser Basin Council – Invitation to Comment on Draft 1 of the Lower Mainland Flood Management Strategy**

Staff report dated March 30, 2021 recommending that the comments provided in the staff report pertaining to Draft 1 of the Lower Mainland Flood Management Strategy be supported and forwarded to the Fraser Basin Council.

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**30 MINUTE RECESS**

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**4.4 Proposed Policy 3-17 Change – Town Centre Area Plan**

Staff report dated March 30, 2021 recommending that an Official Community Plan Amending Bylaw be brought forward with rezoning application 2020-256-RZ to amend Policy 3-17 of the Town Centre Area Plan.

**4.5 Provincial Legislation Enhancements to Reduce Community GHG Emissions**

Staff report dated March 30, 2021 recommending that resolutions pertaining to Property Assessed Clean Energy (PACE) financing and the Help Cities Lead (HCL) campaign be supported.

**5. CORRESPONDENCE**

**5.1 Canadian Union of Postal Workers - Request for Support for Delivering Community Power**

Correspondence dated March 2021 from the Canadian Union of Postal Workers requesting Council support for the Delivering Community Power initiative.

**5.2 Township of Spallumcheen – Support for 988 Crisis Line**

Correspondence dated March 5, 2021 from the Township of Spallumcheen requesting Council support for 988, a national suicide and crisis hotline.

**6. BRIEFING ON OTHER ITEMS OF INTEREST / QUESTIONS FROM COUNCIL**

**7. MATTERS DEEMED EXPEDIENT**

**8. NOTICE OF CLOSED COUNCIL MEETING**

The meeting will be closed to the public pursuant to Sections 90 (1) and 90 (2) of the *Community Charter* as the subject matter being considered relates to the following:

Section 90(1)(e) the acquisition, disposition or expropriation of land or improvements, if the council considers that disclosure might reasonably be expected to harm the interests of the municipality; and

Section 90(2)(b) the consideration of information received and held in confidence relating to negotiations between the municipality and a provincial government, or between a provincial government and a third party.

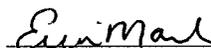
Any other matter that may be brought before the Council that meets the requirements for a meeting closed to the public pursuant to Sections 90 (1) and 90 (2) of the *Community Charter* or *Freedom of Information and Protection of Privacy Act*.

**9. ADJOURNMENT**

APPROVED BY:

  
DATE: March 25/21

PREPARED BY:

  
DATE: March 25/21

CHECKED BY:

DATE:

  
March 25, 2021

City of Maple Ridge

**COUNCIL WORKSHOP MINUTES**

March 9, 2021

The Minutes of the City Council Meeting held on March 9, 2021 at 11:00 a.m. held virtually and hosted in the Council Chambers of the City Hall, 11995 Haney Place, Maple Ridge, British Columbia for the purpose of transacting regular City business.

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**PRESENT**

*Elected Officials*

Mayor M. Morden  
Councillor J. Dueck  
Councillor K. Duncan  
Councillor C. Meadus  
Councillor G. Robson  
Councillor R. Svendsen  
Councillor A. Yousef

*Appointed Staff*

A. Horsman, Chief Administrative Officer  
D. Boag, General Manager Parks, Recreation & Culture  
C. Carter, General Manager Planning & Development Services  
C. Crabtree, General Manager Corporate Services  
S. Nichols, Corporate Officer  
D. Pollock, General Manager Engineering Services  
T. Thompson, Chief Financial Officer

*Other Staff as Required*

C. Goddard, Director of Planning  
C. Nolan, Corporate Controller  
D. Olivieri, Research Technician  
D. Pope, Director of Recreation & Community Engagement  
V. Richmond, Director of Parks & Facilities  
M. Orsetti, Director of Bylaw and Licensing Services

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These Minutes are posted on the City's website at [www.mapleridge.ca/agendacenter](http://www.mapleridge.ca/agendacenter)

Note: Due to the COVID pandemic Councillor Meadus, Councillor Robson, Councillor Yousef, participated virtually.

Note: Councillor Duncan was absent at the start of the meeting.

1. **APPROVAL OF THE AGENDA**

R/2021-WS-020

It was moved and seconded

**That the agenda of the March 9, 2021 Council Workshop Meeting be approved as circulated.**

CARRIED

2. **ADOPTION OF MINUTES**

2.1 **Minutes of the February 23, 2021 Council Workshop Meeting**

R/2021-WS-021

It was moved and seconded

**That the minutes of the Council Workshop Meeting of February 23, 2021 be adopted as circulated.**

CARRIED

3. **PRESENTATIONS AT THE REQUEST OF COUNCIL - Nil**

4. **UNFINISHED AND NEW BUSINESS**

4.1 **Maple Ridge Council Procedure Bylaw No. 7700-2021**

Presentation and staff report dated March 9, 2021 recommending that the attachment to the staff report titled "Maple Ridge Council Procedure Bylaw No. 7700-2021" be forwarded to the Committee of the Whole Meeting of March 23, 2021.

The Corporate Officer provided a presentation on the revisions to the draft Council Procedure Bylaw based on Council feedback on January 26, 2021 and the solicitor's review.

Staff and Kathryn Stuart, Partner with Stewart McDannold Stuart Barristers & Solicitors, responded to questions from Council.

R/2021-WS-022

Moved and seconded

**That the attachment to the March 9, 2021 Council Workshop report titled "Maple Ridge Council Procedure Bylaw No. 7700-2021" be forwarded to the Committee of the Whole Meeting of March 23, 2021.**

CARRIED

4.2 **Quarter 4, 2020 Preliminary Financial Update**

Presentation and staff report dated March 9, 2021 providing a preliminary financial update on operating results to the end of 2020.

The Corporate Controller reported out on the preliminary Q4 Financial Update noting revenue shortfalls, changes to government transfers and use of deferred revenue. She advised that it is unknown how COVID-19 will affect future years and that the estimated surplus is expected to be closer to \$33 million once the financial report is finalized.

Note: Councillor Duncan entered the meeting at 12:15 p.m. and participated virtually.

#### 4.3 **Quarterly Corporate Update – Q4 2020**

Presentation and staff report dated March 9, 2021 providing a corporate update on the advancements to Council's strategic priorities during the fourth quarter of 2020.

The Director of Recreation and Community Engagement, presented on the Corporate / Internal Services and the Community Pride and Spirit pillar of the Council Strategic Plan. The Director of Bylaw and Licensing Services presented on the Community Safety pillar. The Director of Parks and Facilities presented the Natural Environment pillar. The Director of Planning presented on the Growth pillar.

Note: Councillor Robson left the meeting at 12:44 p.m. and returned at 12:47 p.m. during the staff presentation.

#### 4.4 **Council Workplan Matrix – March 9, 2021**

Staff report dated March 9, 2021 recommending that the updated Council Workplan Matrix dated March 9, 2021 be endorsed.

D. Olivieri, Research Technician, spoke to the new format presented and advised of the addition of three additional items – the Thornhill Background Report, Introductory Report on the BC Energy Step Code and Introduction to the Town Centre Parking Strategy.

Note: Councillor Yousef left the meeting at 1:29 p.m. and returned at 1:35 p.m.

R/2021-WS-023

It was moved and seconded

**That the Council Workplan Matrix – March 9, 2021 be endorsed.**

CARRIED

#### 4.5 **2021 Lower Mainland LGA Resolutions for UBCM**

Staff report dated March 9, 2021 recommending that a resolution to ban the use of shock collars on pets be submitted to the 2021 Lower Mainland LGA Annual General Meeting & Conference for consideration.

No further action will be taken on this item.

#### 5. **CORRESPONDENCE – Nil**

6. **BRIEFING ON OTHER ITEMS OF INTEREST/QUESTIONS FROM COUNCIL** – Nil
7. **MATTERS DEEMED EXPEDIENT** – Nil
8. **NOTICE OF CLOSED COUNCIL MEETING**

R/2021-WS-024

Moved and seconded

The meeting will be closed to the public pursuant to Sections 90 (1) and 90 (2) of the *Community Charter* as the subject matter being considered relates to the following:

Section 90(1)(d) the security of property of the municipality;

Section 90(1)(f) law enforcement, if the council considers that disclosure might reasonably be expected to harm the conduct of an investigation under or enforcement of an enactment;

Section 90(1)(m)a matter, that under another enactment, is such that the public may be excluded from the meeting; and under the enactment of the Freedom of Information and Protection of Privacy Act:

Section 15(1)(a) the head of a public body may refuse to disclose information to an applicant if the disclosure could reasonably be expected to harm a law enforcement matter; and

Section 22(1) the head of a public body must refuse to disclose personal information to an applicant if the disclosure would be an unreasonable invasion of a third party's personal privacy.

Any other matter that may be brought before the Council that meets the requirements for a meeting closed to the public pursuant to Sections 90 (1) and 90 (2) of the *Community Charter* or *Freedom of Information and Protection of Privacy Act*.

CARRIED

9. **ADJOURNMENT** – 2:14 p.m.

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M. Morden, Mayor

Certified Correct

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S. Nichols, Corporate Officer



**mapleridge.ca**

**City of Maple Ridge**

**TO:** His Worship Mayor Michael Morden  
and Members of Council  
**FROM:** Chief Administrative Officer  
**SUBJECT:** Thornhill Background Report

**MEETING DATE:** March 30, 2021  
**FILE NO:**  
**ATTN:** Workshop

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#### **EXECUTIVE SUMMARY:**

The Thornhill community encompasses an area of 640 hectares and is characterized by large lot rural residential uses, including some farm activity, and properties are serviced through on-site septic systems and individual wells. While the landscape is pastoral in character, it contains some steep slopes and watercourses and the entire land mass is located over the Grant Hill Aquifer.

Most of the Thornhill area is designated as Urban Reserve (approximately 548 hectares) in the Official Community Plan (OCP) and the northern portion is an 80 hectare forested area designated as Park (Appendix A).

All of Thornhill is located within the Urban Area Boundary and specific policies for this future growth area are provided in Section 3.1.5 of the OCP. Metro Vancouver has indicated a General Urban future for most of these lands within the Regional Growth Strategy (RGS) and the northern portion is designated for Conservation and Recreation (the same area as shown in the OCP). The entire area is also within the region's Urban Containment Boundary.

The OCP contains five policies with regard to future development within the Thornhill Urban Reserve. Urban Reserve policy 3-24 defines two thresholds to be met before allowing residential growth into the area, being when:

- The population exceeds 100,000 residents; and
- Residential capacity is approaching buildout in urban areas.

Additionally, Urban Reserve policy 3-23 states that urban level densities will not be supported in Thornhill until an Area Plan is completed.

This report provides background information on the current context in relation to the criteria set out in the OCP Urban Reserve policies and provides an update on current growth projections. Additionally, this report introduces the potential for allowing an employment use in Thornhill in the near to medium term. Allowing an employment use in Thornhill would be supportable through the current OCP policies for employment and also through the outcomes of the Commercial & Industrial Strategy.

#### **RECOMMENDATION:**

**That staff prepare a Thornhill Employment Lands Scoping Report, which outlines the necessary background studies, estimated costs, and a timeline that indicates when an Area Plan process may commence.**

**4.2**

## 1.0 BACKGROUND:

Background work for preparing the 2006 OCP was underway in 2004, wherein three technical housing and residential studies were completed. From these studies, the following conclusions were made:

- Annual growth estimated to average 1.67% over the next 30 year period;
- Population projection of 108,900 people by 2031;
- Land use designations from the 1996 OCP are insufficient to meet projected population growth;
- An additional 6,250 to 7,500 residential units are needed in Maple Ridge.

In December 2004, Council chose to:

- Continue to identify Thornhill as an area for future residential growth;
- Focus most of the residential growth into the Town Centre and urban areas; and
- Encourage a moderate level of infill development within the existing urban areas.

The approach taken through the 2006 OCP policies has successfully created sufficient capacity within existing urban residential lands for long-term growth. As such, the Thornhill lands are not needed for future residential use over the long-term and this is discussed further in this report.

## 2.0 OCP POLICIES

The Urban Reserve Section 3.1.5 of the OCP, Neighbourhoods & Housing, set various criteria for when Thornhill development may occur, through five policies presented below. Two key policies to point out are: 1) Policy 3-24, which identifies two thresholds (population and residential capacity) that must be met prior to allowing development at urban level residential densities within Thornhill; and 2) Policy 3-23, which states that before any development occurs in Thornhill, an Area Plan must be adopted.

### 3.1.5 OCP Urban Reserve Policies

3-22 *Maple Ridge will avoid non-contiguous expansion of the Urban Area Boundary.*

3-23 *Maple Ridge will not support urban level densities in the Urban Reserve until and Area Plan is adopted pursuant to policy 3-25.*

3-24 *Maple Ridge will retain the Thornhill area as a long term Urban Reserve area. Urban development will not be supported in the Thornhill Urban Reserve Area until the population threshold exceeds 100,000 people for the District and the residential capacity within the existing urban area is approaching build-out.*

3-25 *Prior to urban development occurring in the Thornhill Urban Reserve, the following must have been achieved:*

- a) *Approval of an amended Regional Context Statement by the Metro Vancouver Board;*
- b) *Approval of an extension to the Fraser Sewer Area by the Greater Vancouver Sewerage and Drainage District (GVS&DD) Board;*
- c) *An Area Plan adopted by Council which includes, but is not limited to:*
  - i. *Policies regarding the types of residential development, land use patterns, minimum density requirements, and appropriate phasing for the area;*

- ii. A fiscal impact assessment study;
- iii. Identification of environmentally sensitive areas, ecosystems and the impact of development;
- iv. Agricultural impact assessment to minimize the impact of development on adjacent farm lands;
- v. An aquifer groundwater management study; and
- vi. A transportation plan that includes an integrated system which balances all modes of transportation, including transit.

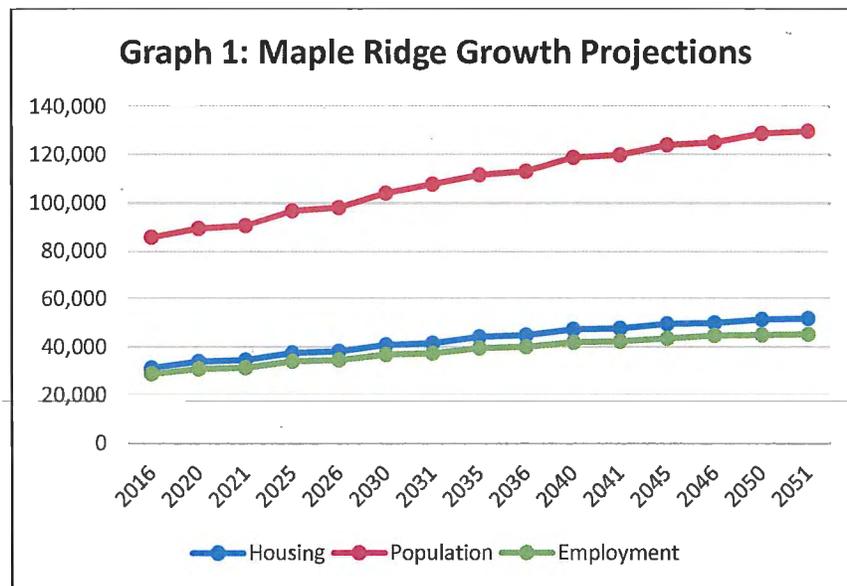
3-26 Until policies 3-24 and 3-25 are satisfied, the minimum parcel size for subdivision of land designated Urban Reserve is 2.0 hectares.

Through the 2006 OCP policies, the City has committed to meeting the above requirements. It should be noted that through the 2006 OCP public consultation process Thornhill was a divisive issue within the community and it is possible that a similar response may occur during discussions to consider urban level development within the area, including new employment uses.

### 3.0 MAPLE RIDGE GROWTH PROJECTIONS – 2004 TO PRESENT

Over the past several years growth projections for population, housing, and employment have fluctuated somewhat, with the ebb and flow of changes in actual growth rates and patterns. Population projections provided for the 2006 OCP estimated that Maple Ridge would grow to 108,900 residents by 2031, with a compound annual growth rate of 1.67%. However, a more modest rate of growth in Maple Ridge (and in the region) has been occurring since that time. In 2013 Metro Vancouver adjusted the Regional Growth Strategy projections (through MV2040) for the region and estimated that Maple Ridge would reach a population of 118,000 by 2041, which reduced the anticipated rate of growth (over a 30 year period) to 1.4%.

Metro Vancouver is currently working on an update to the Regional Growth Strategy with MV2050 and recently completed the region’s growth projections to 2051 for population, housing and employment, as shown in the Growth Projections graph below.



The Metro Vancouver population projection to 2051 is for 130,000 residents, which has further reduced the estimated compound annual growth rate to 1.18%. It should be noted, however, that while growth estimates are slowing somewhat over time, Maple Ridge is still estimated to reach a population of 100,000 residents within this decade, between 2026 and 2030.

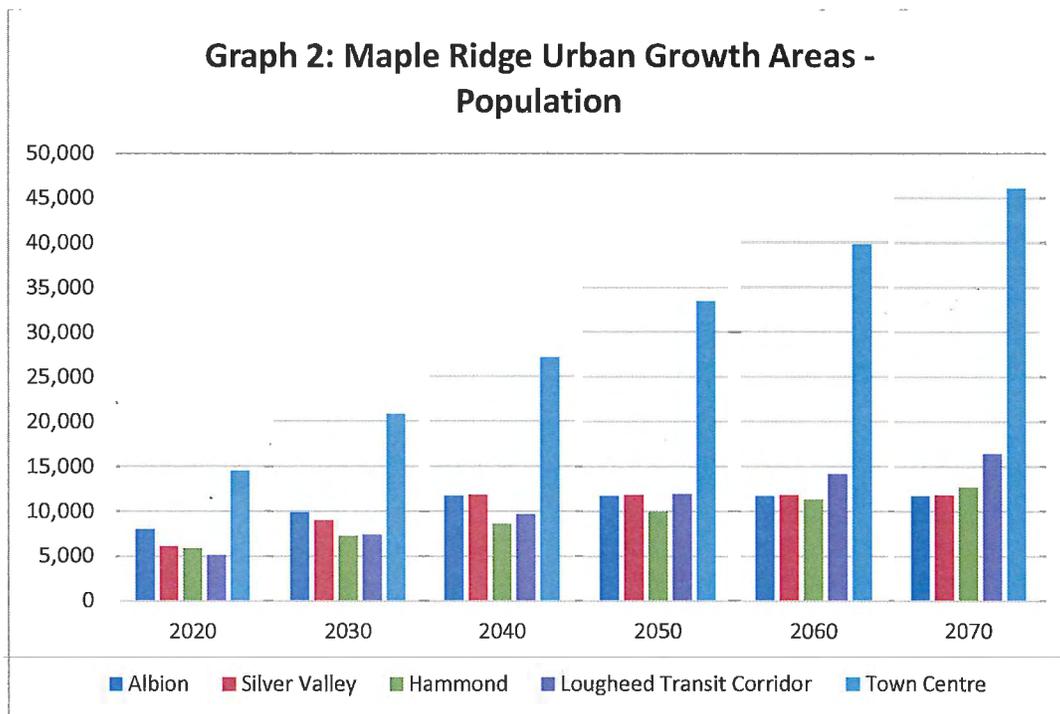
In addition to population trends, Graph 1 also shows housing and job estimates to 2051 with 51,000 housing units (estimated growth rate of 1.21%) and over 45,000 jobs (estimated growth rate of 1.3%). Unsurprisingly, with reductions in population projections, the predicted compound annual growth rates for housing and employment are also declining over time, as rates were higher from 2001 to 2020, being 1.91% and 2.92% respectively.

### 3.1 Anticipated Buildout in Urban Areas

Buildout population numbers for the urban growth areas of Albion, Silver Valley, Hammond, Lougheed Transit Corridor, and the Town Centre is estimated as follows:

- Close to 12,000 residents in Albion and in Silver Valley;
- Under 15,000 residents in Hammond;
- Over 15,000 residents in the Lougheed Transit Corridor; and
- Over 45,000 residents in the Town Centre.

The Urban Growth Areas Graph 2 below shows the estimated timing of build-out for each urban area above.



Graph 2 shows varying rates of growth for each area, with land use in the Town Centre providing the greatest capacity for residential units that will take a significant amount of time to achieve buildout (note current Town Centre population of approximately 15,000 residents). Ultimately, none of the urban areas above are anticipated to reach buildout in the near future, with the nearest estimate being

2040 for Silver Valley and Albion and approximately 50 years (2070) for the Town Centre, Lougheed Transit Corridor, and Hammond.

The data in Graph 2 above shows that there remains significant capacity within existing urban areas to accommodate residential growth for the next 50+ years. Further, the data doesn't include any estimates for residential infill development capacity within urban areas that are designated for Urban Residential use (which are outside of the above Area Plan areas). Infill development housing forms include apartment, townhouse, ground-oriented residential infill (triplex, fourplex, etc.), small lot single-family, DGS, and secondary suites.

#### 4.0 EXPLORING AN EMPLOYMENT FUTURE

An alternative to urban residential development within Thornhill is to explore and consider an employment use (in light industrial/business park type of uses and form), as this is supportable through current OCP policies and recommendations from the Commercial & Industrial Strategy.

##### 4.1 OCP Employment Policies

Section 6.1 of the OCP contains several policies that support the identification and designation of new employment lands within Maple Ridge. Three specific policies relating to both light industrial/business park and industrial uses speak to the creation of new employment lands being a priority for Maple Ridge.

- 6 – 45 *The identification of additional employment generating lands is a priority for the District. Maple Ridge will evaluate alternate locations for a large block or blocks of additional employment generating land to support the growth of the employment sector in the future. Location parameters for suitable industrial land may include, but is not limited to:*
  - a) *land that is relatively flat;*
  - b) *land that is conducive to industrial development;*
  - c) *land that is contiguous to a full range of municipal services;*
  - d) *land that is strategically located near the Regional transportation network.*
  
- 6 – 46 *Maple Ridge will consider industrial development within the Urban Area Boundary providing that the following compatibility criteria can be satisfied:*
  - i) *land is contiguous to a full range of municipal services;*
  - ii) *and is strategically located on, or near a Major Road Corridor and the transportation network can support the development;*
  - iii) *the proposed development is compatible with the surrounding area;*  
*and*
  - iv) *the use is consistent with the Economic Development Strategy.*
  
- 6 – 57 *Maple Ridge will consider additional opportunities for Business Park development within the Urban Area Boundary providing that the following compatibility criteria can be satisfied:*
  - i) *land is contiguous to a full range of municipal services;*
  - ii) *land is strategically located on, or near a Major Road Corridor and the transportation network can support the development;*

- iii) the proposed development is compatible with surrounding development; and
- iv) the development is consistent with the Economic Development Strategy.

Thornhill is an opportunity for exploring future employment use, as it is located adjacent to urban residential, close to major transportation routes, and within Metro Vancouver's Urban Containment Boundary, which means it has the potential for water and sewer service to be extended to the area.

#### 4.2 Commercial & Industrial Strategy

The Commercial & Industrial Strategy was endorsed by Council in 2014. This study looked at the current inventory of commercial and industrial lands and what steps need to be taken to ensure a sufficient amount and location of lands be allocated for these two essential economic drivers into the long-term. While it was determined through the Strategy work that Maple Ridge is doing well in terms of policies and land provision for commercial use, it was concluded that additional lands were needed for industrial use. Key findings for industrial land use are as follows:

- The City needs more employment lands (170 to 230 acres) by 2042;
- Maple Ridge is well positioned in the region for employment opportunities;
- Growth employment sectors include business services, manufacturing, information and culture tourism and education facilities.

Since 2014, the Planning Department has undertaken a significant amount of work to identify potential new industrial lands. A recent Council update on industrial lands, at the September 8, 2020 Workshop, broke down the numbers for the current context within Maple Ridge by comparing zoned and designated industrial lands in 2014 with 2020 numbers. With the planning work completed to date on industrial lands, the City currently has 1,641 acres of land designated for an industrial use, which is up from 1,438 in 2014 (an increase of 203 acres). However, only 666 acres of the designated industrial land is within the Fraser Sewer Area and some industrial lands have steep slopes, making it difficult to develop for any form of industrial use. For an update on the most recent policy and development work on expanding employment use within Maple Ridge, see Appendix B.

Strategy #7 (page 85) of the Strategy states that if work has been ongoing in identifying and providing suitable employment lands and demand for industrial land still exists, then consider that:

*Maple Ridge has significant lands designated for future residential supply, which should be considered for industrial usage if warranted by demand for employment lands. Maple Ridge needs to maintain a balance between the amount of industrial and residential lands, and over the long-term bringing new residential lands to market should be balanced with new industrial lands.*

The recommended action in Strategy #7 above has been captured in the Commercial & Industrial Strategy implementation matrix for the medium term (2018-2028).

If work were to begin on exploring Thornhill for light industrial/business park use, a development phasing plan would be recommended as an early first step to determine how much land would be needed over time and where each phase should be located.

## 5.0 REGIONAL EMPLOYMENT NEEDS and CHALLENGES

At the December 8, 2020 Council workshop, Council endorsed the Regional Industrial Lands Strategy, which outlined 34 recommended action items in response to a critical shortage of industrial lands within the region. The Metro Vancouver board had endorsed the Regional Strategy in July 2020 and are seeking municipal member endorsement as well. The following is the vision statement for the Regional Strategy:

*Ensure there is sufficient industrial lands within the region to meet the needs of a growing and evolving regional economy to the year 2050.*

The Strategy identifies some challenges that are impacting the regional industrial lands shortage:

- Constrained land supply due to the region's physical barriers (e.g. mountains, US Border, ocean);
- Development pressure for other uses on industrial lands;
- Site and adjacency issues, in that some industrial lands are not situated close to transportation routes or flat;
- Complex jurisdictional environment, wherein various levels of government are involved and multiple stakeholders must collaborate and coordinate;
- Impacts of climate change – most of the existing industrial areas are located within floodplains.

Some regional trends include small scale business, such as artisanal products, custom manufacturing, small batch production and food processing. The Strategy also noted that technical firms are growing in light industrial areas.

City staff have discussed the potential of an employment use in the Thornhill area with staff from Metro Vancouver and their response has been very positive and encouraging. Comments from regional staff on Thornhill employment potential is that it may present Maple Ridge with an opportunity to create a large industrial area of regional significance.

## 6.0 THORNHILL SERVICING COSTS

One of the three technical reports that was prepared in 2004 to inform preparation of the 2006 OCP provided cost estimates for the necessary infrastructure for urban level residential development in Thornhill. The 2004 technical report looked at three main areas of cost for expanding into the Thornhill area:

- Cost of administration;
- Cost of hard infrastructure; and
- Cost of community services.

The study included the capital and replacement costs for each area above, as well as annual operating and maintenance expenses, calculated over a 20 year time horizon. The cost estimates include a comprehensive range of components for each option, including but not limited to fire protection and equipment, police protection, roads, streetlights and sidewalks, and infrastructure for water, sanitary and storm sewers. The report identified that out of the three urban area expansion options the eastward expansion (into the current Urban Reserve area) was the most expensive and would require the following infrastructure:

- Sanitary sewer and water distribution systems;
- Fire Hall;
- 5 new neighbourhood-level parks; and
- Schools.

Through the study, it was estimated that the above infrastructure for Thornhill would cost \$362,988,000. Note that these costs were calculated for an urban residential future. Engineering has translated the above cost into 2021 dollars, which amounts to a 35% increase for a total of approximately \$490,000,000. This cost is substantial and underscores the importance of carefully considering development in the Thornhill area. However, there is a benefit to consider an employment use for these lands in that industrial lands contribute much more to the property tax base than residential development. Additionally, an employment use would require fewer parks and schools. As such, an employment use in Thornhill would help achieve the City's goal of providing sufficient employment lands to meet demand, while also enabling a strong injection into the City's tax base with a lower overall cost than residential development.

## **7.0 PREPARING FOR AN AREA PLAN PROCESS**

It is anticipated that there may be some community opposition to any future development occurring in Thornhill. While proceeding with urban residential development in the near future is not in alignment with OCP Urban Reserve policies, an employment use is supportable under OCP Employment policies and the Commercial & Industrial Strategy. Should Council choose to explore Thornhill as a potential opportunity for employment use, it is supportable through current OCP policies and Commercial & Industrial Strategy recommendations, as the area:

- Has servicing potential (water, storm, and sewer) within the GVS & DD;
- Is located close to Lougheed Highway, which is part of the Major Road Network system;
- Is within the existing urban area boundary; and
- Does have some steep slopes areas, but also areas of fairly flat and moderately sloped lands which may be suitable for light industrial development.

The first step in preparing for an Area Plan process is to complete several background studies that will include:

- Fiscal impact assessment study for an assessment of:
  - How much employment lands are needed over the long-term;
  - Confirm future land use and infrastructure costs to the City;
- Transportation Plan: To determine options for major road access and consider various modes of travel, including public transit;
- Identification of ESA areas: For a high level study to identify steep slopes, creeks/wetlands, mitigation/compensation, and stormwater management;

- Agricultural Impact Assessment: Determine potential impacts and identify mitigation for ALR lands along the south edge of the area boundary;
- Aquifer Groundwater Study: Assess potential development impacts on aquifer health and well water for rural residents, determine mitigation opportunities.

It should be noted that undertaking the background studies for future Thornhill development will be a large body of work, involving various departments, regional and provincial agencies, and engaging with the Kwantlen First Nation, whose lands are located directly south of Thornhill, wherein synergies may be identified for mutual benefit early in the process. The background study work may take several months to complete. Planning has allocated \$100,000 in the 2021 Business Plan to undertake background studies, but it is likely additional funds will be needed to complete the studies. It is anticipated a consultant will be contracted to lead a public consultation process for the development of a Thornhill Employment Lands Area Plan.

## 8.0 PROPOSED NEXT STEPS

There are four stages that the City will need to work through to get to the point where an Area Plan is drafted, as shown in the image below.



### Stage 1: Prepare Thornhill Employment Lands Scoping Report

In preparing this report, planning staff will work with various departments to outline the content for background studies, identify any additional funds needed to complete the work, estimate a feasible timeline for completion of the studies phase and determine an approximate timeframe for when an Area Plan process may commence. It is anticipated this report could be back before Council in the third quarter of 2021.

Note that an outline detailing the steps proposed for an Area Plan public consultation process will not be included in the Fall 2021 report and will be brought to Council in a future report that includes the outcomes of the Thornhill background studies.

Determining how to engage with the public through the consultation process closer to the start of the process will enable staff awareness of public health regulations at that time and whether some engagement events might occur during warmer months, which could then potentially involve outdoor events.

### **Stage 2: Commence Thornhill Background Studies**

Upon receiving Council direction to begin working on the background studies, it is anticipated this would commence in the fourth quarter of 2021. Once the background studies are complete (which will likely take several months), the outcomes will be presented to Council.

An outline with the proposed steps for the public consultation process will be included in this report for Council endorsement. It is anticipated a consultant will be retained to assist with the public consultation process that will likely involve a design charrette with key stakeholders, along with various engagement opportunities for the general public.

### **Stage 3: Commence Thornhill Employment Lands Area Plan Public Consultation Process**

Preparing a draft Concept Plan, from the public input received through the consultation process, will occur during Stage 3 and be presented to Council for endorsement.

### **Stage 4: Prepare Thornhill Employment Lands Area Plan**

Once a Thornhill Lands Concept Plan has received Council endorsement, work will begin on preparing draft Area Plan policies and Development Permit Guidelines for Council input, prior to Area Plan bylaw preparation.

## **9.0 STRATEGIC ALIGNMENT**

Implementing strategic plans related to local infrastructure and the economy, including the City's commercial and industrial land base, is a Council priority as established under its Growth pillar of the 2019-2022 City of Maple Ridge Strategic Plan.

## **10.0 FINANCIAL IMPLICATIONS**

Funds totaling \$100,000 have been allocated to the Planning Department, through the 2021 Business Plan, for commencing work on Thornhill background studies. It is likely that additional funds will be needed to complete the background studies and once this has been confirmed, a request will be brought to Council in the Thornhill Employment Lands Scoping Report anticipated for the third quarter of 2021.

## **11.0 INTERDEPARTMENTAL IMPLICATIONS**

Planning for future development in the Thornhill area will involve staff from several departments including Engineering, Parks, Fire, and Finance.

**CONCLUSION:**

Meeting the Urban Reserve OCP policy thresholds for an urban residential future in Thornhill will not occur for the next 50+ years. Further, current data presented in this report confirms that Maple Ridge has sufficient capacity within existing urban areas to accommodate urban residential housing needs over the long-term.

An alternative option for consideration is to explore the potential for employment use in the Thornhill area. Introducing an employment future in Thornhill is supportable through existing OCP Employment policies and implementation of the Commercial & Industrial Strategy. With Metro Vancouver recently reporting on the critical shortage of industrial lands within the region, Thornhill may present Maple Ridge with an opportunity to create a substantial industrial area of regional significance.

“Original signed by Lisa Zosiak”

---

*Prepared by:* **Lisa Zosiak, MRM, MCIP, RPP**  
**Manager of Community Planning**

“Original signed by Chuck Goddard”

---

*Reviewed by:* **Charles R. Goddard, BA, MA**  
**Director of Planning**

“Original signed by Christine Carter”

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*Approved by:* **Christine Carter, M.PL, MCIP, RPP**  
**GM: Public Works & Development Services**

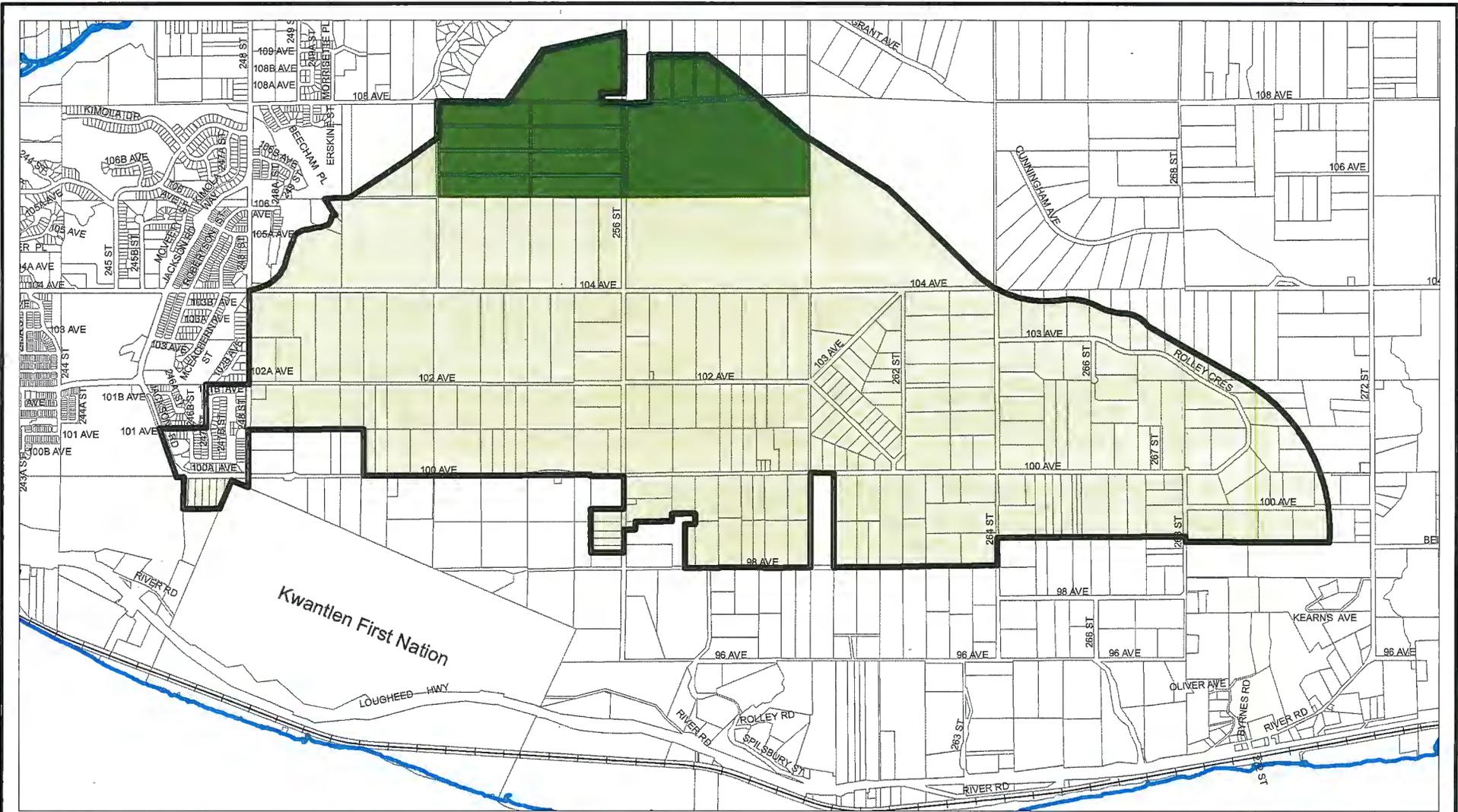
“Original signed by Al Horsman”

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*Concurrence:* **Al Horsman**  
**Chief Administrative Officer**

The following appendices are attached hereto:

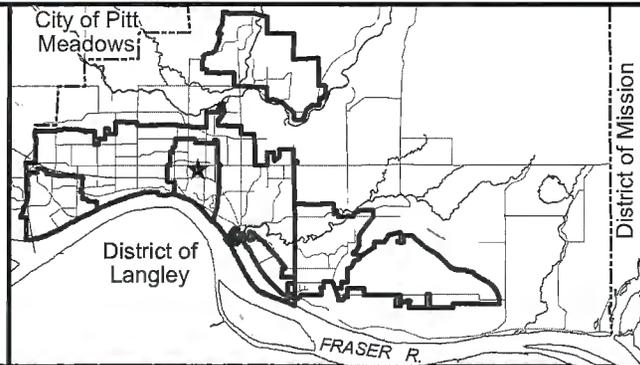
- Appendix A: Thornhill Land Use Map
- Appendix B: Planning Work Underway on Employment use



Scale: 1:23,500

**Legend**

-  Thornhill Area Boundary
-  Urban Reserve
-  Park



**Thornhill Area Boundary and Land Use**

PLANNING DEPARTMENT



**mapleridge.ca**

FILE: ThornhillAreaBoundary.mxd  
 DATE: Mar 2, 2021  
 BY: DT

## APPENDIX B

### PLANNING WORK UNDERWAY ON EMPLOYMENT USE IN MAPLE RIDGE

#### 4.2.1 Implementation of the Commercial & Industrial Strategy

Work has been continuing on the implementation of the Commercial & Industrial Strategy that includes employment area planning and processing of development applications for employment use.

##### Recent and Ongoing Policy Work:

Planning work is in process for three areas in Maple Ridge that have potential for light industrial/business park type of uses and formats within the near to medium term:

- **Yennadon Lands:** Council endorsed Concept #2 in December 2020 and bylaws for the Area Plan policies and Development Permit Guidelines will be brought to Council this Spring;
- **Albion Flats Area Planning Process:** Council has endorsed a Concept Plan for light industrial and commercial uses within this area and staff are currently working on resolving the conditions set by the Agricultural Land Commission. The conditions are proving to be complex and it is not expected they will be resolved in the short-term.
- **Lougheed Transit Corridor:** Council endorsed the Concept Plan in November 2020, which includes 53 acres of 'Flexible Employment' that would permit business park use and form, along with some highway commercial uses. The Area Plan policies and DP Guidelines are being prepared and will be back before Council later this year.

##### Proposed Employment Development:

There are two development proposals for employment use that staff are currently working on with the property owners and work to date is as follows:

- **11310 Kingston Street (2018-458-RZ/SD):** This development application involves a proposal to rezone 41 acres from RS-3 (One Family Rural Residential) to M-3 (Business Park). The applicant is planning a phased development and currently preparing plans for second reading.
- **Hammond Cedar Mill Site:** This site was recently purchased by Conwest and is zoned M-2, General Industrial, which permits a range of industrial uses. It is anticipated that a development permit application will be received within the coming months.



## City of Maple Ridge

**TO:** His Worship Mayor Michael Morden  
and Members of Council

**MEETING DATE:** March 30, 2021  
**FILE NO:** 11-5225-05

**FROM:** Chief Administrative Officer

**MEETING:** Workshop

**SUBJECT:** Fraser Basin Council – Invitation to Comment on Draft 1 of the Lower Mainland Flood Management Strategy

---

### EXECUTIVE SUMMARY:

The Fraser Basin Council (FBC) is a charitable non-profit organization established in 1997 with the goal to advance sustainability in the Fraser River Basin and throughout BC. It is a collaboration of four orders of government (federal, provincial, local and First Nations) along with those from the private sector and civil society. The City of Maple Ridge (City) has been a funding partner with FBC since its inception.

Since 2014, FBC has been developing the Lower Mainland Flood Management Strategy (Flood Strategy), acting as the facilitator and manager of the initiative. The goal of the Flood Strategy is to build a base of knowledge and support for a common vision and set of actions that will work in concert to reduce flood risk across the Lower Mainland, focussing on two regionally significant hazards: flooding on the Fraser River and coastal flooding.

The City, along with other governments and organizations, has been asked to provide commentary on Draft 1 of the Flood Strategy, attached to this report. The Flood Strategy outlines 68 recommended actions to advance the Flood Strategy goals and objectives that participating organizations have been asked to review and provide input on. The majority of recommended actions ask organizations to indicate their level of support for that specific action (high, medium/mixed, or low) and provides an opportunity for comments.

Staff have reviewed the recommended actions in the Flood Strategy and where feasible, provided suggested responses. Council may wish to support the indicated level of support for any or all of the recommended actions but may choose to provide a different level of support for each, or any specific recommended action; if so, such changes will be noted and incorporated in the comments back to FBC.

Along with Draft 1 of the Flood Strategy attached to this report is a Briefing Note document as well as a FAQ document for Council's perusal.

### RECOMMENDATION:

That comments provided by the City of Maple Ridge pertaining to Draft 1 of the Lower Mainland Flood Management Strategy be supported and forwarded to the Fraser Basin Council.

## DISCUSSION:

### a) Background Context

The Fraser Basin Council is a charitable non-profit organization devoted to advancing sustainability in the Fraser Basin and across British Columbia that was formed in 1997. The City contributes annually to the organization.

A letter was received from Fraser Basin Council on January 29, addressed to the Mayor and CAO, inviting comments on Draft 1 of the Lower Mainland Flood Management Strategy (Flood Strategy).

The Flood Strategy initiative started in 2014 with the aim to build a base of knowledge and support for a common vision and set of actions that will work in concert to reduce flood risk across the Lower Mainland.

The scope of the Flood Strategy is broad, including:

- Improve the understanding of Lower Mainland flood risk and increase awareness
- Support investment actions to reduce flood risk, avoid the creation of new risk, and build resilience of communities, ecosystems and critical infrastructure
- Strengthen flood risk governance in the Lower Mainland

Generally, two types of flooding are considered: Coastal (storm surge) and Fraser River (freshet). The document provides an overview of work on the Flood Strategy to date. Feedback on the Flood Strategy includes a number of recommendations and participants are asked to rank the Level of Support for each as: High, Medium/Mixed, or Low, with an opportunity to provide comments. Staff have inserted suggested responses where appropriate, but any variations noted by Council will be incorporated. The completed Flood Strategy with comments is attached to this report, along with the Briefing Note, and FAQ's.

The Flood Strategy is attempting to address a gap in flood management. There are two areas of consideration:

1. Technical, Operations and Infrastructure
2. Governance and Funding

The Flood Strategy outlines criteria for prioritization of work and a variety of techniques that could be used to address flooding and good flood management practices. At this time, the methodology in applying them - what the priorities will be and where and when techniques will be used is unclear. It appears that the emergency response (operational) component of flood management is not included in aspects of the Flood Strategy.

The Flood Strategy speaks to the formation of a provincially mandated regional flood entity, with a board and professional staff to implement and oversee the Flood Strategy, thereby providing an integrated approach to flood management in the Lower Mainland. The Flood Strategy also recommends establishing a regional funding program, however the source of funding is unclear at this time.

Pursuing an independent governance model and potential funding sources are generally supportable, however it will be important to understand funding sources and implications on organizational budgets. Further detail and understanding of priorities and impacts would also be desirable.

The Flood Strategy includes recommendations related to First Nations and flood management and it may be more appropriate for the provincial and federal governments to address these recommendations.

FBC indicate that there will be a series of draft versions of the Flood Strategy issued for consideration as indicated below:

- Draft 1: feedback is due March 29, 2021\*
- Draft 2: to be distributed in May 2021
- Draft 3: October 2021
- Final Draft: complete November 2021

\* FBC acknowledge that the City's comments will be forwarded and accepted past this date.

The areas that this Flood Strategy may impact in Maple Ridge are: Lower Hammond, Albion Flats and some areas around the Alouette Floodplain. The Hammond Dyke connects to the extensive Pitt Meadows dyke system to offer protection from the Fraser River and Pitt River. The amount of urban infrastructure in these areas is relatively low compared to some other municipalities in the Lower Mainland.

**b) Strategic Alignment:**

While not recognized in the Corporate Strategic Plan, this item could be categorized under Intergovernmental Relations.

**c) Citizen/Customer Implications:**

The FBC is undertaking stakeholder engagement and will be engaging the general public as part of the Flood Strategy development.

**d) Business Plan/Financial Implications:**

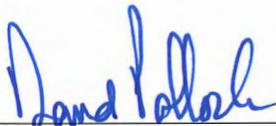
At this time, there are no additional direct implications. The project will require allocation of staff time. Any future costs or implications on funding an implementation program are unclear at this time.

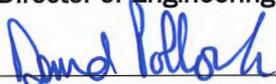
## CONCLUSION:

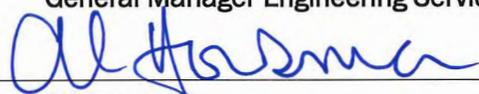
The Flood Strategy as proposed by FBC lays out a regional approach to flooding and is considered generally supportable. The goal of the Flood Strategy is to build a base of knowledge and support for a common vision and set of actions that will work in concert to reduce flood risk across the Lower Mainland, focussing on two regionally significant hazards: flooding on the Fraser River and coastal flooding.

The City, along with other governments and organizations, have been asked to provide commentary on Draft 1 of the Flood Strategy, attached to this report along with supporting documentation including a Briefing Note and FAQs.

The FBC Draft 1 of the Lower Mainland Flood Management Strategy and staff comments are provided for Council's consideration. Any additional comments from Council will also be incorporated and forwarded to FBC as feedback. Staff will continue to liaise with the FBC as part of the consultation process.

  
Prepared by: **Josh Mickleborough, P.Eng.**  
**Director of Engineering**

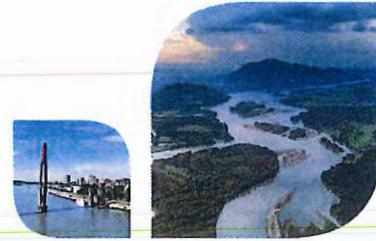
  
Approved by: **David Pollock, P.Eng.**  
**General Manager Engineering Services**

  
Concurrence: **Al Horsman**  
**Chief Administrative Officer**

## Attachments:

- (A) Briefing Note
- (B) Draft 1 – Lower Mainland Flood Mitigation Strategy (Including staff comments)
- (C) FAQs on Draft 1 of the Lower Mainland Flood Management Strategy

# Lower Mainland Flood Management Strategy | Draft 1



## Briefing Note

### for Entities with Flood Management Responsibilities in the Lower Mainland

#### Purpose

To provide an overview of Draft 1 of the Lower Mainland Flood Management Strategy and the invitation by the Fraser Basin Council to review and comment on Draft 1.

#### Background

The Lower Mainland Flood Management Strategy (LMFMS or Flood Strategy) is a region-wide strategy to reduce flood risk and improve the flood resilience of communities along British Columbia's lower Fraser River and south coast. It focuses on two regionally significant flood hazards: Fraser River flooding and coastal flooding.

The development of the LMFMS has been a collaborative, inter-jurisdictional, regional-scale and multi-year initiative. The Fraser Basin Council (FBC), a not-for-profit organization, is the manager and facilitator of this initiative on behalf of over 60 organizations with flood management responsibilities, including federal, provincial, First Nations and local governments, and other entities, such as infrastructure organizations. The initiative began in 2014 and has included a combination of technical analysis, information tool development and advisory and engagement processes. The aim of the LMFMS initiative is to build a base of knowledge and support for a common vision and set of actions that will work in concert to reduce flood risk across the Lower Mainland.

A key factor for success is to develop a Flood Strategy that has broad support among all orders of government and other organizations. Input from these organizations will strengthen the breadth and depth of support for the Flood Strategy. Government and other entities with flood management responsibilities, through their respective internal processes, have an important role in reviewing the initial drafts of the Flood Strategy, providing input and determining next steps, including Flood Strategy adoption and implementation. Many of these organizations have participated in and provided financial and in-kind support for the initiative to date.

FBC is inviting review and input on Draft 1<sup>1</sup> of the Flood Strategy over a two-month commenting period. Draft 1 was distributed by email in late January 2021 to partners and participants in the LMFMS development process.

---

<sup>1</sup> A preliminary draft, named Draft 1A, was distributed in November 2020 for initial review by First Nations and those serving on LMFMS advisory groups (the Joint Program Committee and Leadership Committee). It is now available as Draft 1 for review and comment by all partner and participating organizations. For clarity, Draft 1 is the same as Draft 1A, with one addition, that being an addendum on governance, funding and implementation (Section 6 of Draft 1).

## Flood Strategy Goals and Scope

The draft LMFMS contains seventeen objectives under three overarching goals:

**1) Improve understanding of Lower Mainland flood risk and increase awareness**

*Objectives under this goal include improving understanding of flood risk and risk-based flood management as well as access to information.*

**2) Support investment and actions to reduce flood risk, avoid the creation of new risk, and build resilience of communities, ecosystems and critical infrastructure**

*Objectives emphasize integrated, innovative approaches to reducing flood risk in ways that support the resilience of ecosystems, society and critical infrastructure and account for climate change impacts.*

**3) Strengthen flood risk governance in the Lower Mainland**

*Objectives include furthering collaboration and coordination, reconciliation with First Nations, improving capacity and accounting for the inter-jurisdictional nature of flood.*

Together, the goals and objectives reflect the region's diverse challenges and opportunities and are intended to achieve the Flood Strategy's vision for the Lower Mainland as a flood-resilient region.

The Flood Strategy is focused on addressing Fraser River and coastal flood risks while recognizing that many communities also experience flooding from other sources. The Flood Strategy is not prescriptive in that it does not recommend specific flood risk reduction projects in specific locations. This scope recognizes the important role of existing and future flood management plans, decisions and initiatives at the local and sub-regional scales.

## Key Directions

Draft 1 of the LMFMS contains 68 recommended actions to advance the Flood Strategy's goals and objectives. The following is an overview of the major directions proposed. (Numbers in parentheses refer to Draft 1 sections that contain related recommendations.)

**Regional prioritization:** A core concept of the LMFMS is the prioritization of flood risk areas in the region for flood risk reduction. Current approaches to flood-related project funding tend to be based largely on the merit of applications. This can benefit communities with greater access to technical information and resources regardless of the relative need and urgency of the project compared with other jurisdictions. A process to determine the relative priority of flood risk areas in advance would ensure that areas with higher risk, need and urgency are identified and provide a shared understanding to inform where and how investments should be made. Draft 1 presents draft criteria that are intended to be refined and integrated into a prioritization framework that would ultimately be used to inform funding decisions for risk reduction initiatives. Equity is an important consideration in the proposed approach. (5.3.3)

**Holistic approach to flood risk reduction initiatives:** While regional prioritization considers where and when flood risk reduction actions are most needed, the Flood Strategy also addresses *how* flood risk could be reduced by recommending development of a framework to guide the

design and evaluation of flood risk reduction initiatives. The framework would ultimately inform funding and decision-making. Draft 1 presents draft criteria under four broad categories as the basis of this proposed framework: impacts on flood risk; alignment with existing frameworks; design for a range of positive impacts (e.g., ecosystem resilience); and the process of planning, design and implementation. The criteria support reducing flood risk in a way that minimizes negative impacts, produces positive co-benefits, can be adapted and sustained in the long term, and supports the values identified by LMFMS partners, while recognizing that the same approaches will not be appropriate in all circumstances. (5.2.2)

**Enabling and supporting integrated flood management measures:** The draft Flood Strategy contains recommendations designed to facilitate and widen the suite of flood risk reduction measures considered, including a range of structural (e.g., diking) and non-structural (e.g., land use) measures. Some recommendations propose changes to provincial legislation, standards and guidelines. Others consider incentives, guidance and further study to advance understanding and uptake of risk-based approaches and alternatives to conventional flood protection infrastructure, including land use regulation and nature-based approaches. These recommended actions are intended to support organizations in achieving their risk reduction objectives along with the objectives of the Flood Strategy and, more specifically, the risk reduction framework described above. (5.2.1, 5.2.3, 5.2.4)

**Enhancing First Nations capacity:** The LMFMS aims to support reconciliation with First Nations and address inequities in flood management, including but not limited to improving capacity and access to opportunities for flood risk reduction. Some draft recommendations include improving flood hazard and risk information in First Nations communities, as well as protocols for including Indigenous knowledge and values in flood planning. Others speak to enhancing First Nations capacity for emergency preparedness and response, flood planning and decision-making, and participation in flood initiatives of other jurisdictions. (5.2.5, 5.3.2)

**Improving collaboration and coordination:** Core to the LMFMS is the recognition that floods and their consequences extend across jurisdictional boundaries and that flood management activities in one jurisdiction can have (and have historically had) significant impacts on others. The draft Flood Strategy recommends actions to improve collaboration, coordination and communication among governments and non-governmental organizations across the region. Actions to improve collaboration with and the participation of First Nations in alignment with the BC Declaration on the Rights of Indigenous Peoples Act are emphasized. (5.3.1, 5.3.2)

**Regional technical services, information sharing and education:** Widespread understanding of flood risks along with access to and sharing of information are key to supporting flood risk reduction over the long-term. Draft 1 proposes programs and other actions to deliver regional-scale flood hazard and risk modelling and mapping, opportunities for sharing information among jurisdictions, and public education and communications. The Strategy recognizes the limited capacity of many communities and the value of undertaking some of these actions at the regional scale. (5.1.1, 5.1.2, 5.1.3)

To support implementation of the recommended actions, the LMFMS contains two key proposals:

- 1) **Establishment of a regional flood entity:** While some of the recommended actions could be led by existing organizations, no existing organization has the capacity or

responsibility to oversee the implementation of the Flood Strategy as a whole. The draft Flood Strategy recommends the establishment of a provincially mandated regional entity to implement and oversee implementation of the LMFMS. It would include a Board structure composed of First Nations, local, provincial and federal governments and infrastructure providers. Proposed roles for the entity include delivering regional-scale flood-related technical, communications and education services; establishing regional priorities for flood risk reduction; advising on or delivering funding decisions for regional, sub-regional and local initiatives pertaining to the Flood Strategy; and supporting collaborative flood planning within the Lower Mainland. It is currently proposed that the entity would not assume the responsibilities of existing jurisdictions. (6.1.1)

- 2) **Establishment of a regional funding program:** The draft Flood Strategy proposes the establishment of a long-term, stable regional funding program to a) support implementation of LMFMS recommendations; b) implement regional, sub-regional and local flood management initiatives aligned with the LMFMS; and c) support the operations of the proposed regional flood entity. Current funding arrangements are unpredictable, focus primarily on emergency response and recovery, and typically are available for a limited time period and for a relatively narrow set of eligible projects and activities. The proposed funding program, administered by the proposed regional entity and supported by the regional prioritization and evaluation frameworks, would provide greater predictability and would enhance capacity for a broader range of proactive flood risk management activities. (6.1.2)

## Next Steps

- **FBC will receive feedback on Draft 1 through Monday, March 29, 2021.** Organizations that are invited to provide feedback can email the completed PDF (and any accompanying documents, e.g., staff report, if available) to [floodstrategy@fraserbasin.bc.ca](mailto:floodstrategy@fraserbasin.bc.ca).
- FBC will host a webinar presentation on Draft 1 on February 16, 2021. The presentation will be recorded and shared for viewing by organizations invited to provide feedback. Additional engagement sessions and/or materials may be delivered during the commenting period.
- Input received by March 29 will inform the development of Draft 2. Draft 2 will be distributed in May 2021 for review by all organizations that were invited to comment on Draft 1. This allows for two rounds of review prior to a period of public comment.
- Public engagement on the LMFMS is planned for September 2021.
- The Flood Strategy will be finalized by November 2021.

## Contact

For more information, or to specify an alternative contact for your organization, email Steve Litke at [slitke@fraserbasin.bc.ca](mailto:slitke@fraserbasin.bc.ca).

## DRAFT 1 | January 29, 2021

A Preliminary Draft for Comment by Entities  
with Flood Management Responsibilities in the BC Lower Mainland

# Lower Mainland Flood Management Strategy



### \* About Draft 1

Draft 1 is a **PRELIMINARY DRAFT** of the Lower Mainland Flood Management Strategy (LMFMS).

Draft 1 was previously referred to as "Draft 1A" by those serving on LMFMS advisory groups and in other meetings. **For clarity, Draft 1 is the same as Draft 1A, with one addition: Section 6, an addendum on governance, funding and implementation.**

LMFMS funding partners and other organizations that have responsibilities related to flood risk reduction are being invited to review and provide comments on Draft 1 to help guide the preparation of Draft 2. This invitation is being made to federal, provincial, First Nations and local governments and to infrastructure and other agencies with flood management responsibilities in the region.

Details on the process and timeline for comments are set out on the first inside page.

The process to develop a Lower Mainland Flood Management Strategy is managed by:



*Fraser Basin Council*

# Lower Mainland Flood Management Strategy Draft 1



## **A note to Lower Mainland Flood Management Strategy Partner Organizations**

**We value your comments on Draft 1 of the LMFMS.**

Please open, read and provide comments on Draft 1 within the free Adobe Acrobat Reader and save to your desktop. Do not use your browser window for review.

Note: Draft 1 is the same as Draft 1A (released November 2020 for limited review), with one addition, which is an addendum to Section 6 on governance, funding and implementation (pages 57-68). In Sections 1 to 5, the only changes made have been regarding the project timeline and instructions for reviewers.

Notes and instructions throughout this document are shown in blue, italicized text.

The document contains comment boxes in which you can provide feedback to facilitate automated collation. **Please do not use post-it note comments as this could be overlooked during the collation process.** You are welcome to collaborate with others in your organization to provide feedback. While we welcome your feedback on Sections 1 through 4, we encourage you to focus on Sections 5 and 6, Recommended Actions and Implementation.

For those organizations that previously provided comment on Draft 1A (prior to January 28): We have already recorded these comments to consider in the next draft and there is no need to resubmit unless you are adding to or overriding your previous submission. If you submit comments on Draft 1, please let us know if they are in addition to or should replace previously submitted comments.

**The last date to submit comments to be considered for Draft 2 is March 29, 2021.** We would greatly appreciate receiving submissions earlier than this date. Please email the completed form and/or any additional comments (e.g. staff reports) to [floodstrategy@fraserbasin.bc.ca](mailto:floodstrategy@fraserbasin.bc.ca).

There will be another opportunity to provide comments on Draft 2 in May-July 2021.

Contact Name	Josh Mickleborough
Organization	City of Maple Ridge
Contact Email	<a href="mailto:jmickleborough@mapleridge.ca">jmickleborough@mapleridge.ca</a>

## Executive Summary

### ***A Flood Resilient Vision for the Lower Mainland***

*The Lower Mainland is a flood resilient region where people, communities and organizations are aware of flood hazards, risks and benefits, and work together to reduce flood risks in a way that supports community values, enhances the natural environment, and acknowledges regional interdependencies.*

Section 1 of this report introduces the context for development of the Lower Mainland Flood Management Strategy. It outlines the regional approach and the overall scope of the initiative.

Section 2 provides additional context on flood risk in the Lower Mainland, including several challenges with the current approach to flood management and the opportunities associated with a revitalized collaborative, regional-scale approach.

Section 3 outlines the process that was facilitated and the broad-based partnership that was fostered to undertake this initiative. A summary of key steps, technical analyses, and other activities is provided including the timeline and key milestones.

Section 4 presents a framework for the LMFMS, including a broad, forward-looking vision of flood resilience for the Lower Mainland, as well as 3 primary goals and multiple objectives to be achieved through the LMFMS recommendations. The three goals are:

- 1) Improve Understanding of Lower Mainland Flood Risk and Increase Awareness
- 2) Support Investment and Actions to Reduce Flood Risk, Avoid the Creation of New Risk, and Build Resilience of Communities, Ecosystems and Critical Infrastructure
- 3) Strengthen Flood Risk Governance in the Lower Mainland.

Section 5 presents a series of draft LMFMS recommendations. These are organized by the three primary goals.

Section 6 focuses on implementation. This includes recommendations and considerations on governance and funding; monitoring, evaluation and updates; and other next steps for implementation. Section 6 is the Addendum that was developed to complete Draft 1.

Section 7 includes Appendices, which provide additional details on the structure of the LMFMS partnership and the participating organizations, additional considerations for identifying flood risk areas, and several of the technical analysis results and tools that were developed through the LMFMS process.

*A more detailed Executive summary will be developed in future drafts of the LMFMS.*

## Acknowledgements

This draft LMFMS is the culmination of many years of work and collaboration among scores of organizations and individuals. The Fraser Basin Council has the privilege and honour of facilitating this process and managing the initiative.

First and foremost, the Fraser Basin Council would like to thank the members of the Leadership Committee and Joint Program Committee for Integrated Flood Hazard Management for their time, expertise, and input. A special thanks to the JPC Working Group members who volunteered and mobilized in the summer and early fall of 2020 to advance progress on the draft LMFMS. See Appendix A for a summary of organizations that have been partners or participants in the LMFMS initiative. As of November 2020, more than 80 individuals representing 66 organizations have participated.

Many of these organizations also contributed funding and data. In addition to the funding contributions provided by the partner organizations, the Fraser Basin Council would like to acknowledge the following funding partners:

- National Disaster Mitigation Program (Public Safety Canada and Emergency Management BC)
- Real Estate Foundation of BC
- Pacific Institute for Climate Solutions (internship program)

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## 1. Introduction

### 1.1 Context for Flood Strategy Development

The Lower Mainland Flood Management Strategy (LMFMS or Flood Strategy) is a region-wide strategy to reduce flood risk and improve the flood resilience of communities along British Columbia's lower Fraser River and south coast.

The Flood Strategy addresses a critical question for the future of the region:

***When floodwaters rise in the Lower Mainland, “How prepared will we be?”***

The Lower Mainland region is, and long has been, home to Coast Salish First Nations since time immemorial. First Nations possess rich cultural values and a deep connection to the land, waters, and living beings, recognizing that all are connected. This worldview invites and encourages all people of the Lower Mainland to understand the connections between the river, flood events, nature, communities, and a wide range of cultural and spiritual values when we are considering the management of flood hazards and risks.

Through the Lower Mainland flows BC's longest river, the Fraser (or *Stahlo* in Halkomelem). The Fraser River is a sacred water body of the Coast Salish people. This river flows 1,375 km from near Mount Robson to Vancouver and Richmond where it empties into the Salish Sea and the Pacific Ocean. The river has shaped the region over many thousands of years, supporting the lifeways of First Nations people, supported Pacific Salmon, migratory birds and other wildlife, nourished the river deltas used for farming and served continuously as a key transportation route.

The Lower Mainland is presently Canada's third largest metropolitan region at 2.7 million people — nearly 60% of British Columbia's population. The Lower Mainland is important to British Columbia and all of Canada, culturally, ecologically and economically.

The lower Fraser River floodplain is estimated to be over 600 square km, and over 350,000 people are estimated to live in these flood hazard areas in the region. Over the past 130 years, there have been two regionally significant Fraser River freshet floods — the largest in 1894 and the second largest in 1948 — in the region, and earlier large floods are recounted in First Nations oral histories. In more recent years, there have been “close calls”, with flooding of unprotected lowlands along the river and coastline.

The Lower Mainland will face another large flood sooner or later — and projections under climate change are for more frequent and severe floods, with \$20-30 billion in projected losses if multiple dike systems are unable to holdback floodwaters, given extensive development in flood hazard areas. Future growth projections tell us the region will increase by over a million people by 2050, so the risk will increase. Choices made today for flood risk reduction matter greatly for tomorrow.

## 1.2 A Regional Approach to Flood Risk Reduction

In BC, different orders of governments – federal, provincial, local and First Nations – all have specific flood-related responsibilities, which makes flood risk reduction complex. An [overview of these responsibilities](#) can be found on the FloodWise public education website, developed in the course of the LMFMS initiative.

Inter-jurisdictional flood projects and collaborative dialogues have supported flood management in the Lower Mainland for many years.

The Fraser Basin Council helped establish the Joint Program Committee for Integrated Flood Hazard Management in 1998 to provide a forum for flood management practitioners to address issues and collaborate on projects of common interest and benefit. In December 2012 a report was released that estimated it would cost approximately \$9.5 billion to address flood hazards associated with 1m of Sea Level Rise in the coastal areas of Metro Vancouver. In response to this alarming report and the concerns it raised, the JPC explored interests and opportunities to take a proactive, bottom-up, regional-scale, and collaborative approach to flood management. After a period of dialogue and engagement there was agreement to initiate the Lower Mainland Flood Management Strategy initiative.

This **Lower Mainland Flood Management Strategy** sets out the first comprehensive approach to flood risk reduction for the region as a whole.

## 1.3 Scope of the Flood Strategy

### GEOGRAPHIC SCOPE – BC's Lower Mainland



The LMFMS is geographically focused on the communities of the Lower Mainland that are vulnerable to Fraser River flooding and/or coastal flooding, which encompasses the area east to Hope, west to the Salish Sea, north to Squamish and south to the US border.

## **REGION-WIDE FOCUS**

The LMFMS addresses flood risk reduction on a region-wide basis. The work is aimed at identifying priorities for the region as whole and to complement and support the flood work of all orders of government.

## **A FOCUS ON TWO TYPES OF FLOOD**

Two regionally significant flood hazards in the Lower Mainland are addressed in the LMFMS:

- **Fraser River Flood:** Most likely to occur during spring freshet (spring snowmelt) when water volume in the main river channel increases so greatly that the river overflows its banks or overtops or breaches dikes
- **Coastal Flooding:** Most likely to occur during winter when ocean levels are higher than normal as a result of waves, tides, storm surge, or heavy rainfall from coastal storms, and when seawater may move inland over normally dry land.

The LMFMS does not address other types of flood that may impact individual communities, such as flooding from rivers or creeks, urban flooding from heavy rain events, landslide or debris flow floods, or tsunami. While important, these flood hazards are more manageable for local authorities with less need for region-wide collaboration and coordination.

## **A FOCUS ON FLOOD RISK REDUCTION**

The LMFMS acknowledges the [Sendai Framework for Disaster Risk Reduction \(2015-2030\)](#) and its four principles of disaster risk reduction:

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 "Building Back Better" in recovery, rehabilitation and reconstruction.

The LMFMS initiative centres primarily on the first three principles of the Sendai Framework – to plan proactive mitigation measures that will reduce the likelihood of damage or loss during a Fraser River or coastal flood.

This is not to underplay the importance of a robust investment in emergency preparedness, response and recovery, which is critical to public safety and managing a flood event. The importance of this work is underscored by the [BC Flood Emergency Plan](#) and by the 2018 report [Addressing the New Normal: 21st Century Disaster Management in British Columbia](#) on wildfire and flood.

## **RESPECT FOR EXISTING JURISDICTIONS AND RESPONSIBILITIES**

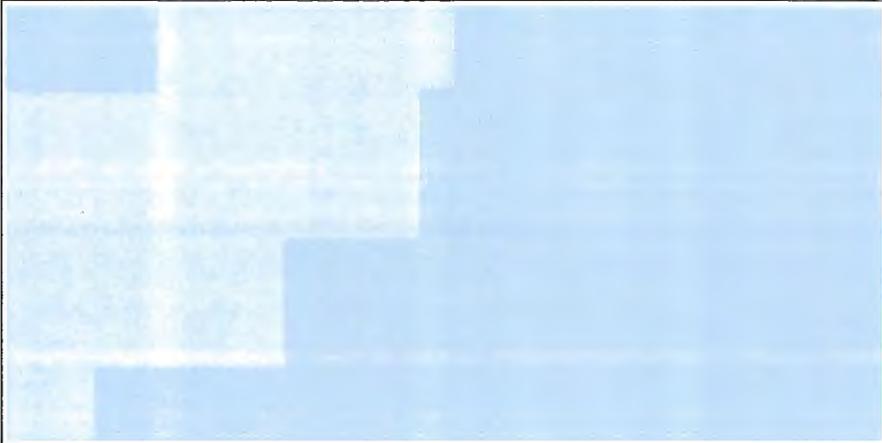
The intention of the partners in the LMFMS initiative has been to acknowledge all existing jurisdictional authority, legislation, commitments and responsibilities for flood risk reduction in the Lower Mainland. The LMFMS itself is not a new governance arrangement.

First Nations, as an order of government, have been invited to participate in the LMFMS development. Such participation, however, does not absolve the duty of the Crown or project proponents to consult and accommodate First Nations interests in relation to all projects. To advance the LMFMS meaningfully, all federal, provincial and other responsibilities must be met, including those reflected in the BC [Declaration on the Rights of Indigenous Peoples Act](#).

The LMFMS sets out recommendations and options for improving flood risk reduction. It falls to individual orders of government to formally adopt and implement the recommendations in Phase 3 through their respective mandates, processes and plans.

### **Feedback Question**

- **Is there anything significant that you would add to, delete from, or modify in the Section 1 Introduction of the draft LMFMS?**

<b>Section 1 Comment</b>	
	

## 2. Flood Risk and Management in the Lower Mainland

### 2.1 Flood Risk in the Lower Mainland

Flood risk is based on the probability of flooding and the resulting consequences. Probability is related to the likelihood of a given flood, and, if flood protection measures are in place, the likelihood of those measures failing. The resulting consequences are related to the people, physical infrastructure, other assets and things of importance that are exposed to flooding, as well as their vulnerability or resilience to damage or other consequences.

#### 2.1.1 Coastal and Fraser River Flooding

Flooding is a natural process that has shaped the Lower Mainland landscape, including its diverse ecosystems and fertile agricultural soils. There are First Nations oral histories of flood events in what is now the Lower Mainland, including accounts of a Great Flood from long ago. Inhabitants of this region have lived with flooding and benefitted from the resulting landscape.

Climate change is projected to increase the size and frequency of both Fraser River freshet and winter coastal floods. Current science projects a smaller snowpack through the year 2100, more rapid snowmelt and increased spring rainfall in the Fraser Basin, resulting in higher peak flows on the Fraser River and potentially an earlier freshet. Sea-level rise resulting from climate change will increase coastal flooding in the future. As the ocean rises near the shoreline, this may lead to larger waves during storm surge events. The Government of BC currently advises planning for 0.5m of sea level rise by 2050, 1m by 2100, and 2m by 2200.

There are other natural hazards that can influence flooding in the Lower Mainland. Much of the floodplain and flood protection infrastructure in this region are vulnerable to earthquakes, which can reduce the integrity and performance of dikes and associated infrastructure. Wildfires and forest pest outbreaks (and associated salvage logging) result in the loss of forest cover and increased surface runoff into streams and rivers.

Accounting for these realities means the way we manage flood will need to evolve as well. Conventional methods and standards, which have tended to design for the 'current state', might no longer be appropriate or cost-effective in the long term. Existing land uses and infrastructure in flood hazard areas will need to change to accommodate changing flood hazards. For example, it may no longer be appropriate to define a static flood level standard for dike height or minimum building elevation. **There is a need and opportunity to explore, enable, and adopt methods that are more dynamic and adaptable into the future.**

## 2.1.2 What is at Risk?

Land use decisions over the past century have placed considerable buildings, infrastructure, and populations in flood hazard areas. Impacts from a major flood could be wide-ranging and can extend beyond those areas, for example as a result of damage and disruption to critical infrastructure and essential services. Impacts from a smaller flood could still be devastating for a smaller community, including many First Nations communities. Although many Lower Mainland communities are situated behind flood protection infrastructure, all dikes pose a risk of failure during a major flood.

Continued population growth and development in flood-prone areas, combined with the increased likelihood and extent of flooding under climate change, are expected to further increase flood risk overall.

Some of the main areas and sectors at risk include:

**Communities and People:** Approximately 350,000 people live within a flood hazard area within the Lower Mainland. This includes hazard extends across 31 Mainland Coast Salish First Nations communities, 26 municipalities, and 2 regional districts in the Lower Mainland. Many First Nations communities face disproportionate exposure to flooding because most reserve and treaty lands were created on the shore of the Fraser River or the Salish Sea. Many are not protected by dikes; in some cases, dikes were built by others inland of a reserve, leaving it highly exposed, and can be subject to near annual flooding in some capacity, requiring resources to be dedicated to emergency response. There is also significant industry and many businesses along the river and within flood hazard areas.

**Table: Number of People and Communities Exposed to Coastal and Fraser River Flooding (including projected climate change impacts)**

Note: Estimated 500-year (0.2% AWP) flood scenarios assuming all dikes fail.

	A - Coastal (Present Day)	B - Coastal (Year 2100)	C - River (Present Day)	D - River (Year 2100)
Total population seeking shelter	238,000	261,000	266,000	311,000
# of Municipalities	15	15	17	17
# of First Nations	4	5	22	23
# of Reserve / Treaty lands	7	9	43	47

Regional Assessment of Flood Vulnerability (NHC, 2016).

**Critical Infrastructure and Essential Services:** Health facilities, water and wastewater treatment plants, rail lines, highways, evacuation routes – including those of First Nation reserves that have a single access road – utility corridors, and other critical infrastructure are in flood hazard areas. Other key infrastructure, such as the Vancouver International Airport and Port of Vancouver, are also located in flood hazard areas. These critical

infrastructure and essential services present a particularly critical aspect of risk, because in many cases damage and disruption of infrastructure will result in a cascade of impacts that extend outside of the flooded area and beyond jurisdictional boundaries. Disrupted infrastructure can result in the loss of service both within and outside of flood hazard areas and impact the movement and provision of goods and services across the region, including international trade.

**Table: Flood Consequences (\$) Associated with Buildings, Infrastructure, Agriculture and Shipping Disruption.**

Note: Estimated 500-year (0.2% AWP) flood scenarios assuming all dikes fail.  
Note, need to replace with table that includes Public buildings (which are included in the total).

Flood Scenario	Residential	Commercial	Industrial	Interrupted Cargo Shipments	Infrastructure	Agriculture	Total
A - Coastal (Present Day)	\$5.6 B	\$6.3 B	\$1.6 B	\$3.6 B	\$1.4 B	\$100 M	<b>\$19.3 B</b>
B - Coastal (Year 2100)	\$7.1 B	\$8.6 B	\$2.6 B	\$3.6 B	\$1.8 B	\$200 M	<b>\$24.7 B</b>
C - River (Present Day)	\$2.6 B	\$3.8 B	\$1.6 B	\$7.7 B	\$4.6 B	\$1.6 B	<b>\$22.9 B</b>
D - River (Year 2100)	\$6.6 B	\$7.6 B	\$2.9 B	\$7.7 B	\$5.0 B	\$1.6 B	<b>\$32.7 B</b>

Regional Assessment of Flood Vulnerability (NHC, 2016).

**Food Security:** Over one-third of the farmland in the Lower Mainland lies in the Fraser River floodplain and may be vulnerable to flooding. Damage and disruption to agricultural lands would not only have a significant impact to the regional (and provincial) economy, it would have considerable implications for food security in the region. Traditional harvesting sites, including fisheries and fishing sites, are part of the livelihood of some communities. A flood could cause wastewater and other contaminated waters to pollute aquifers and streams, which could impact fisheries.

**Environment:** Many of the region's parks, environmentally sensitive areas, and wildlife habitats are in the region's flood-prone areas. While the flooding of natural areas is not necessarily a problem, flooded buildings and infrastructure – especially those containing hazardous material and sewage – can contaminate the water and pollute surrounding lands, along with community wells, aquifers, and river and coastal ecosystems.

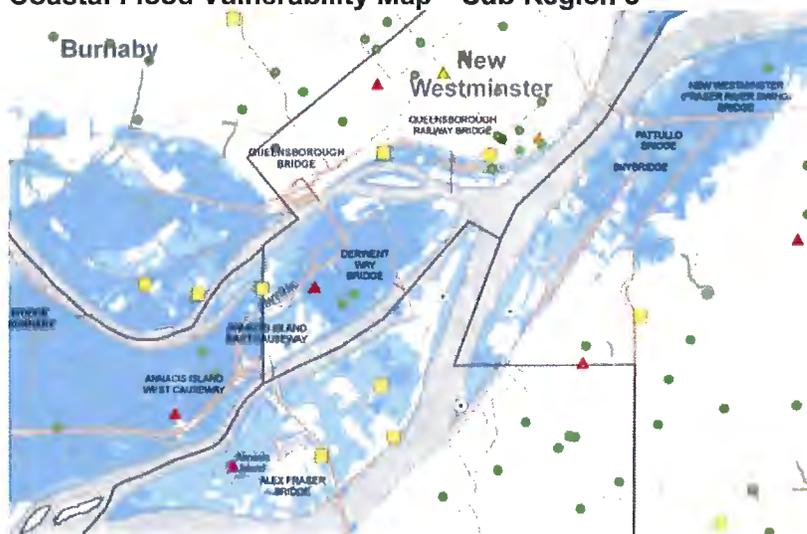
**Culture and Social Impacts:** There are also intangible and indirect impacts that could result from a flood. Loss of or damage to cultural, spiritual, and archaeological sites, including cemeteries and First Nations ancient village sites both on reserve and in

traditional territories, are particularly important to First Nations' heritage as they serve as a record of their historical presence and cannot be recovered once lost. Disruption of schools, religious services, and other cultural and recreational practices due to inundated buildings, and the mental health toll of experiencing a flood, are key among other impacts.

### 2.1.3 Regional diversity and interdependencies

Flood risks are not the same across the region. Some communities are exposed to either freshet or coastal flooding, but some communities are at risk of both. Some key infrastructure and sectors are geographically concentrated, for example Port facilities on the coast and agricultural lands in Fraser Valley floodplain. Absolute damages or losses also do not tell the full story of impacts of a flood on a community: factors such as the frequency of flooding, availability of redundant infrastructure (e.g., having more than one access road in and out of a community), and the capacity for recovery, also contribute to the impacts experienced by a community.

#### Coastal Flood Vulnerability Map – Sub-Region 3



Regional Assessment of Flood Vulnerability (NHC, 2016).

Note: Estimated 500-year (0.2% AWP) coastal flood scenarios assuming all dikes fail.

Flood hazards and risks are not confined by political or administrative boundaries and often cross-jurisdictional lines. In this highly urbanized region, activities are supported by a network of regionally interconnected infrastructure systems. The map above illustrates the proximity and shared flood hazard area among multiple local governments and types of critical infrastructure including highways and bridges, rail, hydroelectricity, and water and wastewater. If multiple dike failures occurred across the region during a major flood event, most residents, businesses and government services in the Lower Mainland would be impacted in some way. **The sharing of flood hazards among jurisdictions, and the potential far-reaching impacts of damaged infrastructure and disrupted**

**essential services, demonstrate a need for inter-jurisdictional coordination and collaboration in reducing flood risk.**

## **2.2 Current Flood Management System**

### **2.2.1 Flood Management in the Lower Mainland**

Mainland Coast Salish First Nations used to manage flood risk by adapting where and how they lived to accommodate periodic floods, recognizing them for their benefits to the natural ecosystem. When reserves were created, many were confined to flood-prone lands. During the Fraser River Flood Control Program (1968-1995), much of the flood protection infrastructure built excluded First Nations communities and were done without the consent and participation of affected First Nations; in some cases, dikes were built such that a reserve was left exposed on the river side of a dike or that culturally significant sites or habitats were destroyed. The lack of historic capital investment in protecting First Nations communities, together with the limitations of the reserve system, has contributed to many being more vulnerable to flood hazards compared with non-First Nation communities. **This is an area where reconciliation with First Nations, including understanding and applying First Nations' knowledge and values in flood management moving forward, is particularly needed to address historical inequities.**

Flood management in BC in the 20<sup>th</sup> century was largely led by the Provincial government. With the end of major flood programs and changes in legislation at the turn of the century, local governments gained authority and responsibility for many aspects of flood management. Today, flood management responsibilities in the Lower Mainland are spread across governments. Local governments fall under Provincial jurisdiction and are supported with Provincial staff and financial resources, while historically First Nations governments have fallen under Federal jurisdiction with differential support of Federal staff and financial resources. These discrepancies are apparent across most aspects of flood management.

Just as the distribution of flood risk is diverse across the region, its management also differs from community to community. Some jurisdictions have taken an active role in understanding their flood risk and made significant progress in planning for and investing in flood mitigation, while others, including many First Nations, are at initial stages of technical analysis and planning and remain vulnerable to even 'smaller' floods. In turn, the frequency of flooding requires resources to go into emergency response rather than proactive planning. Some areas have a limited tax base and large areas to protect; others simply have more urgent demands on their resources. This inconsistency is partly a result of vastly differing levels of local capacity and priorities, and partly a result of the current system of funding and priorities from senior governments. Overall, the current system of flood management supports inconsistency and inequity across the region that leaves some communities more vulnerable than others.

## 2.2.2 Prevailing Approaches to Flood Risk Reduction

The focus of past and current flood/funding programs have led to a broad reliance on diking infrastructure for flood protection in many Lower Mainland communities. The construction of dikes has caused adverse environmental impacts and effects on the river channel while requiring high operations and maintenance costs, particularly when major repairs and/or upgrades are required. The diking system was never designed to act as a stand-alone system of protection, but in some places has become the default flood mitigation measure. This reliance comes with challenges: a majority of flood protection dikes do not protect against the lower Fraser River design flood (the 1894 flood of written record), and significant resources would be required to maintain and to upgrade existing dikes to improve their resilience – against both flood and seismic hazards. While senior governments have contributed to funding capital costs, operations and maintenance costs are presently borne entirely by local diking authorities. While some communities have started to upgrade their flood protection structures, others are limited due to space limitations, ownership issues, complicated and long approval processes, and financial constraints. There are cases where First Nations are not sufficiently consulted on flood management planning and decision-making.

Provincial legislation enables local governments to develop flood bylaws and the Province has developed the Flood Hazard Area Land Use Management Guidelines to support land use planning and decisions. Some local governments have developed regulations to control development in flood hazard areas, but without a requirement to do so, the application of these tools is limited and inconsistent across communities. There are also financial disincentives for limiting development in flood hazard areas. An approach to planning and development in flood hazard areas that recognizes the presence of residual risk (associated with the potential for dike failure) and the importance of preventing the creation of ‘new’ risk is needed. **There is a need to remove disincentives to stronger land use planning measures and move towards an integrated approach to flood risk reduction, learning from those jurisdictions that are leading the way.**

### Coastal Flood Vulnerability Map – Sub-Region 7



Regional Assessment of Flood Vulnerability (NHC, 2016).

Note: Estimated 500-year (0.2% AWP) Fraser River flood scenarios assuming all dikes fail.

There is also potential for flood risk reduction actions to “transfer” risk beyond the local community. For example, dikes can narrow a river channel, increasing water depth and speed and potentially worsening flooding, erosion, or impacts on salmon habitat, downstream. Some actions can also encourage the “creation” of additional risk: for example, the presence of dikes – despite their potential to fail – serves to encourage further development in flood hazard areas. The map above illustrates the proximity and shared flood hazard area among multiple local governments, regional district electoral areas, multiple First Nations, MoTI, ALR, CPR as well as the overall vulnerability if flood protection dikes were to fail during a large Fraser River flood event. **The potential for risk transfer and risk creation highlights the need to ensure that all flood management activities are coordinated and consider unintended consequences.**

### **2.2.3 Financing Flood Management**

In general, there are limited funds and high costs for flood management activities. Many jurisdictions are working individually and competing for limited funding from senior governments. Funding programs are typically available for a limited time period and for a relatively narrow set of eligible projects and activities, often excluding non-structural initiatives. It is difficult to align grant intakes with considerations such as local and First Nations government budget planning cycles, regulatory review processes, and fish windows for construction. There are no mechanisms presently in place to coordinate funding decisions based on the identification of priorities at a regional scale, for example based on relative flood risk or capacity and equity considerations. **There is a need for both a process for equitable, transparent prioritization of flood risk areas and a more predictable, long-term funding approach for a variety of flood assessment, planning, and risk reduction initiatives.**

There seems to be agreement that the costs of creating, reducing, and compensating for risk are not evenly distributed, although there may be disagreement on where the inequities lie. Local governments receive revenue through taxes and fees from properties developed, including those in flood hazard areas. Developers profit from development. However, the liability for flood damages remains mostly with the two senior levels of government through Disaster Financial Assistance Arrangements as well as private homeowners and insurers. At the same time, local governments pay for planning and operations for flood management, benefiting the private sector (e.g., real estate developers, other businesses) and infrastructure providers. The existing financial model compensates individuals, local governments, and businesses for the short-term costs associated with emergency preparedness, response and recovery activities rather than incentivizing / rewarding them for longer-term planning or mitigation approaches. This government backstop acts as insurance and incentivizes continued development in flood hazard areas. **There is a need for an improved system to improve the distribution of who bears and pays for flood risk in which those who accrue the benefits also pay a larger portion of the related cost.** This portion of cost could be invested in resilient design of residential, business, and infrastructure development.

### **2.2.4 Public Flood Awareness**

The above challenges are compounded by a generally low public awareness and understanding of the scale of flood risk facing their communities and the region more broadly. Many residents (and elected leaders) have no experience of a past flood in the

region, which makes flood management investments a lower priority. However, the public dialogue around climate change could be an opportunity to connect to discussions and engagement around flood risk. Jurisdictions that have undertaken community engagement on recent flood planning efforts have considerably increased awareness within their communities. **There are opportunities to build on existing efforts to increase understanding about flood risk across the region and engage the public and stakeholders dialogue**, for example about what level of risk is tolerable and, crucially, the costs and benefits of different types of action (including property-level actions).

## **2.3 Opportunities for a Regional, Collaborative Approach**

Key opportunities that support a regional, collaborative approach taken by the LMFMS initiative are summarized below.

### **2.3.1 Improved Cross-Jurisdictional Relations**

The LMFMS development process (described in Section 3) revealed current gaps in – and a desire for more – communication, coordination, and collaboration among different entities in flood management activities. Improved communication, coordination and collaborative relations are needed both for jurisdictions' own flood management and decision-making (including facilitating funding proposals) and broader, regional-scale decision-making for successful implementation of this Flood Strategy. Successful collaborative efforts in the region can provide examples for future collaboration. It is important to build on these as well as the Flood Strategy development process itself, which also enhanced communication and relationships across many different jurisdictions and, in turn, benefited from improved relationships between jurisdictions, orders of government, and different sectors.

### **2.3.2 Improved Information and Tools**

The Lower Mainland is arguably the most data-rich area of the province. However, there are disparities in the level of and access to information across communities. Well-resourced jurisdictions with more information are better equipped to advance with flood planning and mitigation projects. This highlights a need to continue increasing the quality and currency of, and access to, information in strategic and equitable ways.

At the same time, there have been considerable new technical information and decision-support tools developed in recent years. See section 3.3 for a summary of several projects that aim to provide flood management agencies with increased knowledge and to implement a regional, coordinated approach to regional flood planning.

### **2.3.3 Recognition of the Need for Change**

Through the Flood Strategy development process, it became clear that public and private sector flood practitioners generally recognize that there are myriad challenges with the current way that Fraser River and coastal flood risk are managed in the Lower Mainland. There is also growing support and momentum – as evidenced by many local

planning initiatives as well as provincial and federal programs – for moving broadly from the status quo towards:

- **Holistic approaches** in which flood resilience objectives work together with environmental, social, cultural, economic, and other community values.
- **Integrated, risk-based approaches** in which non-structural and structural mitigation approaches strive to reduce the negative *consequences* of flooding and prevent the creation of additional risk.
- **Collaborative, interjurisdictional approaches** that recognize regional interdependencies, improves consistency, and address past and present inequities in flood management and resource allocation.
- **Flexible approaches** that recognize the unique circumstances of each community and are adaptable to respond to climate change and other future conditions.

### 2.3.4 Complementary Initiatives

There are many initiatives at the federal and provincial levels that are relevant to and aligned with this LMFMS, including (but not limited to):

- The **Sendai Framework for Disaster Risk Reduction**, of which BC and Canada are signatories, inspired the three core goals of the LMFMS and provide an internationally accepted framework to move towards a risk-based, all-of-society approach to flood management.
- **Funding programs** such as the Disaster Mitigation and Adaptation Program and BC's Community Emergency Preparedness Fund are supporting flood hazard and risk assessment and planning, recognizing the importance of understanding risk and undertaking planning before mitigation decisions can be made.
- The **Federal Flood Mapping Guidelines Series**, currently in development, provides guidance for flood mapping, risk assessment, land use, etc. and are exploring the development of standards, which will help facilitate consistency and shared knowledge.
- The **BC Declaration on the Rights of Indigenous Peoples Act** has formalized the Province's commitment to reconciliation with Indigenous peoples, providing a clear mandate for improving the ability for First Nations to advance flood management.
- The **BC Flood Emergency Plan**, which outlines emergency management operations among all orders of government and partners in mitigating, preparing for, responding to, and recovering from flood events, with a focus on coordination and collaboration
- The forthcoming updated **BC Emergency Program Act** will recognize mitigation as a core pillar of emergency management and place more emphasis on proactive risk reduction rather than only focusing on response and recovery.
- The forthcoming **BC Climate Preparedness and Adaptation Strategy** provides support for incorporating climate change considerations into flood planning.
- The Province of BC is developing a **BC Flood Risk Strategy**, which will be informed by many of the lessons learned from the LMFMS process and other province-wide flood initiatives.

There may be additional opportunities to leverage existing and emerging initiatives (including at the local level) to support the approaches recommended in this LMFMS.

Similarly, implementation of the LMFMS might require further refinement and/or additional alignment with one or more of the aforementioned initiatives.

### Feedback Questions

- **Is there anything significant that you would add to, delete from, or modify in Section 2 Flood Risk and Management in the Lower Mainland?**
- **Are there additional points that would help capture the key challenges and opportunities facing the region and the rationale for this Flood Strategy?**

	Section 2 Comment
	<p>Emergency response needs to be considered in some manner in the Strategy. Understanding the varying approaches and levels of protection and service is important to understand the current state should the Strategy move to implementation.</p> <p>Understanding operational components could also be an important part of understanding the economics of flood risk and management.</p>

## 3. Flood Strategy Development

### 3.1 Flood Strategy Development Process

#### 3.1.1 Approach to Flood Strategy Development

The LMFMS development process included a combination of technical analysis, information tool development, and engagement. This approach informed the content of this LMFMS document, including the scope of challenges and opportunities, the broad vision of flood resilience for the Lower Mainland, and the draft recommendations. This approach also strengthened knowledge, capacity and communication, among participants with several benefits including:

- Improving the base of knowledge about (and providing tools for assessing) Lower Mainland flood hazards and risk and options for flood risk reduction;
- Raising awareness about Fraser River and coastal flooding among (and providing tools for engaging) decision-makers, stakeholders, and the public;
- Providing opportunities for dialogue, discussion, and relationship-building among staff and officials with flood management roles in the four orders of government, the private sector and civil society; and
- Encouraging LMFMS partner and participating organizations to look at flooding through a regional, inter-jurisdictional lens.

The LMFMS initiative is inter-jurisdictional, driven by partners in the LMFMS that are governmental entities with flood-related responsibilities, together with non-governmental entities, such as infrastructure organizations, that manage flood-vulnerable critical infrastructure in the region.

During Phase 2 work, a Leadership Committee was established to provide oversight and strategic guidance, particularly on governance and funding aspects. The Leadership Committee includes senior representation from the Government of Canada, Province of BC, First Nations, local governments (through Metro Vancouver and Fraser Valley Regional Districts) and regional entities.

Work on the LMFMS is supported by the Joint Program Committee (JPC) for Integrated Flood Hazard Management (80+ active participants representing 66 partner organizations), technical advisory committees for each of the major projects and an environmental advisory committee.

Program management (coordination, facilitation and administration) was by the Fraser Basin Council, which throughout Phases 1 and 2 has briefed and worked with all partner groups, committees and consultants to advance the work, has communicated key results of each phase, and has provided opportunities for partner, stakeholder and public input.

**The partner entities, through their respective internal processes, have the role of reviewing initial drafts of the LMFMS, providing input, and determining next steps, including Flood Strategy adoption and implementation.**

As part of the LMFMS advisory process, a Vision was developed with several values and principles that were applied to guide the overall process to develop the LMFMS. After

initial drafting of the Vision by a working group, this was reviewed and refined by the Joint Program Committee, Leadership Committee and Environment Advisory Committee. It was further refined for inclusion in the LMFMS.

**The aim of the LMFMS process is to build a broad base of support for a common vision and set of recommendations that will work in concert to reduce flood risk across the Lower Mainland. If consensus can be achieved across a broad base of communities and organizations, this will provide a compelling case for otherwise difficult decisions about flood management projects, policies, programs and associated investments.**

### **3.1.2 Guiding Values and Principles**

The development of the Lower Mainland Flood Management Strategy has been guided by the following values and principles, presented in no particular order:

<ul style="list-style-type: none"><li>• Consider current and future flood hazards and the influence of a changing climate, including large and small flood events of varying frequencies</li><li>• Recognize that First Nations title and rights must be acknowledged and reconciled in a just and fair manner</li><li>• Be informed by different kinds of knowledge including traditional, scientific and local knowledge</li><li>• Emphasize preventative risk reduction measures while recognizing the continued need for preparedness, response and recovery measures</li><li>• Emphasize collaboration and consensus among the four orders of government (local, First Nations, provincial, federal), the private sector, and civil society, working together as neighbours with shared responsibilities to look after a shared region.</li></ul>	<ul style="list-style-type: none"><li>• Support equity in decision-making across the region, including but not limited to equity among urban and rural communities, river and coastal communities, First Nations and non-First Nations, and vulnerable populations</li><li>• Recognize regional inter-dependencies and the need to minimize harm and transfer of risk to neighbouring communities in flood management approaches</li><li>• Consider local and sub-regional circumstances including riverine and coastal flood hazards, urban and rural communities, and natural and built environments</li><li>• Recognize the importance of achieving social, cultural, economic and environmental outcomes, and that not all can be optimized at the same time and trade-offs or compromises may be necessary</li><li>• Include elements of integrated flood management and risk-based approaches wherever possible/appropriate</li></ul>
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## 3.2 About the Flood Strategy Development

### 3.2.1 Partners in the Flood Strategy

The Lower Mainland Flood Management Strategy initiative was formally launched in May 2014, supported by federal, provincial and local government funding and in-kind participation. As of November 2020 there were 66 partner organizations whose representatives have participated in the development of this initiative through funding, in-kind participation, or both: from the Government of Canada, the Province of British Columbia, Lower Mainland local governments, First Nations and other organizations.

The LMFMS process was designed to advance inter-jurisdictional dialogue, planning and collaboration on flood risk reduction in the Lower Mainland.

For a look at the structure of the partnership, the key advisory processes, and a list of partner entities, see **Appendix A: Partnership of the Lower Mainland Flood Management Strategy Initiative**.

### 3.2.2 Phases of the Lower Mainland Flood Management Strategy Initiative

There are three phases of the LMFMS initiative:

A brief description of key projects and deliverables is set out in Section 3.3 below. Reports, maps and background information on these projects can be found on the FloodWise website ([floodwise.ca](http://floodwise.ca)) or are available at the request of a partner organization in the LMFMS.

#### **Phase 1: UNDERSTANDING Flood Hazard, Risk and Risk Reduction (2014-2016)**

Phase 1 was focused on creating a clear, updated understanding of coastal and Fraser River floods and their impacts on the region. Work included an analysis of lower Fraser River and coastal flood scenarios (for present day and year 2100), a high-level regional assessment of flood vulnerabilities (what's at risk in flood hazard area), and a review of the state of flood protection works, policies and practices. These three projects established a compelling case to reduce flood risk in the Lower Mainland. Top findings from phase 1 include:

- Climate change is projected to result in larger and more frequent Fraser River and coastal storm surge flooding
- If there were multiple dike failures across the region during a 500-year Fraser River or coastal flood (0.2% Annual Exceedance Probability and current design standard) about 300,000 people would be displaced and flood damages could be in the range of \$20-30 Billion.
- The majority of flood protection dikes in the Lower Mainland do not meet current provincial standards for dike crest elevation or seismic resilience.

See Section 3.3 below and the [Phase 1 Summary Report](#) for more information.

## **Phase 2: TOOLING UP & STRATEGIZING for Future Floods (2016-2020)**

Phase 2 builds on the work of Phase 1, to develop tools and analysis as a foundation knowledge for the LMFMS. The work and results are summarized in this Draft Flood Strategy. Highlights of phase 2 include.

- Establishment of Leadership Committee of decision makers to provide strategic advice and explore options for governance and funding arrangements for LMFMS implementation. Highlights include:
  - Preliminary review of current and potential arrangements for decision making and funding to implement the LMFMS
- Facilitation of an ongoing outreach, dialogue and engagement process to solicit input and feedback on the LMFMS from partner and participating organizations, stakeholders and the public
- Facilitation of specific processes for First Nations participation and engagement on the LMFMS through collaboration with the S'ólh Téméxw Stewardship Alliance and Lower Fraser Fisheries Alliance, and later with the Emergency Planning Secretariat after it's establishment in 2018. Highlights of participation and engagement with Mainland Coast Salish First Nations include (2017-2020):
  - January and March 2017 workshops
  - Multiple individual and multi-community meetings and delegations
  - October 2019 Flood Forum and First Nations Caucus meeting
  - February, August, October and November 2020 workshops
  - Participation in LMFMS Committees
- Establishment of Environment Advisory Committee and implementation of flood and environment projects and workshops. Highlights include (2017-2020):
  - 3 workshops / field tours on Flood Hazards, Management and the Environment
  - Development of the Lower Mainland Flood and Environment Atlas
  - Research and analysis on the impacts and benefits of different flood management practices on the environment
  - Review of regulatory processes at the interface of flood management and the environment
- Flood Hazard Modelling and Mapping - Development of the HECRAS 2D hydraulic model of the lower Fraser River (including associated flood hazard areas)
- Lower Mainland flood Risk Assessment - Completion of a quantitative flood risk assessment and development of an online flood risk profile web portal
- Preliminary development of frameworks to evaluate, select and design structural and non-structural flood risk reduction measures

The culmination of the work outlined above in phases 1 and 2 of the LMFMS is this initial draft Lower Mainland Flood Management Strategy.

## **Phase 3: FINALIZING AND IMPLEMENTING the LMFMS (2021-)**

Phase 3 is the period for formal adoption of the LMFMS and plans for implementation.

## Lower Mainland Flood Management Strategy Strategy Development Timeline & Key Milestones

### Partners Regional Planning

LMFMS partners have worked together through a Leadership Committee, advisory committees, forums, workshops and presentations throughout the Strategy to advance inter-jurisdictional solutions on flood risk reduction

### Technical Tools & Analysis

New technical work to support the Strategy included an analysis of future flood scenarios, a regional vulnerability assessment and a review of flood risk reduction measures. New tools were developed for flood modelling and risk assessment

### Public Education & Engagement

Public education included media outreach and public presentations, launch of the FloodWise website and opportunities for input on the Phase 2 Draft report.

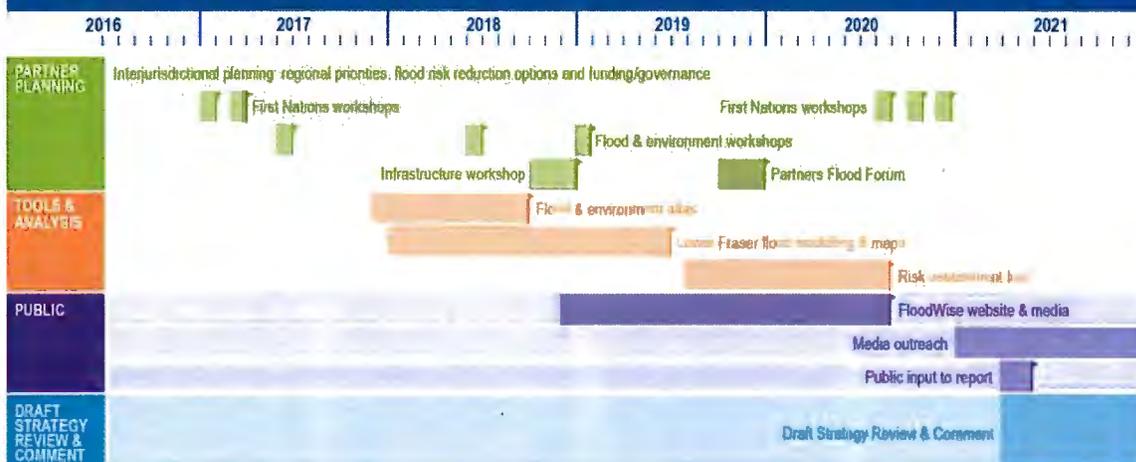
### Draft Strategy Review & Comment

Phase 1 and Phase 2 reports were developed in collaboration with partner organizations. Phase 2 draft for public comment and all final reports, maps and other materials are available at [floodwise.ca](http://floodwise.ca).

### PHASE 1: UNDERSTANDING Flood Hazard, Risk and Risk Reduction



### PHASE 2: TOOLING UP & STRATEGIZING for Future Floods



### PHASE 3: STRATEGY ADOPTION & IMPLEMENTATION



### **3.2.3 Public Engagement**

In 2021 the general public and other interests in the region that are not already actively engaged in the LMFMS initiative will be invited to provide input on key draft directions and recommendations. This input will be considered in completing the LMFMS. The engagement will also test public interest in learning more about flood and flood risk reduction.

## **3.3 Technical Analysis and Information Tool Development**

The following projects were undertaken as part of the development of the LMFMS. These projects resulted in information and in many cases tools that can be used by LMFMS partners and others to support additional flood-related planning and assessment. See Appendix C for additional details and results from these projects.

### **3.3.1 Regional Assessment of Flood Vulnerability**

The Lower Mainland Flood Management Strategy partners retained Northwest Hydraulic Consultants to carry out a flood vulnerability assessment in 2015- 2016. The study estimated flood-related direct losses and some indirect economic losses related to residential, commercial and public/institutional buildings, some infrastructure, cargo shipping delays and agriculture. Estimates are based on current population levels and development in Lower Mainland floodplain areas. If growth continues, the Year 2100 losses are likely underestimated. The project shows that the Lower Mainland is exposed to a high degree of flood risk. It demonstrates the urgent need for a comprehensive flood management strategy, and commitments for action.

### **3.3.2 Lower Mainland Dike Assessment**

In 2015 the Inspector of Dikes oversaw an assessment of Lower Mainland dikes as part of Phase 1 of the Lower Mainland Flood Management Strategy. The assessment, carried out by Northwest Hydraulic Consultants, shows that 71% of the assessed dikes are vulnerable to failure by overtopping during either a major Fraser River or coastal flood. Only 4% of assessed dike segments meet current provincial standards for dike crest height, which includes 0.6 m of freeboard above the water surface elevation of the design flood event. Based on average rankings across multiple criteria, the majority of assessed dikes in the Lower Mainland (69%) were scored as Poor to Fair, 18% as Unacceptable to Poor, and 13% as Fair to Good. Few of the dike segments assessed meet current provincial standards, and no dikes fully meet provincial standards. Among the report recommendations are to prioritize dike upgrades, and where it is not feasible to upgrade dikes sufficiently, to consider a range of structural and non-structural flood management strategies.

### **3.3.3 Lower Mainland Flood and Environment Atlas**

An online atlas was developed for collating best available data about environmental values and features along the Fraser River from Hope to Richmond and coastal foreshore areas from White Rock to Squamish, as relevant to the Lower Mainland Flood Management Strategy. The purpose is to understand how current and potential future flood infrastructure may adversely or beneficially impact the natural environment. Depending on the breadth, depth and quality of available data, the atlas might help identify environmental features that would need to be addressed in the selection, design, and siting of different flood mitigation projects. It could give early indication of the kinds of environmental issues that would need to be addressed in the regulatory process. It might also help identify candidate sites for protection, conservation, restoration, or compensation related to the LMFMS.

### **3.3.4 Flood Modeling and Mapping in BC's Lower Mainland**

The Lower Fraser River 2D Flood Model is a new tool developed to advance the Lower Mainland Flood Management Strategy and other flood planning work in the region. The model shows how water would move along the lower Fraser River and across the floodplain (from Hope to the Salish Sea) under different flood scenarios. 27 lower Fraser flood scenarios were modelled and mapped, reflecting different river flows and ocean levels and the resulting extent and depth of flooding, including from dike overtopping. For eight of the scenarios, potential dike breaching is directly simulated at one or more sample breach locations. Flood managers can use the scenarios to examine the areas that would be flooded under given conditions and where flooding may be most severe.

### **3.3.5 Lower Mainland Flood Risk Assessment**

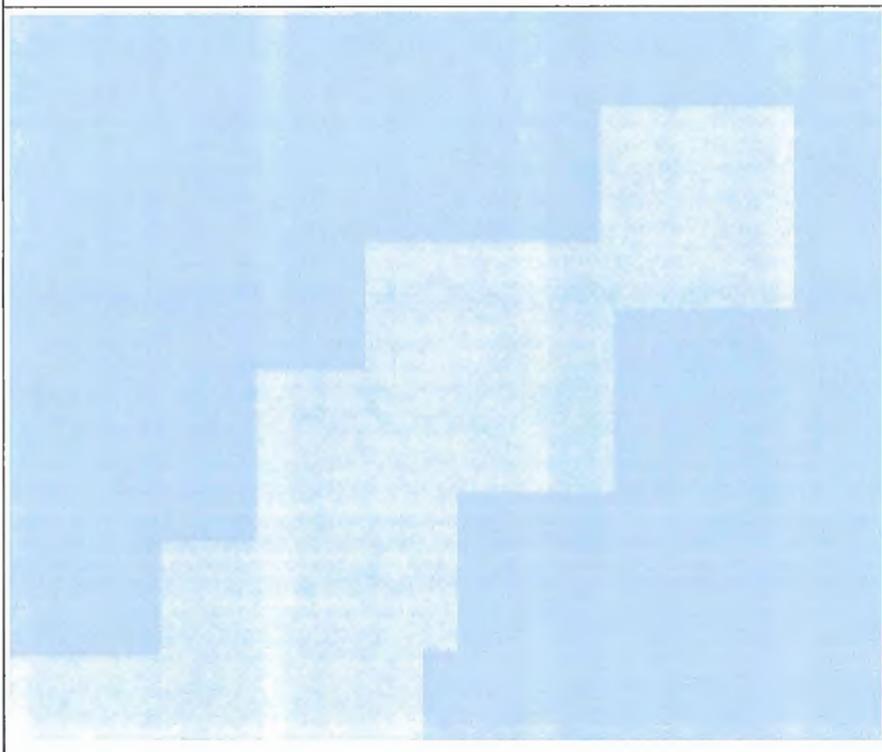
A risk assessment that identifies some of the significant direct and indirect impacts of a major Fraser River or coastal flood was recently completed for the Lower Mainland Flood Management Strategy. The flood risk assessment spans BC's South Coast — from Lions Bay to White Rock — and covers the lower Fraser River — from Hope to Richmond. It is based on hydraulic modelling of flood hazards and the best available datasets on flood exposure (including those for buildings, infrastructure, agriculture, the environment and social vulnerability). The aim of the work was to identify the potential impacts of the region's flood hazards on people and vulnerable assets. This could in turn, help identify flood risk areas from a wide range of perspectives. The risk assessment creates a helpful regional baseline profile of flood risk to inform the Lower Mainland Flood Management Strategy and other flood management work in the region.

### **3.3.6 FloodWise website**

*FloodWise in BC's Lower Mainland ([floodwise.ca](http://floodwise.ca))* is a first-stop website to support better public awareness of flood hazards, what is at risk in the event of a major flood, and the importance of flood risk reduction. The website is open to a wide range of audiences — people who are familiar with flood and those who are not. FloodWise underscores the value of collaboration among all orders of government in flood risk reduction, and it profiles local and regional work, in particular, the Lower Mainland Flood Management Strategy.

**Feedback Questions**

- **Is there anything significant that you would add to, delete from, or modify in Section 3 Flood Strategy Development?**

	Section 3 Comment
	

## 4. Flood Strategy Framework

### 4.1 Vision Statement

One of the tasks for the partners in the LMFMS initiative was to create a vision for flood risk reduction in the region and the overarching goals for the LMFMS. The following is the vision statement:

***A Flood Resilient Vision for the Lower Mainland***

*The Lower Mainland is a flood resilient region where people, communities and organizations are aware of flood hazards, risks and benefits, and work together to reduce flood risks in a way that supports community values, enhances the natural environment, and acknowledges regional interdependencies.*

### 4.2 Flood Strategy Goals and Objectives

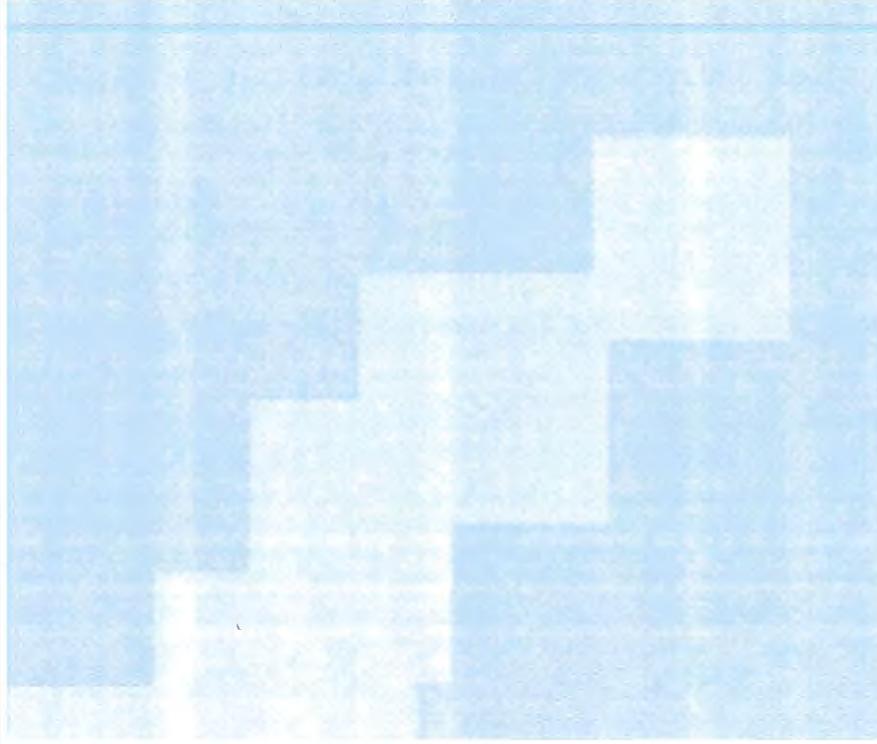
The LMFMS applies a regional lens and integrated, holistic approach to flood risk reduction and sustainability. Flood risk management and climate adaptation actions are identified, evaluated and prioritized for implementation through regional collaboration and consensus supported by the best available science, technical analysis and other knowledge. The LMFMS presents an opportunity to provide new directions on and improve the management of Fraser River and coastal flood risk in the Lower Mainland. This is done through three overarching goals and specific objectives.

<b>Goals</b>	<b>Objectives</b>
<b>Goal 1: Improve understanding of Lower Mainland flood risk and increase awareness</b>	1.1 Improve awareness and understanding of Fraser River and coastal flood risks (hazards, impacts and probability), including the impacts of climate change on flood hazard, among decision-makers, stakeholders and the public to enable informed decision-making and investment
	1.2 Improve access – and equity in access - to information needed to support decision-making across society (four orders of government, private sector (e.g. property owners, infrastructure agencies) and civil society)
	1.3 Improve understanding of risk-based flood management, including probability, the geographic distribution of risk and risk reduction approaches that are not common / mainstream in BC
<b>Goal 2: Support investment and actions to reduce flood risk, avoid the creation of new risk, and build resilience of communities, ecosystems and</b>	2.1 Reduce Fraser River and coastal flood risk through integrated, preventative, proactive, risk-based approaches that emphasize reducing exposure and vulnerability in addition to hazard management.
	2.2 Encourage innovative approaches to flood risk reduction, particularly nature-based and non-structural approaches, that achieve multiple sustainability benefits (social, cultural, environmental and economic) and do not transfer or promote the creation of risk

<p><b>critical infrastructure</b></p>	<p>2.3 Improve the flood resilience of ecosystem and environmental assets and achieve benefits for ecological protection, enhancement, and recovery through flood management decisions</p>
	<p>2.4 Improve the flood resilience of vulnerable/underserved populations and achieve social and cultural benefits through flood management decisions</p> <p>2.5 Improve the flood resilience of critical infrastructure, lifeline services and essential sectors, particularly those with cross-jurisdictional reach or impacts</p> <p>2.6 Account for the impacts of climate change in flood planning and decision-making and encourage future adaptability to be built into investments and policies</p> <p>2.7 Improve capacity for emergency preparedness, response, and recovery</p>
<p><b>Goal 3: Strengthen flood risk governance in the Lower Mainland</b></p>	<p>3.1 Improve coordination and collaboration in flood management activities among the four orders of government, the private sector and civil society</p> <p>3.2 Advance reconciliation through strengthened relations and mechanisms for collaboration between First Nations and other governments and advance First Nations interests and values, title and rights in flood management activities and decisions</p> <p>3.3 Improve transparency and consistency in flood planning and decision-making approaches, but allow for flexibility in mitigation actions.</p> <p>3.4 Improve local and regional capacity including staff expertise, information and sustainable funding for flood management</p> <p>3.5 Account for inter-jurisdictional impacts and regional interdependencies in flood management decisions</p> <p>3.6 Address historical and current inequities in flood management and ensure equitable access by First Nations governments to opportunities for flood risk reduction</p> <p>3.7 Close legislative/policy gaps to promote integrated, risk-based flood management and better sharing of risk and costs among the four orders of government, the private sector and civil society</p>

**Feedback Question**

- **Is there anything significant that you would add to, delete from, or modify in Section 4 Flood Strategy Framework?**

	Section 4 Comment
 <p>FOR COMMENT</p>	

## 5. Recommended Actions

This section presents draft recommendations under the following headings:

<b>Improve Understanding of Flood Risk</b>	Flood Hazard and Risk Information Information Access and Sharing Educating on Flood Hazard and Risk
<b>Reduce Flood Risk and Increase Resilience</b>	Enabling and Regulating Proactive Flood Risk Management Evaluating, Selecting and Designing Flood Risk Reduction Initiatives Guidance and Knowledge-building for Flood Risk Reduction Further Study on Flood Risk Reduction Opportunities Enhancing Emergency Response and Recovery
<b>Flood Risk Governance</b>	Collaborative and Coordinated Flood Planning Reconciliation with First Nations Regional Prioritization of Flood Risk Areas

The development of recommendations drew from an analysis of the input received and technical information available to date. Section 3.3 and Appendix C outline several key types of technical analysis that were undertaken to inform LMFMS development. See Appendix A for an overview of the LMFMS partners and participating organizations, the LMFMS committee structure, and a variety of workshops and other engagement mechanisms that were facilitated to receive input on the LMFMS development. This input was extremely beneficial to complement targeted technical analysis – such as regional flood hazard and risk modeling – with the insights, experiences and knowledge of those working on the front lines to manage flood hazards and risks. A special thanks to those individuals and their organizations for guiding and shaping the recommendations that follow.

*Section 5 (Recommended Actions) provides a rating scale and comment box for each recommendation. **Please review and rate the level of support likely to be achieved within your organization** for each recommendation with a rating of High, Medium/Mixed or Low Support. Provide a comment if you wish, and particularly if you indicate “Low” support or if you have “Medium/Mixed” support with some reservations or suggestions to improve the recommendation. This will help the project team clarify where there is strong support and/or consensus and where more work is required.*

**For each recommendation, we particularly welcome your thoughts on the following questions:**

- *Is it clear and actionable?*
- *Is there a better way to address the same challenges or achieve the same (or additional) objectives, either through rewording or a different recommendation altogether?*
- *What issues, if any, do you anticipate with gaining acceptance by your organization’s senior officials, getting consensus among LMFMS partners, or implementing the recommendation? How can we overcome these issues?*

## 5.1 Improve Understanding of Flood Risk (Goal 1)

### 5.1.1 Flood Hazard and Risk Information

**Challenge:** There are many information gaps and limitations regarding flood hazards and risks in the Lower Mainland. Historically, local and First Nations governments have lacked information or developed their own information about flood hazards and risks using different approaches of varying accuracy and with different time-stamps. Most communities and organizations do not have the capacity or mandate to assess flood hazards and risks at the regional scale.

#### RECOMMENDATIONS

1. **Establish a long-term regional-scale program to facilitate flood hazard and risk modeling and mapping and improve access to resources and information** needed to make evidence-based, sound decisions about flood management. The program could:
  - a. Continue to collect, aggregate and disseminate previously developed flood hazard and risk information to local and First Nations governments and other organizations
  - b. Provide regional-scale information and modeling, mapping, and other support services for local and First Nations governments and other organizations, where appropriate, to inform flood planning, risk reduction initiatives, and emergency response.
  - c. Update and continually improve science, engineering, and technical analysis to inform longer-term hazard analysis, risk assessment, dike assessment, and flood planning and decision-making for risk reduction
  - d. Update the existing Lower Fraser 2D hydraulic model and undertake, where needed, additional hydraulic model runs and dike breach analyses
  - e. Develop guidance and offer training on the use and/or potential of the Lower Fraser hydraulic model.
  - f. Enhance and broaden the application of the Lower Mainland Flood Risk Assessment (for example, integrating First Nations and other data into the risk model, creating flood risk maps, refining dike failure probability, refining main floor building heights, and developing future scenarios) and review or update the assessment every five years.

	Level of Support			Recommendation 1 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

2. **Develop a single and consistent floodplain map, flood hazard area map, or set of maps for the Lower Mainland** and update over time as appropriate. This could be an official floodplain designation map or intended as a high-level planning tool.

	Level of Support			Recommendation 2 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

3. **Develop flood maps to inform emergency preparedness and response** (including identifying people and assets at risk, evacuation planning, etc.)

	Level of Support			Recommendation 3 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Individual municipalities and organizations may have maps/plans in place, coordination and consistency would be important as well as understanding the various levels of response.

4. **Identify needs for and develop other mapping tools using existing information to inform different audiences.** For example, public facing maps to support understanding and real estate purchases and/or support provincial / federal programs such as the National Risk Profile, etc.

	Level of Support			Recommendation 4 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

5. **Develop a sustainable, long-term source of funding for the BC Storm Surge Forecast Model** (for flood response).

	Level of Support			Recommendation 5 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

6. **Explore the feasibility, value, and opportunities for developing a regional coastal flood model for the Lower Mainland** to improve understanding of coastal flood hazards and risks (for longer-term planning) and consider the potential and value of integrating the coastal model with the Lower Fraser River HECRAS 2D flood model.

	Level of Support			Recommendation 6 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

- 7. Undertake a detailed field engineering assessment of existing dikes to understand the current condition, standards and/or probability of failure. This could then be incorporated into updated hydraulic modeling and risk assessments to inform prioritization of flood risk reduction actions, such as potential upgrades.**

	Level of Support			Recommendation 7 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- 8. Funding programs should include technical analysis as an eligible project and/or eligible expense and should require technical analysis to support feasibility and design of new works or major upgrades.**

	Level of Support			Recommendation 8 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

### 5.1.2 Information Access and Sharing

**Challenge:** There are few protocols for sharing and using information across jurisdictions and no single platform for providing information about local flood management activities. This is a particular challenge for small communities with limited staff and financial resources. Improving information access and sharing would enable more informed planning and improve the likelihood of coordinated and more consistent decision-making.

### RECOMMENDATIONS

- 9. Explore opportunities and establish protocols for including traditional knowledge and protecting/securing data and information owned by First Nations used in collaborative flood planning and decision-making. This could include supporting First Nations communities in recording elders' and knowledge keepers' knowledge about flood hazards, risks, and related issues.**

	Level of Support			Recommendation 9 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**10. Make flood information and tools, and technical services available to smaller communities at little or no cost.**

	Level of Support			Recommendation 10 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**11. Provide opportunities for sharing information, best practices and lessons learned from local flood planning processes to build capacity among others in the region.**

	Level of Support			Recommendation 11 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**12. Establish and update an accessible inventory of in-process and completed flood initiatives in the Lower Mainland at all scales, including but not limited to projects undertaken through existing funding programs. This would improve sharing of information across all orders of government to improve knowledge on funding recipients from other streams (CEPF, NDMP, FN Adapt, DMAF and other).**

	Level of Support			Recommendation 12 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**5.1.3 Educating on Flood Hazard and Risk**

**Challenge:** Many Canadians have low awareness of flood hazards and risks where they live, according to 2016 and 2020 national surveys conducted by the University of Waterloo. In the Lower Mainland, the last big Fraser River flood occurred in 1948 – and consequently the majority of residents, business owners, government staff and elected decision makers have little or no first-hand experience of a large flood event. A low level of public awareness on flood may contribute to increased flood risk over time. For cost saving and convenience, developers are attracted to siting new homes, businesses, industries and infrastructure in flat, low-lying areas, even in communities where other options may exist. When residents are informed, they are better positioned to avoid flood risks, to support floodproofing measures, and to understand why flood authorities have to make policy choices on land use and investments for flood risk reduction.

**Opportunity:** In the Phase 2 of the LMFMS initiative an educational FloodWise website was launched, together with a two-part video series and online story map. These public education materials provide a good foundation for future public education outreach in Phase 3 by governments or other entities.

Target audiences for outreach include the general public (respecting language and cultural diversity), decision-makers in public and private sectors, critical infrastructure agencies, businesses that offer floodproofing and flood resilience design services, and various stakeholders operating in flood hazard areas.

The following are some specific areas where educational materials would be beneficial:

- General flood awareness and knowledge about risk reduction options, collective and individual
- Where flood hazard areas are located in the region and their community
- Risks of locating in a flood hazard area (Fraser River and coastal)
- Flood risk management and risk tolerance
- Benefits of land use planning and flood hazard area regulations such as flood construction levels, and floodproofing
- How risk and costs are shared/borne among different parts of society (governments, private sector, infrastructure, residents)
- Costs and benefits of action and inaction
- Use of visuals and storytelling in addition to facts and data.

## RECOMMENDATIONS

**13. Develop and implement an education, information and communications program on flood hazards, risks and risk reduction measures to raise awareness and understanding.**

	Level of Support			Recommendation 13 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

## 5.2 Reduce Flood Risk and Increase Resilience (Goal 2)

### 5.2.1 Enabling and Regulating Proactive Flood Risk Management

**Challenge:** There is significant risk within flood hazard areas that are behind diking systems. The majority of dikes in the Lower Mainland do not meet current provincial standards for crest elevation and seismic resilience and are vulnerable to failure. There are numerous challenges related to dike operations and maintenance, major repairs and upgrades, adverse impacts on the environment, and varying capacities among diking authorities. Limited and inconsistent application of land use planning and development controls for flood management across the Lower Mainland supports continued development in flood hazard areas, increasing risk. There is potential for land use planning and other non-structural approaches to play a larger role in reducing exposure and vulnerability and preventing the creation of additional risk. A mix of enabling, incentivizing and regulatory approaches are recommended for consideration.

## RECOMMENDATIONS

**14. Amend provincial documents and communications** so that 'hazard management' is changed to 'risk management' where appropriate.

	Level of Support			Recommendation 14 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**15. Advocate for the BC Flood Risk Strategy and accompanying policies/plans/legislation to reconfigure incentives for better land use planning** to limit development in high-risk areas.

	Level of Support			Recommendation 15 Comment
	High	Medium / Mixed	Low	
		<input checked="" type="radio"/>		

**16. Amend legislation to require local governments with public or private assets within the 0.2% AEP flood hazard area to establish a flood bylaw** in flood risk areas. Set minimum requirements for new and updated flood bylaws in the region, including restrictions on development (including redevelopment and expansions), flood construction levels and other floodproofing measures, and use of flood mapping including climate change scenarios. If exceptions to the requirements are permitted due to undue hardship, establish a transparent process by which they would be considered on a case-by-case basis.

	Level of Support			Recommendation 16 Comment
	High	Medium / Mixed	Low	
		<input checked="" type="radio"/>		

**17. Update the Flood Hazard Area Land Use Management Guidelines** and make it a policy for the guidelines to be applied when adopting a flood bylaw.

	Level of Support			Recommendation 17 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**18. Establish flood construction levels for the entire Lower Mainland** that account for flood levels under sea level rise and other climate change conditions. Alternatively, provide guidance, incentives, and/or policy requirements to adopt more consistent flood construction levels across the Lower Mainland.

	Level of Support			Recommendation 18 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**19. Amend legislation to require dike authorities to develop and maintain flood risk management plans and strategies for their respective areas to support achievement of regional goals and objectives.**

	Level of Support			Recommendation 19 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**20. Adopt a risk-based approach to funding approvals of dike infrastructure by accounting for consequences (what is protected behind a dike), not just hazard.**

	Level of Support			Recommendation 20 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	In consideration of 20&23; what measures would be eligible for funding? Both Operating and Capital. Who administers funding? How would funding programs, priorities and funding levels be established?

**21. Update dike design standards to include flood levels under climate change scenarios.**

	Level of Support			Recommendation 21 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**22. Include requirements and/or incentives attached to accessing funding for structural approaches such as requiring integrated flood planning at the local or sub-regional scale.**

	Level of Support			Recommendation 22 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**23. Change legislation and regulations to grant more authority to local / regional entities to advance innovative flood mitigation infrastructure, including, but not limited to, nature-based approaches.**

	Level of Support			Recommendation 23 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	In consideration of 20&23; what measures would be eligible for funding? Both Operating and Capital. Who administers funding? How would funding programs, priorities and funding levels be established?

**24. Raise flood awareness among homebuyers** through collaboration with realtors.

	Level of Support			Recommendation 24 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**25. Require notice on property title** regarding flood hazard areas and/or floodplain designation.

	Level of Support			Recommendation 25 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**26. Combine an education program with an incentive program to increase the use of floodproofing measures**, including new buildings and retrofitting existing buildings and structures in flood hazard areas.

	Level of Support			Recommendation 26 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

### 5.2.2 Evaluating, Selecting and Designing Flood Risk Reduction Initiatives

**Challenge:** Many of the limitations of recent approaches to managing flood risk have been discussed in earlier sections: high operations and maintenance costs, difficulty in adapting to changing conditions, environmental impacts, lack of coordination or consistency across jurisdictions, and so forth. Innovative, sustainable, and adaptable approaches are needed so that flood risk reduction initiatives in this region reflect the values and interests summarized in this LMFMS.

A regionally agreed-upon set of criteria for identifying, designing, and evaluating risk reduction options and initiatives would provide a common understanding about how to reduce flood risk in a way that is equitable, minimizes negative impacts and produces positive co-benefits, can be adapted and sustained in the long term, and supports the values identified by LMFMS partners, while recognizing that the same approaches will not be appropriate in all circumstances.

#### RECOMMENDATIONS

- 27. Use the following set of criteria in the identification and evaluation of flood risk reduction options and the design of flood risk reduction initiatives.** Initiatives in this section would include infrastructure, nature-based works, land use or other types of policy, regulation or program that proactively and in the long-term contribute to the reduction of flood risk. It does not include emergency measures.

	Level of Support			Recommendation 27 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**28. Refine and integrate the following set of criteria as part of a decision-making framework for evaluating proposed flood risk reduction initiatives, based on further consultation with all LMFMS partners.** Further consultation is needed to refine the criteria and inform the development of an evaluation, weighting, and scoring scheme.

	Level of Support			Recommendation 28 Comment
	High	Medium / Mixed	Low	
		<input checked="" type="radio"/>		

**29. Adopt and implement the risk reduction initiative evaluation framework in funding and project decision-making.** Doing so, especially in conjunction with the implementation of the prioritization framework as described in section 5.3.3, would be a significant step towards achieving the vision of the LMFMS.

	Level of Support			Recommendation 29 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**30. Review and update the framework as new information becomes available or once every 5 years.** It is important that emerging best practices are incorporated into the framework and practices that are no longer considered suitable be considered for removal.

	Level of Support			Recommendation 30 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

The criteria include considerations for both the process and the end “product” (infrastructure, policy, regulation, program, etc.) of the proposed initiative under four categories:

- A. Flood Risk Impacts:** Impacts of the initiative on flood risk, including a cost-benefit analysis
- B. Alignment:** Alignment with legislation and other frameworks, and with the other parts of an integrated flood management approach
- C. Design:** Design of the end product for positive (flood and non-flood) impacts and longevity/adaptability
- D. Process:** Process of planning, design, and implementation of the initiative

The order in which the criteria below are presented are not representative of their relative importance. There may be overlaps among some criteria.

<b>A. Flood Risk Impacts</b>	
<b>A1. Potential for flood risk reduction or creation</b>	How the initiative will reduce the impacts of Fraser River or coastal flood hazards and/or prevent the creation of additional flood risk. The timeframe of results would depend on the nature of the initiative. Residual risk should be acknowledged and accounted for. The amount of existing risk reduced, or new risk avoided may be considered proportional to the size and characteristics of the jurisdiction. The five risk categories from the LMFRA could be used, but qualitative measures of risk can be included.
<b>A2. Potential for risk transfer or benefits to other jurisdictions</b>	How the project identifies potential risks to other jurisdictions and how it will avoid the transfer of flood risk to other parts of the jurisdiction and outside the jurisdiction (e.g., as demonstrated by evaluating local and regional hydraulic effects). How the project considers potential risk reduction benefits for neighbouring jurisdictions and leverages opportunities to reduce flood risk in more than one jurisdiction.
<b>A3. Cost-benefit</b>	How the project produces risk reduction benefits relative to the life-cycle cost. Costs should include capital costs (including acquisition of land and rights of way) and estimated operational and maintenance costs. (Target/threshold TBD)

<b>B. Alignment</b>	
<b>B1. Reconciliation with First Nations</b>	How the proposed process and product are designed in ways that advance reconciliation with Mainland Coast Salish First Nations in alignment with DRIPA, engage meaningfully with First Nations, address historical and current inequities in flood management, and strive to protect important First Nations values.
<b>B2. Alignment with plans, legislation, frameworks, and standards</b>	How the project aligns with or advances the objectives of existing legislation, regulation, strategies, guidelines, frameworks, and plans (e.g., land use, asset management, climate adaptation). How the project intent, design, and methods align with the vision, goals, and objectives of the LMFMS. Where it does not align, demonstrate rationale (e.g., if it adopts a more rigorous standard or does so to achieve other criteria).
<b>B3. Integrated flood management</b>	How the proposed initiative contributes to an integrated, multi-faceted approach to flood risk reduction as appropriate to the circumstances of the community. How it complements existing and planned flood management approaches.

<b>C. Design</b>	
<b>C1. Innovation</b>	How innovation is demonstrated as part of the initiative, for example through natural infrastructure, policy, new technologies and/or global best practices in the design, operations, and management/administration of the process and end product. How monitoring is incorporated to demonstrate effectiveness. This criterion may relate to all of the below.

<b>C2. Design-life and adaptability</b>	How the initiative is designed in to adapt and/or be sustained in response to changing conditions and flood risk due to climate change, new information and technologies, and other changes. How it can continue to reduce risk and meet standards throughout its whole design life. <i>[Something about seismic here?]</i>
<b>C3. Critical infrastructure resilience</b>	How the initiative will strengthen the flood resilience of critical and lifeline infrastructure systems and essential sectors such as agriculture, for example by reducing their flood vulnerability or exposure, reducing negative impacts from the risk reduction measure itself, or improving capacity and redundancy.
<b>C4. Environmental outcomes and ecosystem resilience</b>	How the initiative will avoid/minimize negative impacts (including erosion and pollution) on – and strengthen the resilience of – river, coastal and other sensitive ecosystems; protect and enhance fish and wildlife habitats, restore or protect ecosystem services, reduce the potential for contamination of sensitive areas during a flood, or provides other positive environmental outcomes. How nature is included as part of the approach, particularly for engineered works.
<b>C5. Social and cultural resilience</b>	How the project will avoid/minimize negative impacts on – and strengthen the flood resilience of – vulnerable populations and groups, protect irreplaceable cultural assets, or enhance public health and safety and positive social outcomes, for example through enabling recreational opportunities.
<b>C6. Economic resilience</b>	How the project will contribute to economic resilience, for example through reducing the flood vulnerability and exposure of key sectors; reduce negative socio-economic impacts, and advances equity, for example by increasing the capacity of marginalized or under-resourced groups, jurisdictions, or communities.
<b>C7. Whole-of-society approach</b>	How the project supports a whole-of-society approach to flood risk management, contributes to a more sustainable and equitable sharing of risk and cost, and promotes better decision-making and behaviour.

<b>D. Process</b>	
<b>D1. Cross-jurisdictional collaboration coordination</b>	How the lead agency intends to partner, collaborate, coordinate, and/or engage with other governments and entities, including potentially affected First Nations governments (both on neighbouring reserves and those whose traditional territories may be affected by the project) and infrastructure/utilities providers. How the project contributes to a cooperative and regional approach to flood risk reduction.
<b>D2. Community Engagement</b>	How the lead agency will engage and consult (and has already engaged and consulted) with affected communities including First Nations communities, subject matter experts and/or academia, and other stakeholders and agencies. What public participation principles and practices will be used to ensure an accessible, equitable, cost-effective, and otherwise robust engagement process?
<b>D3. Use of</b>	How the lead agency will use (and has sought) current available

<b>information</b>	flood hazard and risk information and other required information to support the design, planning, and implementation of the initiative.
<b>D4. Design process</b>	How the initiative has involved or will include a robust, iterative design or development process where feasible, for example by identifying and evaluating alternative approaches and refining them prior to arriving at the final initiative.

### 5.2.3 Guidance and knowledge-building for flood risk reduction

**Challenge:** Although there is a growing awareness about flood hazard and risk among professionals and practitioners across the Lower Mainland, there are significant gaps in knowledge and experience when it comes to integrating flood hazard and risk into planning processes, infrastructure design, and decision-making. This is particularly challenging in the context of a changing climate and associating changes in flood hazards. Several communities and organizations are “learning by doing”, and there are also opportunities for “peer learning” through professional associations, professional practice guidelines, and collaborative processes like the LMFMS. However, resources are stretched, and there is a need for more efficient and effective mechanisms to develop and deliver leading edge guidance and best practices across many different aspects of flood risk management from collaborative planning, to policy analysis, to nature-based solutions and other innovations.

#### RECOMMENDATIONS

**31. Develop guidance on the development and use of risk-informed and risk-based decision making** inclusive of the concepts of risk evaluation and a broad range of risk mitigation actions.

	Level of Support			Recommendation 31 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**32. Develop guidance on how flood risk reduction measures can be designed and implemented to be resilient to future flood scenarios** resulting from a changing climate, including multiple possible future conditions.

	Level of Support			Recommendation 32 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**33. Develop guidance for governments, infrastructure providers, and others on how to establish risk tolerance** and what level of development or risk is appropriate or acceptable.

	Level of Support			Recommendation 33 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**34. Provide training and guidance, including developing model flood bylaws and other flood-related planning policies,** to improve understanding, capacity and uptake by local governments.

	Level of Support			Recommendation 34 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**35. Develop guidance on land use approaches for flood management in Mainland Coast Salish First Nations communities,** including those available through the Land Code, other legislative and policy provisions, and indigenous law. There is recognition of current and historical constraints associated with existing legislation, the reserve system and limited availability of land, challenges with retreat and relocation, and impacts of climate change including sea level rise.

	Level of Support			Recommendation 35 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**36. Develop guidance, and education on non-traditional, innovative flood protection infrastructure designs,** including infrastructure suited for densely urbanized areas with limited available footprint.

	Level of Support			Recommendation 36 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**37. Develop guidance on how to include environmental considerations and achieve positive environmental benefits,** including restoration of fish habitat, in the design, operations, maintenance and upgrading of flood infrastructure projects.

	Level of Support			Recommendation 37 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**38. Develop guidance on nature-based flood risk reduction approaches** to support uptake (including as pilot projects). For example, conduct a study on a region-wide scale of where, in what circumstances, and through what mechanisms, nature-based structural approaches may be feasible and what legislation or policies need to change to support more innovation and encourage experimentation in this area.

	Level of Support			Recommendation 38 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**39. Continue work that is underway through the Seismic Assessment and Geotechnical Investigations to:**

- a. Develop guidance on the interaction of flood and earthquake risks including seismically resilient flood infrastructure design
- b. Conduct research and facilitate advice and guidance on mechanisms to improve seismic resilience of high consequence dikes including feasibility, cost implications, potential for dike repairs post-earthquake, competition / prioritization of recovery resources, etc.

	Level of Support			Recommendation 39 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**40. Develop guidance on flood resilient critical infrastructure design and sector-specific analysis of flood risk reduction measures. Investigate the potential of a program to improve the flood resilience of existing critical infrastructure.**

	Level of Support			Recommendation 40 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**5.2.4 Further Study on Flood Risk Reduction Opportunities**

**Challenge:** Flood hazard management in BC over the past 50 years has been primarily focused on flood protection dikes, horizontal setbacks from watercourses, and flood construction levels. The significance of flood risk in the Lower Mainland and the diversity of communities and land uses across the region, requires a much more diverse toolkit, particularly in the context of climate change. However, we have limited experience with other approaches in this region such as living dikes and other nature-based approaches, different techniques for wet and dry floodproofing, or sector-specific resilience measures that can reduce risk for different types of infrastructure, or the agricultural sector for example. In some cases, further research and analysis is required to assess the suitability of different measures as opportunities to reduce flood risk in the Lower Mainland.

## RECOMMENDATIONS

- 41. Conduct research, analysis, and engagement with agricultural stakeholders** to explore the impacts and benefits of various flood risk reduction options.

	Level of Support			Recommendation 41 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- 42. Develop policy recommendations on how to improve the balance** between those who benefit from risk creation and those who bear the costs.

	Level of Support			Recommendation 42 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	This is an important aspect of the Strategy. Clarity and understanding on the mechanism would be helpful, is this a potential source of revenue for the new entity? Municipalities have limited capacity to fund from EXISTING revenues.

- 43. Conduct a study on the costs and benefits of, and opportunities for, floodproofing** existing buildings and structures in coastal and Fraser River flood hazard areas. Include exploration of different floodproofing techniques, levers for making it happen (policy/regulation for new/renovated buildings, incentives for existing buildings, etc.), and recommendations for guidance and pilot programs.

	Level of Support			Recommendation 43 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- 44. Study the feasibility of, and options for, land use measures** such as transfer of development/density rights, managed retreat, and other emerging and innovative approaches in the Lower Mainland context. For example, conduct a study on a region-wide scale of where, in what circumstances, and through what mechanisms, managed retreat may be feasible / desirable.

	Level of Support			Recommendation 44 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- 45. Explore the feasibility, effectiveness, and designation of "safe to flood" areas** to provide controlled flooding, and the cost-benefit of doing so with or without compensation (e.g., agricultural lands with more resilient, easy-to-recover crops). Research compensation mechanisms in BC and other jurisdictions and explore the feasibility of, and options for, compensation such as payments for ecosystem services.

	Level of Support			Recommendation 45 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**46. Undertake further study on flood storage options and effectiveness and limitations for reducing flood risk**, including both upstream storage capacity and restoring blocked-off sloughs and side channels to increase flow capacity. Assess the storage capacity of the Nechako and Bridge River reservoir systems, as well as operational constraints and administrative/regulatory requirements.

	Level of Support			Recommendation 46 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**47. Undertake research, data collection, monitoring, analysis and modeling to update knowledge about lower Fraser River sedimentation and erosion patterns.** Gravel and sand deposited and moved within the lower reaches varies from year to year and over decades as basin hydrology changes and new sources of sediment are mobilized. Climate change may also impact sediment transport patterns as a function of changing flow patterns. Most studies to date suggest little or no flood reduction benefit resulting from sediment removal. Questions remain about maintaining channel flow capacity within existing dikes, and potential opportunities for habitat restoration. This recommendation includes, but is not limited to:

- a. Update the sediment budget (inflow, deposition and movement of gravel, sand) including future projections;
- b. Identify areas of aggradation, degradation, erosion, and channel stability;
- c. Study sedimentation and erosion processes in relation to fish habitat;
- d. Study the potential for sediment management (different approaches) to decrease flood and erosion hazards while minimizing adverse impacts to fish habitat and channel stability;
- e. Study the potential for sediment management activities to improve fish habitat; and,
- f. Based on the findings above, if beneficial for flood risk reduction and/or ecosystem health, develop a long-term sediment management plan.

	Level of Support			Recommendation 47 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

## 5.2.5 Enhancing Emergency Response and Recovery

**Challenge:** The LMFMS initiative has largely focused on proactive, preventative measures to reduce flood risk in the Lower Mainland. However, floods are natural events and will occur again. Therefore, it is critical that there is also a high degree of capacity and sufficient resources for emergency response and recovery. First Nations participation in the LMFMS engagement process identified particular gaps with respect to information and capacity to support First Nations emergency response activities. This is an important challenge to address, especially for those First Nations who have little or no flood protection infrastructure and are vulnerable to smaller and more frequent flood events.

The lack of a flood recovery plan was also identified in the LMFMS engagement process. The consequences of a regional-scale Fraser River or coastal flood would be significant and widespread, with major challenges in terms of prioritizing recovery and delivering the necessary resources to rebuild. Planning ahead for flood recovery should support a more efficient and effective flood recovery process.

### RECOMMENDATIONS

- 48. Improve flood forecasting and warning information** with specific, relevant flood level triggers for each First Nation community to inform mitigation measures, responses, evacuation, etc.

	Level of Support			Recommendation 48 Comment
	High	Medium / Mixed	Low	
		●		

- 49. Enhance First Nations capacity for emergency preparedness, response, and recovery**, including training and an inventory of existing resources and assets in each community.

	Level of Support			Recommendation 49 Comment
	High	Medium / Mixed	Low	
	●	○	○	

- 50. Develop a regional flood recovery plan** in alignment with the vision, goals and objectives of the LMFMS.

	Level of Support			Recommendation 50 Comment
	High	Medium / Mixed	Low	
	●	○	○	Understanding the emergency response across the region would be interesting, what actions and levels of protection are provided?

## 5.3 Flood Risk Governance (Goal 3)

Managing flood hazards and risks is complex, multi-dimensional and inter-jurisdictional. When they occur, floods cross many political and administrative boundaries. Many agencies and organizations have roles, but no single organization is fully responsible or accountable for reducing flood risk at the regional scale. There is no overall strategy or process of setting regional priorities.

There is broad recognition that the status quo, or business as usual approach is inadequate for many communities and organizations in the Lower Mainland. To complement existing jurisdictions, a coordinated, collaborative and regional-scale approach is needed along with more substantial resources and capacity.

### 5.3.1 Collaborative and Coordinated Flood Planning

**Challenge:** Flood planning and management responsibilities are widely distributed, including all orders of government. In many cases, multiple departments and branches are involved within a single order of government. In addition, a wide range of infrastructure organizations is exposed to flood hazards and there are many different types of land ownership and tenure, creating a complex mosaic of diverse and overlapping jurisdictions across the flood hazards areas of the Lower Mainland. Therefore, there is need for collaborative and coordinated planning, decision-making and implementation of the LMFMS. Collaboration among multiple jurisdictions and perspectives is most likely to advance flood measures that are holistic and integrated.

#### RECOMMENDATIONS

- 51. Establish formal mechanisms for improved coordination and collaboration between all jurisdictions** in flood-related assessment, planning and decision-making including First Nations, Local, Provincial and Federal orders of government as well as critical infrastructure and stakeholders.

	Level of Support			Recommendation 51 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

- 52. Support local and sub-regional collaborative planning processes with funding and technical expertise** to enable neighbouring and other jurisdictions to share information, build a common understanding, co-create optimal measures to reduce flood risk, and advance other common goals through improved coordination and collaboration.

- a. A variety of agreements / MOUs and other arrangements may help formalize arrangements for improved coordination and collaboration.
- b. Develop a model or mechanism for collaboration and partnerships. All LMFMS partners should reference the LMFMS and/or objectives in future

plans, policies, and strategies, particularly around partnerships and collaboration with other agencies.

- c. Develop guidance on collaborative and integrated flood planning (i.e., how to form partnerships and relations among governments and private/quasi-public entities and how to implement an integrated approach).

	Level of Support			Recommendation 52 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**53. Develop guidance and case studies on how Local Governments, First Nations, Provincial Ministries, and Infrastructure Providers/Agencies can collaborate and develop partnerships for flood management planning (and other related) activities.**

	Level of Support			Recommendation 53 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**54. Develop more formal, consistent and comprehensive communications protocols between First Nations and other jurisdictions,** particularly with respect to, but not limited to, emergency management (e.g., who to contact, interpretation of forecasted flood levels, response triggers, etc.).

	Level of Support			Recommendation 54 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**55. Involve utilities, infrastructure providers, different sectors, and their corresponding regulatory jurisdictions in regional, sub-regional and local flood planning,** as appropriate, to integrate their perspectives and to resolve regulatory requirements within flood plans and risk reduction measures. For example, include agriculture perspectives in flood planning as and where appropriate (e.g., Agricultural Land Commission involvement in flood management decisions relevant to the Agricultural Land Reserve).

	Level of Support			Recommendation 55 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**56. Engage with infrastructure providers to determine possible and desired roles in regional flood management/risk reduction.**

	Level of Support			Recommendation 56 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**5.3.2 Reconciliation with First Nations**

**Challenge:** Flood management decisions by federal, provincial and local orders of government have often been made without the input and consent of the appropriate First Nations governments. Collaboration and coordination between First Nation governments and other organizations – in both emergency and non-emergency conditions – are particularly important for advancing reconciliation with First Nations in flood management.

**RECOMMENDATIONS**

**57. Enhance capacity for First Nations governments and communities to be leaders in flood-related planning and decision making, for example through funding, information, training and other resources.**

	Level of Support			Recommendation 57 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**58. Enhance capacity for First Nations governments to fully participate in meaningful ways in the flood planning and decision-making of other jurisdictions to ensure First Nations values, interests, title and rights are considered and accommodated by other jurisdictions.**

	Level of Support			Recommendation 58 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**59. Co-create with First Nations guidance / best practices for First Nations consultation in flood planning and decision making, including the representation of First Nations in flood planning and projects, with provisions for including communities with limited capacity.**

	Level of Support			Recommendation 59 Comment
	High	Medium / Mixed	Low	
	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	

**60. Require local governments and other jurisdictions (e.g., through policy, regulation, or other mechanism) to include participation and collaboration**

**with First Nations at the outset of flood management projects** that impact on First Nations interests, rights and title in both emergency and non-emergency conditions.

	Level of Support			Recommendation 60 Comment
	High	Medium / Mixed	Low	
	○	⊙	○	

**61. Clarify and develop guidance on how to implement the BC Declaration on the Rights of Indigenous Peoples Act in flood management activities** including, but not limited to, collaborative flood planning and achieving free, prior and informed consent. This should include a definition of free, prior and informed consent.

	Level of Support			Recommendation 61 Comment
	High	Medium / Mixed	Low	
		⊙		

**62. Based on the guidance that has been developed, seek free, prior and informed consent from affected First Nations** in flood management planning and projects to avoid conflict and intrusion on title and rights.

	Level of Support			Recommendation 62 Comment
	High	Medium / Mixed	Low	
		⊙		

### 5.3.3 Regional Prioritization of Flood Risk Areas

**Challenge:** The current approach to project funding for flood risk reduction tends to be based largely on the competitive merit of an individual funding application with uncertainty to those responsible for flood management within their jurisdictions. This tends to benefit communities that have greater access to technical hazard/risk information and more resources and capacity to put together successful applications, regardless of the relative need and urgency of the project compared with other jurisdictions in the region. A better process is needed to identify priority areas where targeted, strategic policy and investment can reduce flood risk in alignment with the LMFMS’s vision and objectives. It is needed both because there are finite resources available at any given time and based on the idea that any regional funding decisions should not be based on individual merit alone, but regional goals and vision should also be considered. Equity is an important consideration in this broader concept.

A consistent, transparent process to evaluate the relative priority of different flood risk areas across multiple criteria would ensure that areas with higher risk, higher need and urgency are identified. It would also provide a shared understanding about where and how the region will be addressing flood risk. While proponents would still need to

demonstrate need and technical merit, the relative need for and urgency of action across the region can be determined in advance of project funding decisions, for example as regionally significant flood risk areas. It is not appropriate for the LMFMS to develop and present a list of priority areas; this should be a task for decision-makers. However, the following recommendations are offered from the LMFMS process for consideration by decision makers.

**RECOMMENDATIONS**

**63. Refine the following set of draft criteria and develop a regional prioritization framework, based on further consultation with all LMFMS partners, to generate one or more lists of regional priority areas.** These criteria are based on quantitative estimates of flood risk together with values and interests identified through engagement on the LMFMS development process.

It is suggested that the criteria are considered in combination and that they are assessed in a relative way (e.g., areas with high-risk *relative to others*), although absolute thresholds could also be incorporated. It is also recognized that some organizations / orders of government might weight the relative importance of the criteria differently. Further consultation is needed to refine the criteria and methods for operationalizing them; determine whether Fraser River freshet and coastal flooding should be considered separately; and inform the development of a sequencing, weighting, and scoring scheme and other elements of the prioritization framework.

	Level of Support			Recommendation 63 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**64. Collect additional data to facilitate the application of the finalized set of criteria.** As noted in the table below, the data required to assess the relative risk for each criterion are partially available; additional efforts to gather the necessary data are needed.

	Level of Support			Recommendation 64 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**65. Adopt and implement the regional prioritization framework to develop regional priorities for use in funding and project decision-making.** Doing so, especially in conjunction with the adoption of a merit-based framework to evaluate / select / design flood risk reduction initiatives as described in section 5.2.2, would be a significant step towards achieving the vision of the LMFMS.

	Level of Support			Recommendation 65 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

**66. Review the framework and update the priority list as new information becomes available or once every 5 years.** The purpose of prioritization is to provide certainty and predictability to LMFMS partners even as circumstances change. However, it should be recognized that priorities are not static, and would need to respond to changing risks. It is also hoped that flood risk will be reduced, capacity and resilience will increase, in regional priority areas over time, making some of the criteria less relevant. Therefore, review and updates are important.

	Level of Support			Recommendation 66 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

The order in which the following criteria are presented is not a reflection of their relative importance.

Criterion	Rationale and Potential Implications	Measurement and Data Considerations
<b>1. Areas with quantitatively high flood risk</b>	<p>Reducing flood risk in areas with quantitatively high Fraser River or coastal flood risk – in terms of high potential impacts across a range of flood scenarios and relative to other areas – could provide significant benefit to the region and potentially have a high benefit-to-cost ratio.</p> <p>Based on the LMFRA, this would likely prioritize areas in Richmond and Delta. The LMFRA does not include a number of risk factors and considerations that LMFMS partners have identified as important – for example, specific/real dike failure probabilities, some key infrastructure, flood response measures, etc. Partly for these reasons, this is not the sole criterion proposed.</p>	<p>The LMFRA can be used to identify a ranked list of areas (at the census subdivision, census tract, or dissemination area level) with relatively high risk across all impact categories (tangible direct damages including agriculture, community impacts, critical infrastructure/lifeline disruptions, environmental impacts, and social impacts).</p> <p>Estimated annualized damages can be used as an estimate of average annual losses (across a range of flood likelihoods).</p>
<b>2. Areas that are at risk from frequent and high-likelihood floods</b>	<p>Many places experience frequent flooding with much effort going into response and recovery. Frequent floods can also cause higher levels of emotional toll, which is more difficult to represent in quantitative flood risk assessments.</p> <p>Prioritizing areas that are often impacted would likely help prioritize some First Nations communities and</p>	<p>The LMFRA can be used to identify a ranked list of areas with relatively high risk.</p> <p>The LMFRA portal does not currently include a high-likelihood flood scenario, even though 10-, 30-, and 50-year flood events were modelled and</p>

	<p>those without existing flood protection. Including this criterion would help move towards providing a baseline level of protection to all Lower Mainland residents.</p>	<p>included in the calculation of estimated annualized damages. Once one of these thresholds is selected as the definition of 'frequent', the hazard data would have to be added to the portal. Asset and exposure data in First Nations reserves would also need to be added to the model (and portal) to adequately reflect potential impacts.</p> <p>Geographic scale would need to be chosen.</p> <p>Alternatively, a hazard instead of risk approach could be applied using the flood hazard mapping from the LMFRA.</p>
<p><b>3. Areas with disproportionately high flood risk</b></p>	<p>Flood impacts are disproportionate to the population, size, or capacity of the community, or other measure. This has been raised by LMFMS partners and is intended to address the capacity of the community to recover (e.g., in terms of human resources, ability to generate revenue) and resume daily life (e.g., in the case of community where the only school or health facility is inundated, or a community where the only access road is inundated).</p> <p>Prioritizing these areas could help mitigate the cost of recovery. Including this might make smaller jurisdictions a priority over larger communities with high 'absolute' risk.</p>	<p>This would be difficult to quantify. Additional study would be needed to develop a defensible method to decide which indicators from the LMFRA (or other study) would apply, what measures to use to calculate proportionality. The census subdivision level would likely be the most appropriate geographic scale.</p> <p>One or more flood scenarios would need to be chosen.</p>
<p><b>4. Areas with flood risk that are currently underserved with regard to flood protection or emergency response</b></p>	<p>This may have some overlap with the frequent flood and disproportionate impacts criteria. It partially addresses communities that have been excluded when dikes were built nearby, and communities that are less advanced in emergency and mitigation planning due to limited capacity.</p>	<p>'Underserved' needs to be defined and operationalized first.</p> <p>This may involve a systematic qualitative assessment of all jurisdictions to develop a list of areas. There may be</p>

<b>measures</b>	Including this might help de-prioritize those communities with high flood risk but also a high level of existing flood mitigation and resilience measures.	existing work (e.g., from EMBC?) to draw from to compile such a list.
	This partly addresses a concern that the LMFRA does not account for in-process mitigation actions/resilience measures besides existing dikes.	Inclusion of this criterion does not imply that diking and emergency response measures are the most appropriate to reduce flood risk in that area.
<b>5. Areas with high critical infrastructure and essential sector impacts</b>	<p>Critical infrastructure and essential sectors are a critical regional priority due to their cross-jurisdictional impacts if inundated and, conversely, the regional benefits of reducing the vulnerability or exposure of these assets. Functioning infrastructure is required to facilitate public health and safety during a flood, to enable people to return to work, to provide and move essential goods and services across the region, arguably before other types of recovery can be addressed.</p> <p>It is suggested that at least regional transportation networks (major roads, highways, rail line, rapid transit network), evacuation routes and EOCs, and agriculture and food production be included in the application of this criterion. YVR and Port of Vancouver facilities could also be included. These types may need to be ranked or weighted.</p>	<p>The LMFRA model includes a number of relevant indicators, including major roads, highways, and agricultural lands, but does not include all critical infrastructure data. The LMFRA also mapped evacuation routes but they are not included in the model. Depending on which impacts are included in this criterion, additional data would likely need to be acquired and integrated.</p> <p>One or more flood scenarios and geographic scale would need to be chosen.</p>

The five criteria above are not an exhaustive list of all possible considerations and have been selected because they are most capable of representing the values we have heard from LMFMS partners and the objectives of the Flood Strategy. Other considerations not explicitly included as distinct criteria are discussed in Appendix B.

## 6. Implementation – Addendum

*Section 6 sets out information and recommendations on governance, funding and implementation of the Lower Mainland Flood Management Strategy (LMFMS). This material was not included in an earlier limited-circulation draft (Draft 1A).*

### 6.1. Governance and Funding for LMFMS Implementation

#### 6.1.1 Governance

**Challenge:** Managing flood hazards and risks is complex, multi-dimensional and inter-jurisdictional. When they occur, floods cross many political and administrative boundaries. Many agencies and organizations in the Lower Mainland have roles in flood management, but no single organization is fully responsible or accountable for reducing flood risk at the regional scale. While some of the recommendations in this draft LMFMS could be led by existing organizations, no existing organization has the capacity or responsibility to oversee the Flood Strategy as a whole, particularly with regard to region-wide initiatives such as determining regional priorities and regional-scale hazard and risk modelling. To complement existing jurisdictions, an organization (a “regional flood entity”) with authority to implement and oversee implementation of the Lower Mainland Flood Management Strategy is proposed.

#### RECOMMENDATIONS

67. Establish a new regional flood entity, mandated by the Province of BC, and aligned with UNDRIP, to oversee implementation of the LMFMS
  - c) The regional flood entity would include a Board structure, composed of First Nations, Local, Provincial and Federal Governments and infrastructure providers
  - c) The primary purposes of the regional flood entity would be to:
    - i. Implement / oversee implementation of the LMFMS, and
    - ii. Support and strengthen regional coordination and collaboration
  - c) The regional flood entity would be supported by a professional staff to be determined in relation to the scope of roles and responsibilities of the entity
  - c) The overarching role of the regional flood entity is to implement and oversee implementation of the LMFMS. Responsibilities could include:
    - i. Deliver regional-scale technical services such as flood hazard modelling, floodplain mapping and flood risk assessment
    - ii. Deliver regional-scale communications and public education services (including monitoring and reporting on LMFMS implementation)
    - iii. Establish regional priorities for flood risk reduction across the region (using a transparent framework developed in collaboration with existing jurisdictions)

- iv. Serve an advisory or decision-making role with respect to funding decisions about projects, policies and programs for LMFMS implementation
- v. Support inter-jurisdictional, multi-sectoral, collaborative flood planning to advance LMFMS implementation at different scales and across different sectors

	Level of Support			Recommendation 67 Comment
	High	Medium / Mixed	Low	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	

### Responsibilities for LMFMS Implementation

As described above, a new regional-scale entity is being proposed to implement and oversee implementation of the LMFMS (recommendation 67). For recommendations in which existing organizations already have the relevant responsibilities, the regional flood entity would collaborate with those organizations to ensure the recommendations are implemented. For recommendations without an obvious lead organization, the entity could implement recommendations directly or identify appropriate organizations to implement them. See Tables 1 and 2 below for an overview of current and proposed roles, responsibilities and decision authorities.

As such, it is *not* proposed that recommendations be “assigned” to specific entities at this time. Instead, it would be left to the new regional flood entity to manage and/or coordinate the implementation of the recommendations.

The underlying intention is to avoid overlap between existing flood management jurisdictions and any new proposed regional flood entity (except where agreed upon with the relevant jurisdictions), and that the new regional flood entity would not have any flood management authority over existing governments.

### Feedback Question - Do you have comments or feedback regarding responsibilities for LMFMS implementation?

	Comment

### 6.1.2 Funding and Resources

**Challenge:** Funding of flood risk management is currently insufficient, unpredictable, and inconsistent. Current funding arrangements focus primarily on emergency response

and disaster recovery costs, with relatively fewer dollars allocated to proactive planning and preventative flood risk reduction measures. Funding programs are typically available for a limited time period and for a relatively narrow set of eligible projects and activities. It is difficult to align grant intakes with local and First Nations government budget planning cycles, regulatory review processes, fish windows for construction, and other planning and implementation considerations. There are no mechanisms presently in place to coordinate funding decisions at a regional scale based on regional priorities for risk reduction.

**RECOMMENDATIONS**

68. Establish a long-term, stable funding program to support implementation of the Lower Mainland Flood Management Strategy. The primary purposes would be to:

- a) Implement LMFMS recommendations such as:
  - Technical information and analyses such as flood hazard modelling, floodplain mapping and flood risk assessment
  - Inter-jurisdictional, multi-sectoral flood mitigation planning at local and sub-regional scales
  - Enhance financial resources available for First Nations
  - Training and capacity building
  - Communications and public education
- b) Implement projects, policies and programs aligned with the LMFMS such as:
  - Structural and non-structural flood risk reduction measures (e.g., dike improvements, green infrastructure, floodproofing and integrated flood management plans)
  - Associated costs such as land acquisition, rights-of-way, environmental assessments, consultation and engagement and other related project costs.
- c) Support the operations of the regional flood entity.

	Level of Support			Recommendation 68 Comment
	High	Medium / Mixed	Low	
	●	○	○	

**Capacity for LMFMS Implementation**

There is a need for a large, long-term investment in flood risk reduction in the Lower Mainland of BC. Table 3 below includes a sample budget over an initial 5 years; however, it is recognized that a larger and longer-term budget is ultimately required.

It is recognized that existing agencies and organizations may lack the capacity (financial, human, technical) to carry out recommendations that are beyond their current body of work and/or their current resources. These capacity limitations could potentially apply to all orders of government and the private sector. The need for increased capacity might be partially addressed through the proposed funding program (recommendation 68), but might also need to be addressed through other mechanisms.

**Feedback Question - Do you have comments or feedback regarding capacity for LMFMS implementation?**

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## 6.2 Flood Strategy Monitoring, Evaluation and Updates

It is important to monitor and measure progress in implementing the recommendations and achieving the goals and objectives in the LMFMS. A framework containing measures and targets could help assess and report on progress over time and inform course corrections if progress is not being achieved. Measures could relate to both actions and outcomes:

- Actions – What actions have been undertaken (e.g., resources, structural and non-structural flood risk measures, policies, programs, etc.)?
- Outcomes – What has changed on the ground (e.g., reductions in risk)?

Targets are helpful to motivate action and to measure progress.

The development of a framework will need to consider opportunities and resources required to gather available data and facilitate new data and analysis. It will be critical that metrics are selected that are able to detect change and are relevant to decision-makers, stakeholders, and the public.

It is proposed that monitoring and reporting be undertaken by the regional flood entity proposed in recommendation 67, supported by human, financial and information resources as well as commitments from responsible agencies and organizations to share data and act on the reporting results to ensure effective implementation of the LMFMS. Draft 2 of the LMFMS will contain additional details on monitoring and reporting based on input received during the Draft 1 engagement period.

### Feedback Questions

- **What are your suggestions regarding measuring and reporting on LMFMS implementation?**
- **How frequently should the LMFMS be updated?**

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## 6.3 Next Steps Following Flood Strategy Finalization

### Timeline and Next Steps

The goals and objectives of this Flood Strategy are for the long-term. To substantially reduce flood risk in the Lower Mainland, decades of investment and policy evolution will be required, particularly to adapt to a changing climate and the associated changes in flood hazard and risk. In this sense, the time horizon of this Flood Strategy is to 2050 and beyond.

However, due to the urgent need for action, this initial draft LMFMS emphasizes near-term actions and funding over the next five years (2022-2027). In addition to these near-term actions, there will be a need for continued collaboration, investment, and implementation of flood risk reduction practices, policies and programs. It is anticipated that a rolling 5-year LMFMS (and associated funding program) is required over multiple cycles to meaningfully reduce flood risk in the region.

Recommended actions would be implemented in order of priority as determined in collaboration among LMFMS partners. It is also recognized that some recommendations must be implemented before others can proceed (for example, recommendations 28-30 must be implemented in sequence). Draft 2 will provide more detail regarding timeline. Partner feedback regarding sequencing/prioritization of recommendations and timeline are welcome.

There are immediate actions to be taken as key first steps to realize core elements of the LMFMS. Initial groundwork has been laid by FBC, the LMFMS Leadership Committee, and the Joint Program Committee through the LMFMS development process. It will be imperative to advance the following priority actions upon the launch of the final LMFMS:

<b>Immediate next steps</b>	<b>Relevant recommendation(s)</b>
Establishment of regional flood entity	67
Establishment of funding program	68
Development of a regional prioritization framework, including any required supporting analysis (e.g. First Nations flood risk assessment), to support funding decisions	63-65
Development of a risk reduction initiative evaluation framework to support funding decisions	28-29

Additional immediate next steps and high-priority actions may be identified by partners through the engagement process prior to finalization of the LMFMS.

Additionally, there are activities that have been managed by FBC to date as part of the LMFMS initiative. They include:

Ongoing LMFMS activities	Relevant recommendation(s)
Engagement, dialogue, and information sharing among partner organizations (e.g. through the JPC)	11, others
Management and dissemination of existing flood hazard and risk models and data	1
Management of Floodwise.ca	13

The LMFMS will be finalized before a regional flood entity is established. As the facilitator and manager of the LMFMS to date, subject to agreement by partners (and funding), FBC could continue to manage the above activities – and other high-priority actions – until a regional flood entity has been established and funded. This is not the only option and other management and implementation arrangements could also be contemplated. Suggestions and comments are welcome.

#### Feedback Question

- Please provide comments, if any, on section 6.3 next steps after LMFMS finalization

	Section 6 Comment
	This area is intentionally blurred to represent a redacted comment

## 6.4 Tables

Table 1: Current and Proposed Flood Roles and Responsibilities

Table 2: Current and Proposed Decision Authorities

Table 3: Sample Budget for LMFMS Implementation

**Feedback Question**

- Please provide comments, if any, on the following tables

 <p>FOR COMMENT</p>	<p><b>Table 1 – Current and Proposed Flood Roles and Responsibilities – Comment</b></p> <p>[Redacted content]</p>
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 <p>FOR COMMENT</p>	<p><b>Table 2 – Current and Proposed Flood Decision Authorities – Comment</b></p> <p>[Redacted content]</p>
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 <p>FOR COMMENT</p>	<p><b>Table 3 – Sample Budget for LMFMS Implementation – Comment</b></p> <p>[Redacted content]</p>
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**Table 1: Current and Proposed<sup>1</sup> Flood Roles and Responsibilities**

Order of Govt / Organization	Flood Information	Flood Mitigation Planning	Flood Protection Works	Land Use Planning / Regulation	Emergency Management
<b>Local (municipalities and regional districts)</b>	<ul style="list-style-type: none"> <li>Local flood modelling, mapping, and risk assessment or other flood studies (subject to need and available resources)</li> <li>Provides local flood information to public and stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>Development of local flood mitigation / climate adaptation plans</li> <li>Participation and collaboration in the Lower Mainland Flood Management Strategy (LMFMS)</li> </ul>	<ul style="list-style-type: none"> <li>Ownership, operation and maintenance of works (esp. routine maintenance, repairs)</li> <li>Cost-sharing on major repairs, upgrades and new works</li> <li>Securement of rights-of-way</li> <li>Inspections and reporting</li> </ul>	<ul style="list-style-type: none"> <li>Establishment of setbacks and flood construction levels through flood-related bylaws and other mechanisms (OCPs, zoning, DPAs, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Local emergency manager / coordinator; emergency operations centre; local emergency plans / flood-specific emergency plans</li> </ul>
<b>First Nations</b>	<ul style="list-style-type: none"> <li>Local flood studies and assessments (subject to need and available resources)</li> </ul>	<ul style="list-style-type: none"> <li>Development of community flood mitigation / climate adaptation plans</li> <li>Participation and collaboration in the LMFMS</li> </ul>	<ul style="list-style-type: none"> <li>Varies – some are registered diking authorities with roles similar to local governments; some have no works</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive Community Plans</li> </ul>	<ul style="list-style-type: none"> <li>First Nations emergency coordinator; EOC; emergency plans / flood-specific emergency plans</li> </ul>
<b>Province of BC</b>	<ul style="list-style-type: none"> <li>BC River Forecast Centre (and related modelling)</li> <li>Design flood standards</li> <li>Funding support for flood modelling and mapping</li> <li>Flood map development when appropriate</li> <li>Provincial guidance on LiDAR</li> </ul>	<ul style="list-style-type: none"> <li>Development of a BC Flood Risk Strategy</li> <li>Participation and collaboration in the LMFMS</li> <li>Funding and guidance on flood mitigation planning (e.g., NDMP, CEPF)</li> <li>Needs identification for critical infrastructure of regional, provincial and national significance</li> </ul>	<ul style="list-style-type: none"> <li>Standards for flood protection works; regulatory role through the Inspector of Dikes office and the Dike Maintenance Act for changes to works or new works; official design flood profile model</li> <li>Guidance on climate change</li> <li>Funding for flood protection infrastructure (new and upgrades)</li> </ul>	<ul style="list-style-type: none"> <li>Provincial guidelines (FHALUMG); guidance on climate change</li> <li>MoTI Approving Officers for unincorporated areas in regional districts (bylaw / subdivision approval)</li> </ul>	<ul style="list-style-type: none"> <li>EMBC; Emergency Program Act modernization</li> <li>PECC / PREOCs;</li> <li>Support for urgent/ temporary flood mitigation works;</li> <li>Administration of DFAA;</li> <li>Recovery planning framework</li> </ul>
<b>Government of Canada</b>	<ul style="list-style-type: none"> <li>Floodplain Mapping Guidelines</li> <li>Funding support for local and regional studies/assessments</li> </ul>	<ul style="list-style-type: none"> <li>Funding to support flood mitigation planning (e.g., NDMP)</li> </ul>	<ul style="list-style-type: none"> <li>Funding for flood protection infrastructure (new works and major upgrades)</li> </ul>	<ul style="list-style-type: none"> <li>Role in land use planning on reserves</li> </ul>	<ul style="list-style-type: none"> <li>Public Safety Canada, DFAA</li> <li>Military support for flood response if needed</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>EGBC Guidance / Professional Practice Guidelines</li> </ul>		<ul style="list-style-type: none"> <li>Some private dike construction, operations and maintenance</li> </ul>	<ul style="list-style-type: none"> <li>PIBC; realtors; insurers; developers; mortgages; etc.</li> </ul>	<ul style="list-style-type: none"> <li>IPREM; Red Cross; private flood insurance for recovery</li> </ul>
<p><b>Proposed for a Regional Flood Entity</b></p> <p>To focus on regional gaps and/or opportunities for adding value at the regional-scale<sup>1</sup></p>	<ul style="list-style-type: none"> <li>Undertake (and be the keeper of) regional-scale technical analysis such as hydraulic modelling and mapping, flood risk assessment and best practices especially to capture efficiencies of scale</li> <li>Support regional-scale education, awareness-raising and engagement</li> </ul>	<ul style="list-style-type: none"> <li>Oversee implementation of the LMFMS (including monitoring, reporting and updating)</li> <li>Enhance regional collaboration &amp; coordination</li> <li>Identify regional priorities for implementation through the LMFMS</li> <li>Support inter-jurisdictional, multi-sectoral, collaborative flood planning at different scales and across different sectors</li> </ul>	<ul style="list-style-type: none"> <li>Provide a regional voice to secure funding to invest in regional flood risk reduction (including infrastructure operations, maintenance and upgrades)</li> <li>Provide regional guidance &amp; advice</li> <li>Guide distribution of funds and decision-making for design and construction of regional-scale flood infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>Provide regional guidance and advice if appropriate</li> </ul>	<ul style="list-style-type: none"> <li>NA</li> </ul>

<sup>1</sup> The final row of the table includes proposed roles for a regional flood entity to complement the current roles of existing jurisdictions. The entity should be a strong strategic body, with accountability, that needs to interface with local and First Nations governments for full implementation of the LMFMS. There may be a need for a dispute resolution mechanism and/or management approaches to help address different perspectives and approaches.

**Table 2: Current and Proposed<sup>2</sup> Decision Authorities**

Note: The following content should be considered as draft for review and feedback, including the current decision authorities. It is acknowledged that current roles, responsibilities and decision authorities are evolving, particularly through BC provincial legislation such as the Declaration on the Rights of Indigenous Peoples Act and the Emergency Program Act modernization. The following draft content does not yet take these or other legislative or policy initiatives into account.

Order of Govt / Organization	Flood Information	Flood Mitigation Planning	Flood Protection Works	Land Use Planning / Regulation	Emergency Management
<b>Local</b> (Municipalities and regional districts)	<ul style="list-style-type: none"> <li>Decide to develop and share flood information or not (subject to resources and capacity)</li> </ul>	<ul style="list-style-type: none"> <li>Decide to undertake planning or not (subject to resources and capacity)</li> </ul>	<ul style="list-style-type: none"> <li>Decide to construct, own, operate and maintain works or not (subject to resources and capacity)</li> <li>Decide what design and alignment (subject to regulatory approval)</li> <li>Decide to apply for funding or not</li> </ul>	<ul style="list-style-type: none"> <li>Decide on setbacks and flood construction levels (informed by Provincial guidelines) and which policy tools (e.g., zoning, bylaws, OCPs, DPAs)</li> </ul>	<ul style="list-style-type: none"> <li>Decide on declaring local emergencies and deployment of local emergency resources</li> </ul>
<b>First Nations</b>	<ul style="list-style-type: none"> <li>Decide to develop and share flood information or not (subject to resources and capacity)</li> </ul>	<ul style="list-style-type: none"> <li>Decide to undertake planning or not (subject to resources and capacity)</li> </ul>	<ul style="list-style-type: none"> <li>Decide to construct, own, operate and maintain works or not (subject to resources and capacity)</li> <li>Decide what design and alignment (subject to regulatory approval)</li> <li>Decide to apply for funding or not</li> </ul>	<ul style="list-style-type: none"> <li>Decide on setbacks and flood construction levels and policy tools</li> </ul>	<ul style="list-style-type: none"> <li>Decide on declaring community emergencies and deployment of community emergency resources</li> </ul>
<b>Province of BC</b>	<ul style="list-style-type: none"> <li>Decide on financial and staff resourcing of flood information (including Provincial roles and capacities as well as financial support for local and First Nations governments to invest in flood information)</li> <li>Decide on data and information standards</li> </ul>	<ul style="list-style-type: none"> <li>Decide on developing and implementing a BC Flood Risk Strategy and financial support for others to undertake flood mitigation planning</li> </ul>	<ul style="list-style-type: none"> <li>Decide on standards for flood protection works</li> <li>Decide on developing regulations, providing guidance, and financial support for flood protection infrastructure (new and upgrades)</li> <li>Decide on regulatory approvals (e.g., Dike Maintenance Act, Water Sustainability Act, Seismic Guidelines)</li> </ul>	<ul style="list-style-type: none"> <li>Decide (via MoTI Approving Officers) on bylaw and subdivision approvals for unincorporated areas in regional districts</li> <li>Decide on developing and updating / amending Provincial Guidelines (FHALUMG) and other guidance (e.g., climate change) and relevant legislation</li> </ul>	<ul style="list-style-type: none"> <li>Decide on legislation, policy and regulations on emergency management</li> <li>Decide on activating the PECC / PREOCs</li> <li>Decide on declaring provincial emergencies and deployment of provincial emergency resources</li> </ul>
<b>Government of Canada</b>	<ul style="list-style-type: none"> <li>Decide on developing national guidelines/standards</li> <li>Decide on financial support for flood information development</li> </ul>	<ul style="list-style-type: none"> <li>Decide on financial support for flood mitigation planning</li> </ul>	<ul style="list-style-type: none"> <li>Decide on financial support for flood protection infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Decide on guidance and financial support</li> </ul>	<ul style="list-style-type: none"> <li>Decide on deployment of federal resources for emergency response and recovery</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>Professional associations decide on developing guidance / professional practice guidelines</li> </ul>		<ul style="list-style-type: none"> <li>Developers, landowners, and other organizations decide on private dike construction, operations and maintenance (subject to regulatory approval)</li> </ul>		<ul style="list-style-type: none"> <li>Private and non-profit organizations decide on deployment of resources for response and recovery</li> </ul>
<b>Proposed for a Regional Entity</b> To focus on regional gaps & opportunities for adding value at the regional scale <sup>2</sup>	<ol style="list-style-type: none"> <li>Proposed decision role in establishing regional priorities to address areas of high flood risk through implementation of the LMFMS (using multiple criteria, agreed upon by existing jurisdictions)</li> <li>Proposed decision role in providing financial support for regionally significant flood risk reduction initiatives aligned with the LMFMS, including: <ul style="list-style-type: none"> <li>Flood information and education</li> <li>Local and sub-regional flood mitigation planning</li> <li>Structural measures</li> <li>Non-structural measures</li> </ul> </li> </ol>				

<sup>2</sup> The final row of this table includes proposed decision authorities for a regional flood entity to complement existing authorities. The entity should be a strong strategic body, with accountability, that needs to interface with local and First Nations governments for full implementation of the LMFMS. There may be a need for a dispute resolution mechanism and/or management approaches to help address different perspectives and approaches.

**Table 3: Sample Budgets for LMFMS Implementation**

**Part 1.1: Summary of Sample Budgets (5-Year Budget)**

Budget Item	Proposed % of Total Budget	Sample A	Sample B	Sample C
Highest Cost Measures: structural works/upgrades; land acquisition, other?	89%	\$445,000,000	\$667,500,000	\$890,000,000
Lower Cost Measures: hazard and risk assessment, flood planning/policy/program development, guidance, research, capacity-building, training, education	10%	\$50,000,000	\$75,000,000	\$100,000,000
Operations of the regional flood entity	1%	\$5,000,000	\$7,500,000	\$10,000,000
<b>Total</b>	<b>100%</b>	<b>\$500,000,000</b>	<b>\$750,000,000</b>	<b>\$1,000,000,000</b>

**Part 1.2: Summary of Sample A Budget (\$500 Million over 5 Years)**

Budget Item	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Total
	\$500,000,000						
Highest Cost Measures: structural works/upgrades; land acquisition, other? (estimated at 89% of total budget)	\$445,000,000	\$22,250,000	\$44,500,000	\$89,000,000	\$133,500,000	\$155,750,000	\$445,000,000
Lower Cost Measures: hazard and risk assessment, flood planning/policy/program development, guidance, research, capacity-building, training, education (10% of total budget)	\$50,000,000	\$2,500,000	\$5,000,000	\$10,000,000	\$15,000,000	\$17,500,000	\$50,000,000
Operations of the regional flood entity (1% of total budget)	\$5,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$5,000,000
<b>Total</b>	<b>\$500,000,000</b>	<b>\$25,750,000</b>	<b>\$50,500,000</b>	<b>\$100,000,000</b>	<b>\$149,500,000</b>	<b>\$174,250,000</b>	<b>\$500,000,000</b>

Part 1.3: Sample Budget A with Details - \$500 million over 5 years

Budget Item	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Total
<b>Highest Cost Measures: structural works/upgrades; land acquisition, other? (estimated at 89% of total budget)</b>	<b>\$445,000,000</b>	<b>\$22,250,000</b>	<b>\$44,500,000</b>	<b>\$89,000,000</b>	<b>\$133,500,000</b>	<b>\$155,750,000</b>	<b>\$445,000,000</b>
Dike upgrades to provincial standards	\$267,000,000	\$13,350,000	\$26,700,000	\$53,400,000	\$80,100,000	\$93,450,000	\$267,000,000
Land acquisition for dike upgrades, dike realignment, or land use change/managed retreat	\$89,000,000	\$4,450,000	\$8,900,000	\$17,800,000	\$26,700,000	\$31,150,000	\$89,000,000
Other (e.g. seismic, environment, other design considerations)	\$89,000,000	\$4,450,000	\$8,900,000	\$17,800,000	\$26,700,000	\$31,150,000	\$89,000,000
<b>Sub-Total</b>	<b>\$445,000,000</b>	<b>\$22,250,000</b>	<b>\$44,500,000</b>	<b>\$89,000,000</b>	<b>\$133,500,000</b>	<b>\$155,750,000</b>	<b>\$445,000,000</b>
<b>Lower Cost Measures: hazard and risk assessment, flood planning/policy/program development, guidance, research, capacity-building, training, education (10% of total budget)</b>	<b>\$50,000,000</b>	<b>\$2,500,000</b>	<b>\$5,000,000</b>	<b>\$10,000,000</b>	<b>\$15,000,000</b>	<b>\$17,500,000</b>	<b>\$50,000,000</b>
Hazard and risk assessment (modelling, mapping, etc.)	\$20,000,000	\$4,000,000	\$4,000,000	\$4,000,000	\$4,000,000	\$4,000,000	\$20,000,000
Flood planning / policy / program development	\$15,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$15,000,000
Guidance, research, capacity building, training	\$10,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$10,000,000
Education	\$5,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$5,000,000
<b>Sub-Total</b>	<b>\$50,000,000</b>	<b>\$10,000,000</b>	<b>\$10,000,000</b>	<b>\$10,000,000</b>	<b>\$10,000,000</b>	<b>\$10,000,000</b>	<b>\$50,000,000</b>
<b>Operations of the regional flood entity (1% of total budget)</b>	<b>\$5,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$5,000,000</b>
Professional staff	\$2,500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$2,500,000
Operational expenses for Board	\$1,250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000
Office and related overhead	\$1,250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$1,250,000
<b>Sub-Total</b>	<b>\$5,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$5,000,000</b>
<b>Total</b>	<b>\$500,000,000</b>	<b>\$33,250,000</b>	<b>\$55,500,000</b>	<b>\$100,000,000</b>	<b>\$144,500,000</b>	<b>\$166,750,000</b>	<b>\$500,000,000</b>

**Part 1.4: Reference Material**

The following tables illustrate a wide range of costs for flood infrastructure projects

**Risk Assessment of BC's Orphan Dikes - Summary Report (KWL, 2020)**

Cost item	Amount (\$)	Amount (%)
<b>Total cost for 11 orphan structures in the South Coast Region</b>		
Cost to remove and replace (meeting Provincial dike design standards)	\$114,613,000	93%
Land acquisition cost	\$8,804,000	7%
<b>Total cost</b>	<b>\$123,417,000</b>	<b>100%</b>
<b>Average cost per orphan structure in the South Coast Region</b>		
Cost to remove and replace (meeting Provincial dike design standards)	\$12,734,778	93%
Land acquisition cost	\$978,222	7%
<b>Average total cost</b>	<b>\$13,713,000</b>	<b>100%</b>
Note: The above are class D cost estimates developed for specific structures and alignments in the South Coast Region		

**Cost of Adaptation Report - Sea Dikes and Alternative Strategies - Final Report (Delcan, 2012)**

Cost item	Amount (\$)
Structural flood protection	\$880,000,000
Utility impacts, pump stations, flood boxes	\$350,000,000
Land acquisition costs	\$1,580,000,000
Seismic upgrades for select dikes	\$3,250,000,000
Environmental	\$90,000,000
Site Investigation, project management and engineering	\$190,000,000
<b>Sub-Total</b>	<b>\$6,340,000,000</b>
Contingency	\$3,160,000,000
<b>Total</b>	<b>\$9,500,000,000</b>
Note: The above are class D cost estimates developed for 33 reaches of the Fraser River and coastal shoreline downstream of the Port Mann bridge in Metro Vancouver. This includes flood-related adaptation measures (primarily dike upgrades) to address 1m of sea level rise including a mix of diked and undiked shoreline.	
Note: While the sample 5-year budget for LMFMS implementation presented above does not include infrastructure upgrades or land acquisition associated with new standards accounting for climate change, the cost estimates outlined in the Cost of Adaptation report are informative for the longer term costs facing the Lower Mainland region.	

## 7. Appendices

- Appendix A: Partnership of the Lower Mainland Flood Management Strategy Initiative
- Appendix B – Additional Considerations for Identifying Flood Risk Areas
- Appendix C - Technical Analysis and Information Tool Development

### Feedback Question

- **Is there anything significant that you would add to, delete from, or modify in Section 7 Appendices?**

	Section 7 Comment

### Final Comments on Draft 1

- **Do you have any final feedback or suggestions on the organization and content of the draft LMFMS (including potential visuals)? Do you have any advice as we develop Draft 2?**

	Final Comments

## Appendix A: Partnership of the Lower Mainland Flood Management Strategy Initiative

### Partnership Structure

#### Lower Mainland Flood Management Strategy Structure of the Project Partnership



## **List of Partners and Participating Organizations in the Initiative**

The Lower Mainland Flood Management Strategy is possible thanks to the collaborative work of 66 government, nongovernment and private sector organizations that have flood-related responsibilities or interests in the Lower Mainland and that have engaged in Phase 1, Phase 2, or in most cases both. The partners participating have provided funding and/or in-kind contributions. The list below is intended to acknowledge the participation, input and support of the following organizations. It is not intended to imply formal endorsement of the draft LMFMS.

### **Government of Canada**

1. Canada Mortgage and Housing Corporation (Granville Island)
2. Indigenous Services Canada
3. Natural Resources Canada
4. Public Safety Canada (National Disaster Mitigation Program)
5. Public Works and Government Services Canada

### **Province of British Columbia**

6. BC Ministry of Public Safety & Solicitor General & Emergency BC (Emergency Management BC)
7. BC Ministry of Forests, Lands, Natural Resource Operations & Rural Development
8. BC Ministry of Transportation and Infrastructure
9. BC Ministry of Environment & Climate Change Strategy (Climate Action Secretariat)

### **Local Governments**

10. City of Abbotsford
11. Village of Belcarra
12. Bowen Island Municipality
13. City of Burnaby
14. City of Chilliwack
15. City of Coquitlam
16. City of Delta
17. Fraser Valley Regional District
18. Village of Harrison Hot Springs
19. District of Hope
20. District of Kent
21. City of Langley
22. Township of Langley
23. Village of Lions Bay
24. City of Maple Ridge
25. District of Mission
26. City of New Westminster
27. City of North Vancouver
28. District of North Vancouver
29. City of Pitt Meadows
30. City of Port Coquitlam
31. City of Port Moody
32. City of Richmond
33. District of Squamish
34. City of Surrey

35. City of Vancouver
36. Metro Vancouver
37. District of West Vancouver
38. City of White Rock

#### **Other Entities**

39. Agricultural Land Commission
40. BC Agriculture Council (and Agricultural Research and Development Corporation)
41. BC Ferries
42. BC Real Estate Association
43. BC Wharf Operators Association
44. Canadian National Railway
45. Canadian Pacific Railway
46. Emergency Planning Secretariat
47. Fraser Health
48. Fortis BC
49. Greater Vancouver Gateway Council
50. Insurance Bureau of Canada
51. Lower Fraser Fisheries Alliance
52. North Shore Emergency Management
53. Pacific Institute for Climate Solutions
54. People of the River Referrals Office
55. Port of Vancouver
56. Raincoast Conservation Foundation
57. Real Estate Foundation of BC
58. Simon Fraser University (Adapting for Climate Team)
59. Stó:lō Research and Resource Management Centre
60. TransLink
61. Transmountain Pipeline ~~Kinder Morgan~~
62. Union of BC Municipalities
63. University of British Columbia
64. Urban Development Institute
65. Vancouver International Airport
66. West Coast Environmental Law

#### **First Nations (on the Leadership Committee)**

- Semiahmoo First Nation
- Sto:lo Tribal Council / Seabird Island
- Sumas First Nation

#### **Additional organizations that receive JPC email updates**

- Environment and Climate Change Canada
- Kwantlen First Nation
- Musqueam First Nation
- Peters First Nation
- Seabird Island First Nation
- Sqewlets First Nation
- Sto:lo Nation
- Tsawwassen First Nation

## Appendix B – Additional Considerations for Identifying Flood Risk Areas

The table below provides a list of considerations that LMFMS partners have mentioned should be considered in the prioritization of flood risk areas and some of the reasons that they have not been presented as distinct criteria in Section 5.3.3

<b>Consideration</b>	<b>Notes</b>
Areas with a Fraser River and/or coastal flood hazard or risk that spans multiple jurisdictions	This is an important tenet of the LMFMS – dealing with flood issues that require cross-jurisdictional cooperation. However, rather than identifying where flood hazard or risk areas span more than one jurisdiction (because many do), the cross-jurisdictional element might be more suitably assessed when a project is proposed instead, so it is addressed in section 5.2.2.
Life safety	This is commonly cited as a priority by governments. However, this was not included in the LMFRA due to the challenges with life safety modelling at a regional scale. Exposed population provides an indication of areas within the LM where more of the population is exposed.
Recovery ability	Assets' ability to recover has been raised as an important consideration. Some assets take a long time to recover, and some cannot be recovered at all once lost. Because this can be due to many things and recovery ability is hard to measure, it may be more suitable and feasible to include those assets in the quantitative risk model (and weight them accordingly) rather than introduce this as a separate criterion.
First Nations communities	First Nations reserves and significant sites are not explicitly included in the prioritization criteria. However, when asset and exposure data for First Nations communities are incorporated into the LMFRA model, these values will be included wherever the LMFRA model is used in the recommended criteria. Additionally, criteria 2, 3, and 4 are designed to represent, by proxy, some of the other more difficult-to-measure elements of risk, such as capacity and stress.
Ground-truthed dike conditions in terms of seismic and erosion resilience	LMFRA hazard assessment is based on application of an estimated dike failure probability and real (assessed) dike crest heights. Real and current dike conditions would also affect risk. However, at this time it is not possible to include unique, ground-truthed conditions of dike conditions in a systematic way.
Areas with high potential environmental impacts	Prioritizing areas with high environmental impacts has not been included as a separate criterion largely because: <ol style="list-style-type: none"> <li>1. The application of criteria 1 and 2 includes consideration of environmental (and social, cultural, economic) impacts; weighting those indicators affects how they are prioritized. More data would help make</li> </ol>

	<p>the environmental impacts included in the LMFRA more comprehensive.</p>
	<p>2. A more suitable stage to integrate this objective may be when risk reduction actions are being proposed when the question can be asked 'what the initiative will do to reduce the environmental impacts of a flood' (in addition to reducing the environmental impacts of the action itself). (See Section 5.2.2)</p>

## **Appendix C - Technical Analysis and Information Tool Development**

### **C.1 Regional Assessment of Flood Vulnerability**

The Lower Mainland Flood Management Strategy partners retained Northwest Hydraulic Consultants to carry out a flood vulnerability assessment in 2015- 2016. The assessment sets out projections for damages and losses related to buildings in Lower Mainland floodplain areas – and the related direct and indirect economic losses – under different flood scenarios. Four major Lower Mainland flood scenarios were assessed for comparative purposes — two coastal flood scenarios (Present Day and 2100) and two Fraser River flood scenarios (Present Day and 2100).

The key takeaway is that any one of the four major Lower Mainland flood scenarios analyzed could be expected to trigger flood-related losses in the tens of billions of dollars and displace hundreds of thousands of people. There would be severe strain on the regional, provincial and national economies.

The study estimated flood-related direct losses and some indirect economic losses related to residential, commercial and public/institutional buildings, some infrastructure, cargo shipping delays and agriculture. Estimates are based on current population levels and development in Lower Mainland floodplain areas. If growth continues, the Year 2100 losses are likely underestimated. The project shows that the Lower Mainland is exposed to a high degree of flood risk. It demonstrates the urgent need for a comprehensive flood management strategy, and commitments for action.

### **C.2 Lower Mainland Dike Assessment**

In 2015 the Inspector of Dikes oversaw an assessment of Lower Mainland dikes as part of Phase 1 of the Lower Mainland Flood Management Strategy. The assessment, carried out by Northwest Hydraulic Consultants, shows that 71% of the assessed dikes are vulnerable to failure by overtopping during either a major Fraser River or coastal flood. Only 4% of assessed dike segments meet current provincial standards for dike crest height, which includes 0.6 m of freeboard above the water surface elevation of the design flood event.

Dikes can fail for different reasons. The assessment covered, not only dike crest height, but also geometry, geotechnical stability during floods and earthquakes, erosion protection, control of vegetation/animal encroachments, appurtenant structures on the dikes and administrative arrangements, including secured rights of way and inspection practices. A key reason that Lower Mainland dikes are considered vulnerable to failure is because most were reconstructed in the 1970s and 1980s according to the standard of the day, which has since been recognized as too low. The standard has been updated through more accurate flood modelling.

Based on average rankings across multiple criteria, the majority of assessed dikes in the Lower Mainland (69%) were scored as Poor to Fair, 18% as Unacceptable to Poor, and 13% as Fair to Good. Few of the dike segments assessed meet current provincial standards, and no dikes fully meet provincial standards. Among the report recommendations are to prioritize dike upgrades, and where it is not feasible to upgrade

dikes sufficiently, to consider a range of structural and non-structural flood management strategies.

### **C.3 Lower Mainland Flood and Environment Atlas**

An online atlas was developed for collating best available data about environmental values and features along the Fraser River from Hope to Richmond and coastal foreshore areas from White Rock to Squamish, as relevant to the Lower Mainland Flood Management Strategy.

The purpose is to understand how current and potential future flood infrastructure may adversely or beneficially impact the natural environment. Depending on the breadth, depth and quality of available data, the atlas might help identify environmental features that would need to be addressed in the selection, design, and siting of different flood mitigation projects. It could give early indication of the kinds of environmental issues that would need to be addressed in the regulatory process. It might also help identify candidate sites for protection, conservation, restoration, or compensation related to the LMFMS.

Datasets in the atlas have been organized under six main categories, including: base layers; communities; watercourses & wetlands; sensitive ecosystems; fish; and flood. A metadata database has been set up to capture the basic information about each included dataset and to make finding and working with particular instances of data easier.



### **C.4 Flood Modeling and Mapping in BC's Lower Mainland**

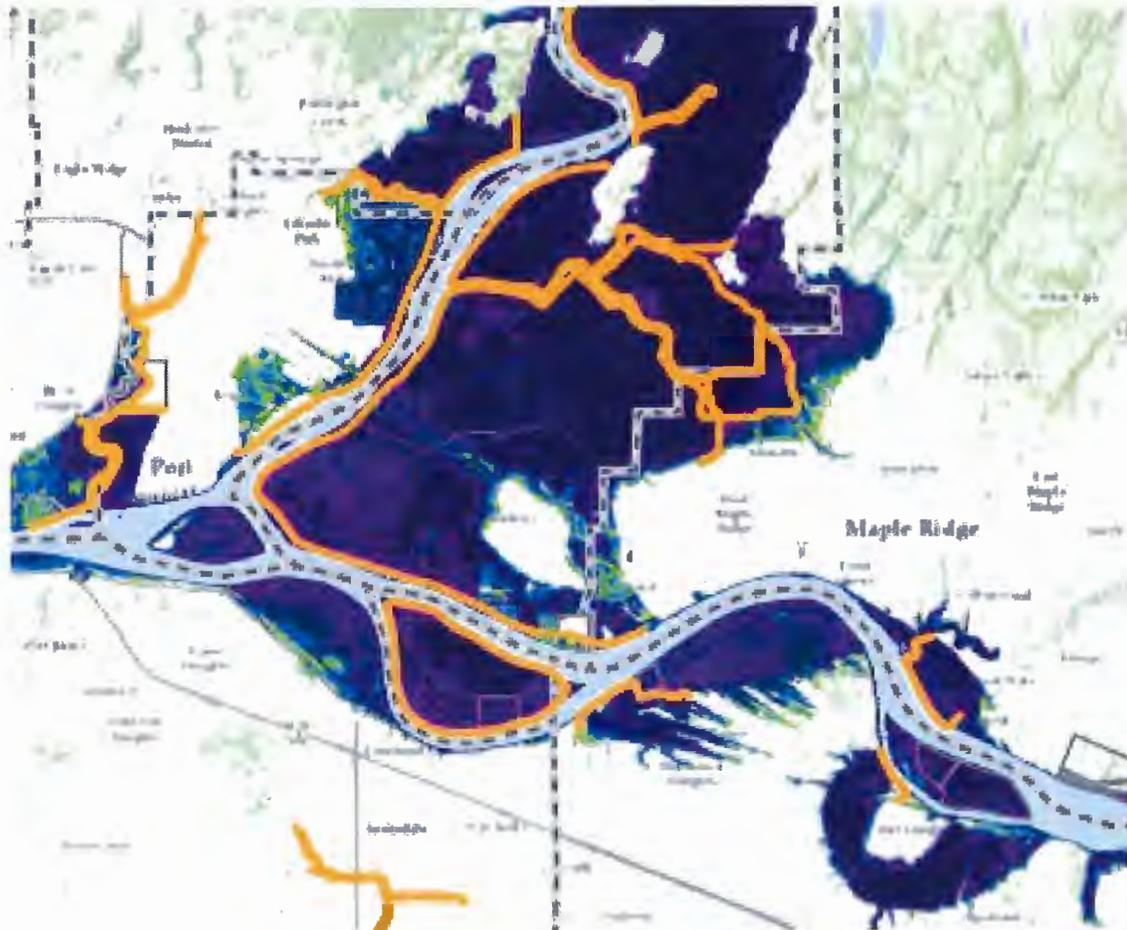
The Lower Fraser River 2D Flood Model is a new tool developed to advance the Lower Mainland Flood Management Strategy and other flood planning work in the region. The Fraser Basin Council retained Northwest Hydraulic Consultants (NHC) to develop the flood model. The model shows how water would move along the lower Fraser River and across the floodplain (from Hope to the Salish Sea) under different flood scenarios. NHC modelled and mapped 27 lower Fraser flood scenarios that reflect different river

flows and ocean levels and the resulting extent and depth of flooding, including from dike overtopping. For eight of the scenarios, potential dike breaching is directly simulated at one or more sample breach locations.

Future flood scenarios that account for the effects of climate change were modelled. As projected in Phase 1 of the LMFMS, climate change is expected to lead to larger and more frequent floods on the lower Fraser River in the coming decades. The change in the river flood hazard comes from the combination of sea level rise and changing snowmelt and precipitation patterns in the Fraser Basin. In the Phase 2 modelling and mapping work, climate change (to 2050 and 2100) was taken into account in multiple flood scenarios, using updated climate science that was unavailable in Phase 1. Flood managers can use the scenarios to examine the areas that would be flooded under given conditions and where flooding may be most severe.

**Flood Map from the HEC RAS 2D Hydraulic Model – Fraser River Freshet 0.2% AEP projection to year 2050**

Note: Includes 0.5m of sea level rise and a higher peak flow on the Fraser River



Flood Modeling and Mapping in BC's Lower Mainland (NHC, 2019)

Key model findings include:

- Many areas not currently protected by dikes will be flooded by even a relatively small flood event, and the potential extent and depth of flooding in these areas increases with climate change.
- The total area of floodplain flooded, and number of dikes overtopped increases significantly as the freshet flood scenarios become more severe. The total area impacted increases when end-of-the-century climate change impacts are considered.
- Based on assumptions about the potential for upstream flow storage – where river flows are temporarily held back in an existing impoundment area – it is estimated that flood levels in the lower Fraser River could be reduced to some degree. Setting back new dikes from their current location to create more “room for the river” in flood events may also reduce flood levels in some locations.
- For the 0.2% Annual Exceedance Probability flood, by 2050, climate change could raise water levels at Mission by approximately 0.8 m and by 2100 by approximately 1.9 m, compared to present conditions.
- Downstream of the Alex Fraser Bridge, coastal flooding becomes dominant (i.e., storm surges generate higher water levels than the Fraser River freshet).

### **C.5 Lower Mainland Flood Risk Assessment**

A risk assessment that identifies some of the significant direct and indirect impacts of a major Fraser River or coastal flood was recently completed for the Lower Mainland Flood Management Strategy by consultants of IBI Group.

The risk assessment spans BC’s South Coast — from Lions Bay to White Rock — and covers the lower Fraser River — from Hope to Richmond. It is based on Phase 2 regional flood modelling results and the best available datasets (including those for buildings, infrastructure, agriculture, the environment and social vulnerability). The aim of the work is to identify the potential impacts of the region’s flood hazards on people and vulnerable assets.

The risk assessment creates a helpful regional baseline profile of flood risk to inform the Lower Mainland Flood Management Strategy and other flood management work in the region. Limitations on time, budget and available data limit the level of analysis – and it is expected that more in-depth work will be done over time. The Fraser Basin Council thanks the Government of Canada (National Disaster Mitigation Program) and Province of British Columbia for supporting this project.

### **C.6 FloodWise Website**

*FloodWise in BC’s Lower Mainland ([floodwise.ca](http://floodwise.ca)) is a first-stop website to support better public awareness of flood hazards, what is at risk in the event of a major flood, and the importance of flood risk reduction. The website is open to a wide range of audiences – people who are familiar with flood and those who are not. FloodWise underscores the value of collaboration among all orders of government in flood risk reduction, and it profiles local and regional work, in particular, the Lower Mainland Flood Management Strategy. Some highlights of the site include:*

- FloodWise Videos: When the Waters Rise (Parts 1 & 2)

- Part 1 gives an overview of Fraser River and coastal flooding, regional vulnerability and the need for better flood risk reduction. It draws on findings of Phase 1 of the LMFMS development.
- Part 2 recaps Lower Mainland flood hazard and vulnerability. It explains the range of structural and non-structural approaches to flood risk reduction and the work underway in Phase 2 of the LMFMS.
- Flood History Story Map
  - A new Story Map and photo gallery encourages visitors to take a step back in time through a pictorial tour of the 1894 and 1948 Fraser River floods.
- Protecting Your Home and Business
  - The site offers residents general information on flood risk reduction for their homes and businesses. The importance of seeking information from local authorities and advice from professionals is emphasized.
- Flood Maps
  - The site explains different kinds of flood maps and how they are used, plus offers tips on finding flood maps in BC. Regional maps produced in the LMFMS are hosted on the site.
- Resources
  - The site has a collection of helpful links to local government flood pages, provincial guidance and reports, and other resources from BC and beyond.

**FRASER BASIN COUNCIL**  
**FAQs on Draft 1 of the Lower Mainland Flood Management Strategy**

### Strategy Development and Finalization

**Q1: What are the reasons for developing a Lower Mainland Flood Management Strategy (LMFMS) and what benefits does it offer?**

The LMFMS initiative (2014-present) is aimed at reducing flood risks and improving flood resilience in the Lower Mainland. This proactive, collaborative initiative by governments and others with flood responsibilities in the Lower Mainland is based on concerns that the region could suffer significant losses in the event of a major Fraser River or coastal flood. Technical analyses undertaken as part of this initiative have validated these concerns and deepened our understanding of flood hazard and risk.

Reducing flood risk regionally is important because floods are not constrained by administrative boundaries, and a major flood in the region would have impacts well beyond the flooded area. Moreover, flood management activities in one area can impact neighbouring communities, so regional-scale coordination of those activities would increase efficiency and help avoid conflicts and duplication of effort. The LMFMS presents the first comprehensive, holistic and collaborative approach to flood risk reduction for this region.

**Q2: What organizations have been involved in the LMFMS initiative and the development of Draft 1?**

Since the LMFMS initiative began in 2014, it has involved individuals from over 60 organizations representing the federal, provincial, First Nations and local governments and non-government entities with flood management interests and responsibilities. A list of organizations is provided in Appendix A of Draft 1 (*NB: This list will be updated in Draft 2*). Individuals from these organizations have participated as members of the Joint Program Committee, Leadership Committee and other advisory committees and as workshop attendees. The Fraser Basin Council, as facilitator of the initiative, prepared Draft 1 with input and advice from many of these individuals and organizations.

**Q3: Who has been asked to comment on Draft 1 of the strategy?**

Draft 1 was circulated for review and comment by all organizations that have participated in the process to date through invitations to their elected leadership and/or senior staff including First Nations Chiefs, Mayors, Regional District Chairs, CAOs/General Managers, Deputy Ministers, Regional Directors and others. Draft 1 was also circulated for review by the Emergency Planning Secretariat to about 300 First Nations contacts spanning 31 Mainland Coast Salish First Nations communities with flood-related interests.

In addition to this FAQ, a briefing note on Draft 1, webinar recording on Draft 1, and briefing note for First Nations on the strategy development process have been developed to assist with organizations' review of Draft 1.

**Q4: If my organization cannot provide comments on Draft 1 within the comment period, are there further opportunities to provide comments?**

Comments received on Draft 1 after March 29, 2021 may not be considered in time for the development of Draft 2, but will be recorded by FBC and included for consideration for Draft 3. Alternatively, your organization may choose to wait until Draft 2 is issued before submitting comments.

#### Q5: What happens if organizations provide conflicting input on Draft 1?

Input will be considered on all Draft 1 content, including the strategy vision, goals and objectives and all individual recommendations. This will assist in preparation of Draft 2.

Given the diversity of organizations, interests and priorities across the region, differing input is anticipated. If the disagreement is minor, careful rewording might achieve an acceptable middle ground. For more significant differences (e.g., a recommendation that receives both strong support and strong opposition), further analysis or further engagement with relevant parties or LMFMS committees might be required to find possible solutions.

In some cases, comments will be specific to the mandate and needs of a given order of government or other entity. For example, comments from First Nations on recommendations that pertain directly to First Nations governance would be prioritized.

#### Q6: When will the LMFMS be finalized, and how will consensus be achieved among participating organizations?

Finalization of the strategy is planned for November 2021.

Organizations' level of support for the draft recommended actions will be identified during the review periods for Draft 1 and Draft 2. Organizations are encouraged to express any major concerns as early as possible in the review process. Based on feedback at each stage, the draft will be revised and refined with the goal of increasing the depth and breadth of support. Areas of significant conflict or opposition that cannot be resolved over the coming months may have to be removed and/or addressed through other mechanisms, potentially as part of the implementation stage or future updates of the LMFMS.

#### Q7: What does final strategy endorsement look like? Will my organization be expected to "sign off" on the final strategy?

It is not expected that all governments will "sign off" on all recommendations in the final strategy. The aim is to have as many governments and other organizations as possible **endorse in principle the strategy as whole** (including the goals, vision and objectives) and endorse as many of the individual recommendations as possible.

FBC will be engaging with the Leadership Committee, Joint Program Committee and First Nations to better understand what mechanisms for endorsement are appropriate and feasible for each order of government. Your organization's perspectives on this issue are welcome during the Draft 1 and subsequent commenting periods.

#### Q8: What benefits or responsibilities are conferred by an endorsement in principle?

Benefits and responsibilities associated with strategy endorsement will be clarified as the strategy is further refined and agreement on policy directions is confirmed. An endorsement in principle of the strategy by multiple governments and other entities with flood responsibilities would reflect a continued commitment to regional flood risk reduction in the Lower Mainland.

Each participating entity that endorses the strategy in principle would play a key role in the work ahead after the strategy is finalized. This work would include implementing strategy recommendations where appropriate, developing a framework for prioritizing flood risk areas and an evaluation framework for flood risk reduction projects, and participating in inter-jurisdictional discussions to secure funding for short-, medium- and long- term flood risk reduction projects.

## Strategy Content

### Q9: What are the goals of the strategy?

The overall purpose of the LMFMS is to take a regional approach to reducing flood risks associated with Fraser River and coastal flooding in the Lower Mainland. As written in Draft 1, the strategy's three overarching goals are to:

1. Improve understanding of Lower Mainland flood risk and increase awareness
2. Support investment and actions to reduce flood risk, avoid the creation of new risk, and build resilience of communities, ecosystems and critical infrastructure
3. Strengthen flood risk governance in the Lower Mainland.

A vision statement and 17 objectives are outlined in section 4 of Draft 1.

### Q10: Why does the LMFMS focus on Fraser River and coastal flooding rather than other floods, such as other rivers and creeks?

Fraser River and coastal floods can have regional-scale impacts and are best addressed through collaborative and coordinated approaches to planning and mitigation supported by a regional strategy. Even though communities can be seriously impacted by other types of flooding — such as from smaller rivers or creeks, groundwater seepage, overwhelmed drainage systems during heavy rain events, or landslide or debris flow floods — a region-wide approach would arguably have less benefit on the management of these types of flood risk.

In addition, the agreed-on mandate and funding for the LMFMS process was limited and not sufficient to address these other flood hazards.

### Q11: Why does the strategy not identify specific flood risk reduction projects or regional priorities?

Several organizations participating in the LMFMS were of the view that the strategy should not be prescriptive with regard to flood risk reduction projects for local communities.

Draft 1 recommends criteria for designing and evaluating risk reduction initiatives (section 5.2.2), but it is not within the capacity or authority of the LMFMS process to undertake locally specific analysis for each community. Similarly, Draft 1 proposes criteria for determining priority flood risk areas (section 5.3.3), but the actual prioritization is most appropriately the role of decision-makers. The Lower Mainland Flood Risk Assessment can serve as a tool to support regional prioritization, along with additional information.

### Q12: Even though further work is needed to determine regional priorities, does the strategy identify and advance some short-term actions to reduce flood risk?

The 68 recommendations in Draft 1 are being reviewed regarding relative urgency and feasibility of implementation in the short, medium and longer term. Several recommendations can be implemented by existing jurisdictions with relatively few additional resources. Other recommendations will require more thought, analysis, resources and perhaps legislative change. Governments and infrastructure organizations can continue to advance their own flood planning and risk reduction priorities in the meantime through available funding sources.

### Q13: What is the relationship between the strategy and my organization's flood management plan/activities?

Although the strategy may not cover all organization-specific needs, interests, priorities and circumstances, it targets issues and opportunities where a regional approach can have the greatest impact, for mutual benefit. To facilitate implementation, partner and participating organizations may consider opportunities for alignment between the LMFMS in their flood planning and mitigation activities.

## Strategy Implementation

### Q14: In what order and timeframe would recommendations be implemented?

Section 6.3 in Draft 1 proposes four immediate next steps to realize core elements of the strategy: establishing the regional flood entity and funding program and development of a regional prioritization framework and risk reduction initiative evaluation framework to support funding decisions.

Drafts 2 and 3 of the strategy will contain more direction on the timing and order of implementing recommendations. Additional immediate next steps and high-priority actions may be identified prior to strategy finalization. It is proposed that the detailed work on implementation would be done by a regional flood entity. Input on this topic is welcome at this time.

The following factors will likely be considered:

- Priorities indicated by partner and participating organizations during the Draft 1 and Draft 2 review processes
- Relative urgency – some recommendations are more urgent than others (e.g., those addressing frequent and significant flood consequences compared with those addressing longer term climate change)
- Relative ease/effort and resource availability (including financial, human, information and legislative) – some recommendations can be implemented with few additional resources and no change in policy or legislation, while others will require additional technical analysis, further engagement with affected organizations, significant financial investment (including establishment of new funding sources) and/or legislative amendments
- Required sequencing of related recommendations – some recommendations need to be implemented before others can (e.g., fill critical information gaps before establishing regional priorities).

### Q15: Why is a regional flood entity proposed and what role(s) would it play? What benefits would it achieve?

A regional flood entity is recommended to implement and oversee implementation of the strategy, address current gaps and deliver needed support services at the regional scale. It is proposed that, with the exception of decisions about regional priorities and funding – where First Nations and local governments would have an enhanced role – existing flood management jurisdictions, roles, responsibilities and funding sources would be retained by existing organizations across the four orders of government.

It is proposed that the regional flood entity could be mandated to do any or all of following:

1. Establish regional priorities for flood risk reduction across the region (by developing and using a transparent framework developed in collaboration with existing jurisdictions)
2. Serve in an advisory or decision-making role with respect to funding decisions about projects, policies and programs for LMFMS implementation
3. Deliver regional-scale support services, including:
  - o Technical services (e.g., flood hazard modelling, floodplain mapping and flood risk assessment)
  - o Communications and public education services (including monitoring and reporting on LMFMS implementation)
  - o Inter-jurisdictional, multi-sectoral, collaborative flood planning to advance LMFMS implementation at different scales and across different sectors.

The proposed regional flood entity would ensure strong involvement of First Nations and local governments, along with provincial and federal representation, in regional-scale decisions about priorities and funding. Currently, First Nations and local governments apply for grants in the absence of a regional decision-making framework and the final decisions are made by provincial and/or federal agencies.

#### Q16: What is the timeline for establishing the proposed regional flood entity?

Establishment of a regional flood entity is proposed as a priority step following finalization of the strategy and the entity would be tasked to oversee strategy implementation. The timeline would depend on the structure, responsibilities and authority of the entity and whether legislative change is required. Work is being undertaken to explore mechanisms and the timeframe for establishing the regional flood entity. Interim mechanisms are also being explored so as to advance recommendations and flood risk reduction initiatives in the near term, and these will be addressed in Draft 2.

Input on possible approaches to implementation during this interim period is welcome.

#### Q17: Would the regional entity have authority over my government or organization?

The regional flood entity is expected to have representation from different orders of government. It is proposed that the entity be mandated to determine the regional priority areas for flood risk reduction and to have either a decision-making or an advisory role in the allocation of funding for work that implements the strategy. Comments are sought during the Draft 1 and Draft 2 reviews on the scope of the entity's role.

It is proposed that, with the exception of decisions about regional priorities and funding — where First Nations and local governments would have an enhanced role — existing flood management jurisdictions, roles, responsibilities and funding sources would be retained by existing organizations across the four orders of government.

#### Q18: What overall investment in flood risk reduction is proposed in Draft 1? How does this compare to past investments?

A start-up budget of \$500 million is proposed over an initial 5-year period. This is estimated to be equivalent to all prior flood infrastructure investments across all of BC over the last 50 years.

This amount of funding would support substantial implementation of a majority of strategy recommendations and a number of risk reduction initiatives in priority areas; however, it would not be sufficient to address all of the flood risk reduction needs across the Lower Mainland region. This is particularly true for flood protection infrastructure upgrades, including for seismic and climate change resilience.

It is proposed that the program would be updated and extended on a 5-year rolling basis.

A longer-term timeline for strategy implementation is needed. Substantial progress could be achieved over an initial 10-year period if sufficient resources are invested. To address projected larger and more frequent flooding due to climate change, a longer time period and a more significant investment will be required.

#### Q19: Who would pay into the proposed regional funding program?

It is envisioned that provincial and federal governments would share in the substantive costs of strategy implementation. Local and First Nations governments have limited capacity to share in these costs. It is anticipated that the commitment of the provincial and federal governments to invest will depend on achieving a broad base of support and endorsement of the strategy among First Nations and local governments and other organizations across the Lower Mainland.

#### Q20: When would the proposed funding program start?

The recommendation for a regional funding program in the final strategy will be the basis for a formal request on behalf of all entities that endorse the strategy.

Work is being undertaken now to clarify the mechanisms necessary to establish a dedicated funding program for implementation of the strategy. In the interim, existing, albeit limited, funding sources will be explored for near-term implementation of some lower-cost and most urgent recommendations.

#### Q21: How will funding decisions on my organization's proposed flood projects be made if a regional flood entity is created?

As proposed, the regional flood entity would determine regional priority areas based on a framework that considers relative flood risk on a regional scale, as well as need and urgency (see the proposed criteria in section 5.3.3). These areas would be prioritized for financial support. Flood risk reduction projects would be evaluated by the entity based on the framework proposed in section 5.2.2. With regard to specific funding applications, the regional entity could play either a decision-making role or an advisory role to senior levels of government that provide the funding. It is envisioned that other provincial- and national-scale funding sources would continue to be available to support local flood projects. Input on this point is encouraged.

**TO:** His Worship Mayor Michael Morden and Members of Council  
**FROM:** Chief Administrative Officer  
**SUBJECT:** Proposed Policy 3-17 Change – Town Centre Area Plan

**MEETING DATE:** March 30, 2021  
**MEETING:** Workshop

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**EXECUTIVE SUMMARY:**

Over the past nine months, two rezoning applications were presented to Council for first reading, for properties designated *Single-Family Residential* in the Town Centre Area Plan, to create lots less than 371m<sup>2</sup> in area with vehicle access from the street, which does not comply with policy 3-17 (see Appendix A and B). The applications were presented to Council on June 9, 2020 and January 15, 2021, respectively, with a favourable recommendation. The staff reports noted that an Official Community Plan (OCP) text amendment for policy 3-17 in the Town Centre Area Plan would be required to allow the subdivisions to occur. Application 2019-309-RZ was denied by Council on June 9, 2020. At a Council meeting on January 12, 2021, Council passed the following motion regarding application 2020-256-RZ:

*That Zone Amending Bylaw No. 7694-2020, application 2020-256-RZ, 12333 227 Street, RS-1 to R-2 be referred back to staff; and further, That staff commence a review of the OCP rear lane requirement for R-2 lots in the Town Centre Area Plan, and consultation with the neighbourhood.*

On February 18, 2021, staff held a virtual open house with approximately 90 participants, consisting of property owners in the Town Centre whose properties are currently designated *Single-Family Residential*. Feedback was encouraged at the open house event and also through an online survey (see Appendix F and H). This report presents the background information for the proposed policy change, provides an overview of the Town Centre Area Plan context, outlines the public consultation process and findings, details an analysis of the impacts of a policy change, and recommends new policy wording (see Appendix I).

Having completed a planning analysis of the *Single-Family Residential* designated lands along with public consultation with property owners, the recommendation is to remove the requirement for a rear lane specifically for new single-family lots that are created with lot areas no less than 315 m<sup>2</sup>, in locations where it has been determined that a rear lane is not feasible, or required under Council's Access Management Policy. The change in policy 3-17 is justified for the following reasons:

1. **Consistent with development practice outside of the Town Centre.** Since its introduction after adoption of the Town Centre Area Plan, the R-2 (Single Detached (Medium Density) Urban Residential) zone (minimum lot size 315m<sup>2</sup>) has been used throughout the City with driveway access from the street rather than a rear lane.
2. **Complies with access requirements stipulated by the Engineering Department.** New single-family subdivision will continue to comply with the Access Management Policy 9.14, which restricts access from Major Arterials, limits access on Minor Arterials; and the *Maple Ridge*

*Subdivision and Development Servicing Bylaw*, which restricts access on Collector roads in the Town Centre.

3. **Supports the Town Centre Area Plan goals and objectives.** The Town Centre is a desired location for a range of housing forms, and a key location for residential densification.
4. **Results in a modest number of new units.** The properties that satisfy all of the eligibility criteria is approximately 10% of all *Single-Family Residential* designated properties (see Appendix A).
5. **Supported by property owners in consultation survey.** Of the 47 survey responses, there were 26 responses in favour of the proposed policy change from 25 households.
6. **Regulated through development process.** Survey responses noted concerns over on-street parking and traffic, and a desire to see elements such as trees and greenspace, road design, and views addressed as change occurs. These considerations can be mitigated through design features and rezoning requirements. A rezoning application will be required as part of each property's re-development process, allowing Council and neighbourhood feedback for each development proposal.

## **RECOMMENDATION:**

**That an Official Community Plan Amending Bylaw be brought forward with rezoning application 2020-256-RZ to amend policy 3-17 of the Town Centre Area Plan, as outlined in the report "Proposed Policy 3-17 Change – Town Centre Area Plan"**

### **1.0 BACKGROUND:**

Since June 2020, two rezoning applications were considered by Council for first reading, for properties designated *Single-Family Residential* in the Town Centre Area Plan. Both applications were to subdivide using the R-2 (Single Detached (Medium Density) Urban Residential) zone with vehicular access from the street rather than a rear lane, to create new lots no less than 315m<sup>2</sup> in area. The Town Centre Area Plan policy 3-17 outlines requirements for rear lane vehicular access on lots with an area less than 371m<sup>2</sup>.

The applications were presented to Council for first reading on June 9, 2020 and January 12, 2021, respectively, with a favourable recommendation. The staff report noted that an OCP text amendment for policy 3-17 in the Town Centre Area Plan would be required to allow the subdivisions to occur. The first application, file reference 2019-309-RZ was denied first reading. The second application, file reference 2020-256-RZ, was deferred with the following motion:

*That Zone Amending Bylaw No. 7694-2020, application 2020-256-RZ, 12333 227 Street, RS-1 to R-2 be referred back to staff; and further, That staff commence a review of the OCP rear lane requirement for R-2 lots in the Town Centre Area Plan, and consultation with the neighbourhood.*

At Council's direction, a public consultation process was initiated to gather feedback from property owners on their level of support for a proposed policy change to the Town Centre Area Plan.

### **2.0 TOWN CENTRE AREA PLAN CONTEXT**

This section describes the area plan objectives, recent residential growth and outlines the existing policies for the *Single-Family Residential* land use designation including policy 3-17.

### Area Plan Objectives, 2008-2020 Residential Growth:

The Town Centre Area Plan has been in place since 2008 and since that time the area has been densifying with residential and commercial development. It is an area that is anticipated to accommodate 50% of the total population growth in Maple Ridge over the long term. The Town Centre is identified in Metro Vancouver's Regional Growth Strategy, *Metro Vancouver 2040: Shaping Our Future*, as a Regional Town Centre, meaning that it is an area expected to have a wide range of urban features that include:

- Being within walking distance of a rapid transit station;
- Accommodating regional scale employment, business, and commercial activities, and
- Providing high and medium density housing opportunities.

There are eight guiding sustainability principles outlined in the Town Centre Area Plan that guide development in the area, including **Principle 5: Housing Serves Many Needs**. This principle supports a mix of housing types, enabling residents to live in the same community throughout their life.

Over the 2008-2020 time period, 2,005 new housing units have received occupancy permits in the Town Centre, with 1% of those units created as single-family, duplex or garden suite units. The predominant housing type has been low rise apartment units (4 storeys or more).

### Single-Family Residential Land Use Designation Overview and Policies:

The *Single-Family Residential* designation is distributed throughout the Town Centre, and this land use allows for transitional residential densities at the west and north-east borders of the area, where adjacent lands are expected to remain as neighbourhoods with a single-family character over the long-term. Pockets of *Single-Family Residential* designated land also exist south of Lougheed Highway adjacent to multi-family land uses. For the purpose of this policy review, three geographic sub-areas are identified:

- West sub-area: lands west of 224 Street. Characterized by existing lanes adjacent to the Lougheed Transit Corridor, where greater density is expected.
- North-East sub-area: lands east of 224 Street and north of Dewdney Trunk Road. Characterized by larger lots, with frontages on a range of road classifications.
- South-East sub-area: lands east of 224 Street and south of Lougheed Highway. Characterized by generally smaller properties with newer homes.

The *Single-Family Residential* land use designation provides options for increasing density and choice of housing form, while retaining the single-family character in these established neighbourhood blocks. Additionally, this land use designation supports several different lot sizes, with the smaller lot sizes typically being infill development, and includes the duplex and triplex housing typology. The latter form of housing permits a higher level of density, compared to a townhouse form, to help encourage a greater variety of infill housing that is intended to help retain single-family character. The existing OCP policy 3-17 prescribes development in the following ways:

- To enable some densification in areas designated for Single-Family Residential, Maple Ridge will consider:*
- a. A Detached Garden Suite, subject to consistency with the Maple Ridge Detached Garden Suites policy;*
  - b. A Secondary Suite within a principle single-family use dwelling, subject to consistency with the existing Maple Ridge Secondary Suite Bylaws.*

- c. *Lot size of 213m<sup>2</sup> to 370m<sup>2</sup> is permitted, where vehicle access is from a rear lane only.*
- d. *Minimum lot size of 371m<sup>2</sup> is permitted, where driveway access is located from the rear lane or the street.*
- e. *Duplex development will be permitted on a corner lot or a lot with lane access to concealed parking. The minimum lot size for duplex development is 557 m<sup>2</sup> and the character of the development should be similar to a single-family development in its size, scale, and massing.*

While rear lanes currently exist in the Town Centre area, they are not common and are more prevalent in the Central Business District and in the historically developed precinct of Port Haney. The Town Centre Area Plan specifically addresses the desirability of lanes, and policy 5-9 states:

*Maple Ridge will encourage the retention of laneways and the creation of new laneways should be considered, where appropriate and feasible.*

Creating and retaining laneways, where possible, is supported through the *Maple Ridge Subdivision and Development Servicing Bylaw*, which stipulates that new residential driveway access is not permitted from arterial roads. A further limitation is placed on new residential driveways for collector roads, where the parcel is less than 370m<sup>2</sup> in lot area.

Since adoption of the Town Centre Area Plan, new and revised information that guides development have been adopted, specifically the creation of the R-2 (Single Detached (Medium Density) Urban Residential) zone. This zone has a minimum lot size of 315 m<sup>2</sup> with a lot size in between the R-1 (Single Detached (Low Density) Urban Residential) zone and the R-3 (Single Detached (Intensive) Urban Residential) zone. Currently, the R-2 (Single Detached (Medium Density) Urban Residential) zone has been used throughout the City. This relatively new zone has provisions to have driveway access from either the street or a rear lane, with successful examples of both already built.

Through the City's Housing Action Plan, work is ongoing to explore a broad range of residential infill options, to provide moderate density in housing forms where gaps have been identified. Additionally, staff have identified some small select areas of streets that are, in fact, good candidates for even higher densities and housing forms.

#### Access Management Policy:

In 2020, the Engineering Department established an Access Management Policy 9.14, to differentiate Major and Minor Arterial roads and their driveway access regulations. The Access Management Policy states that no new vehicle access is permitted from Major Arterials, such as 227 Street, and that access must be obtained from the lesser classified street or a rear lane. For Minor Arterials, a limited number of driveways is possible, with spacing every 50 m. Given these access requirements, parcels of land will need to consolidate into larger development sites, or obtain access from a rear lane or side street

### **3.0 PUBLIC CONSULTATION PROCESS**

Within the context of a steadily densifying Town Centre, and the purpose of the *Single-Family Residential* land use designation to provide detached homes in established neighbourhoods, which have seen relatively small amounts of redevelopment change, a public consultation event was created to gather public input on allowing the subdivision of land into a minimum lot size of 315m<sup>2</sup> for single-

family homes without a rear lane, as is currently permitted outside of the Town Centre. This section outlines the engagement program, and the survey results.

In order to receive feedback from *Single-Family Residential* land use property owners in the Town Centre, an invitation letter was mailed to all property owners in the *Single-Family Residential* land use area (see Appendix C). A total of 510 invitations were mailed out. The letter provided overview information about the proposed policy change, invited them to a virtual open house, and directed them to find more information on the city website.

Approximately 85 people sent a RSVP for the virtual open house (using Zoom) and approximately 90 people logged on for the event. The event included a power point presentation describing the land development process, OCP policy framework and explained the proposed policy change and its implication. The presentation was followed by a 'Question and Answer' period, where participants could either 'chat' a question or comment, or raise a virtual hand to verbally ask a question or make a comment (see Appendix E). The event ended at 8:20pm, when there were no further questions or comments to staff.

Following the virtual open house, a survey (see Appendix F) was emailed to participants and posted on the City's website, inviting completion of the survey over a two week period (February 18 – March 4, 2021). In total, 47 responses were gathered (see Appendix H). The survey included two parts with a total of 15 questions:

- Part 1: Regarding general opinion about housing change and timing on a homeowner's street.
- Part 2: Addressing feedback for the proposed policy change.

#### Part 1 Results:

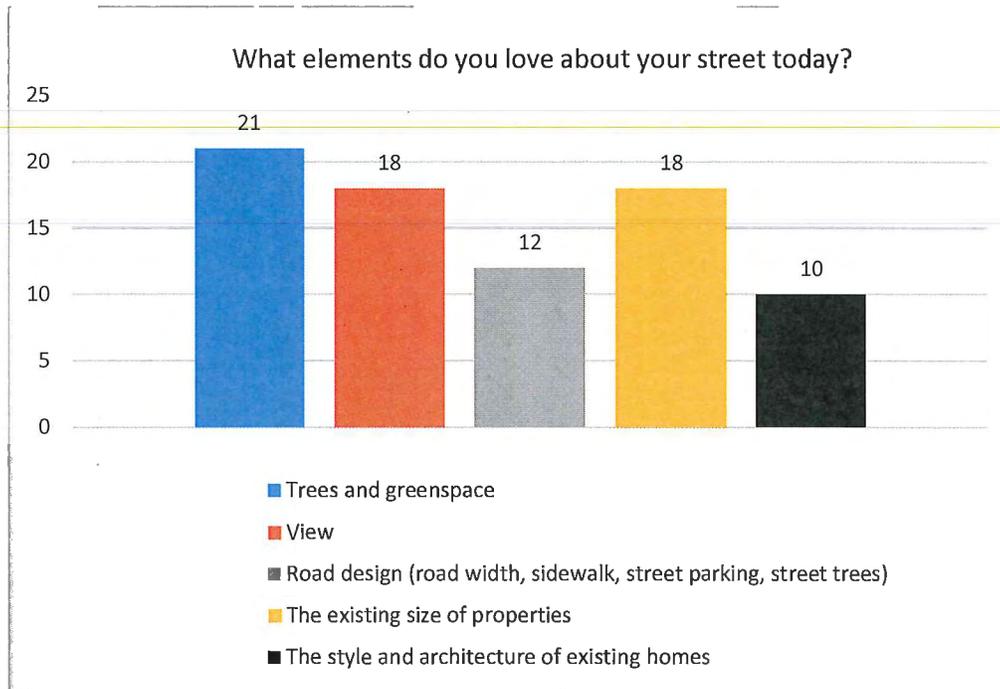
In Part 1 of the survey, we asked people for their address and how long they have owned their property to get a sense of the make-up of the group. Many of the streets with *Single-Family Residential* designated properties were represented in the survey responses. This information was used to map the geographic distribution of agreement or disagreement with the policy change by broader sub-area (north-east, south-east, and west) to maintain privacy. Support for the proposed policy based on location is attached as Appendix G.

The virtual open house was by invitation to property owners and 55% percent of respondents identified as residing at the property for ten years or more, with 39% residing at the properties for less than 10 years. Three respondents identified as non-resident landowners or renters.

Respondents were invited to identify the elements that they loved about their street. Some of the elements that were most often picked included trees and greenspace, the existing size of properties, and views. In the 'other' category, people recorded the following additional elements:

- Proximity to destinations
- A sense of belonging (Neighbours/Neighbourhood Feel/Sense of Community)
- Quiet and Privacy

Table 1: Survey Question 3



When asked what elements were desired as neighbourhood change occurs, the most often selected element was road design (road width, sidewalk, street parking, street trees), followed by trees and greenspace. In the 'other' category, the road design element was also reflected with responses such as traffic calming, streetlights, on-street parking, and quiet and low traffic. The elements of existing lot size and existing style and architecture of existing homes also scored high.

Table 2: Survey Question 4

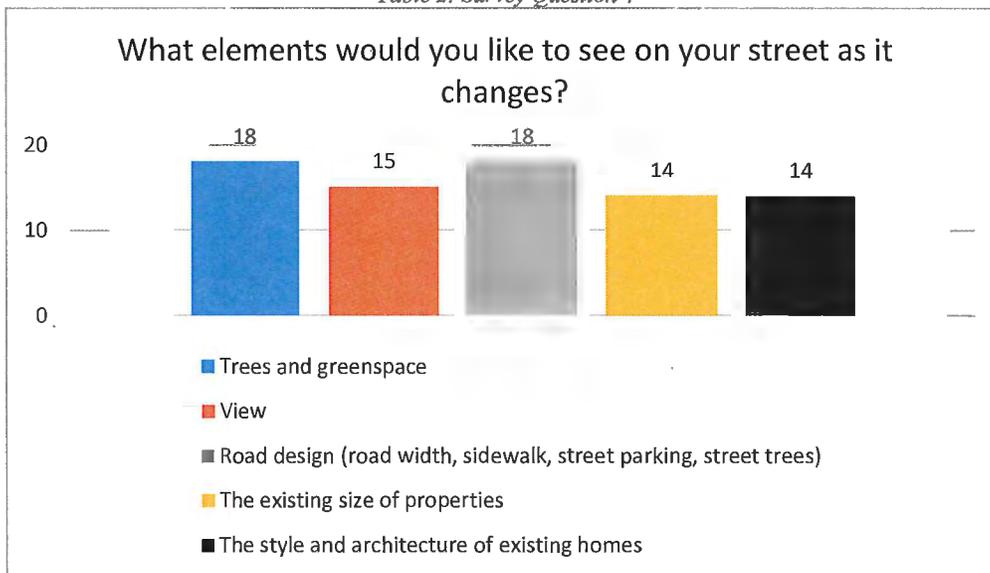


Table 3: Survey Question 5

Over what time frame do you anticipate seeing your street changing with new homes?



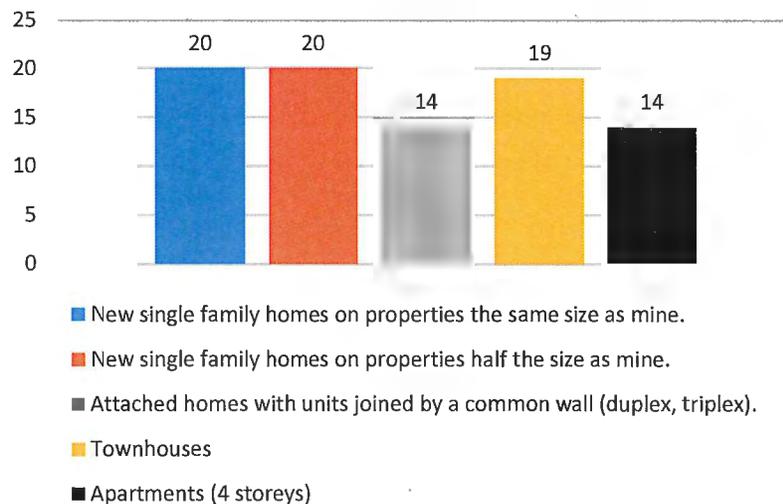
Next, respondents were asked to think about the timeframe that they anticipated seeing their street changing with new homes. Responses were primarily 'Change is already happening' and '0-5 years'. The second largest reported answer was 'I don't want my street to change'.

The survey also asked respondents to share what types of homes they envisioned on their street, with the option to select one or more forms of housing.

All forms of housing were envisioned, with 'apartments' and 'attached homes' scoring the lowest, and 'new single-family homes on properties half the size of mine' as the most commonly chosen option.

Table 4: Survey Question 6

As change occurs, what types of homes do you envision on your street?

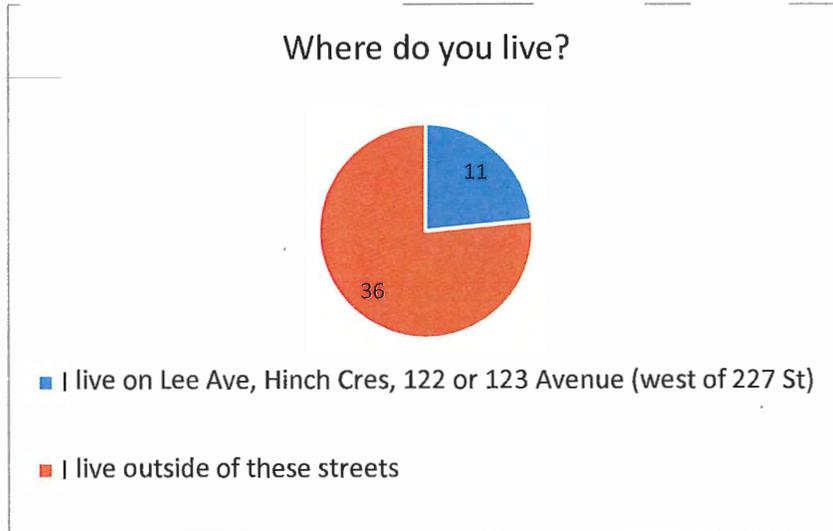


## Part 2 Results:

In this part of the survey, respondents were asked if they supported the proposed policy change or not. As the number of eligible properties is concentrated in the northeast part of the Town Centre, respondents were specifically asked whether they lived in this sub-area. If they did, there were two additional questions to determine if they were interested in using the new development opportunity the policy change affords, and if the proposed policy change reflected the vision for change on their street.

The survey results indicated that of the total number of survey respondents, 24% owned property in this sub-area. Of these 11 property owners, five indicated that subdivision without a rear lane was an option that they would consider for their property.

Table 5: Survey Question 7



Sub-area property owners were then asked how the proposed policy change fit with how they imagined their street changing. Compared to the earlier question about future housing form, sub-area property owners envisioned a narrower range of housing options than the broader group of 47 respondents. In this question, none of the owners envisioned townhouses or apartments on their street, and four respondents commented that they envisioned no change to housing form or lot size.

Table 6: Survey Question 9

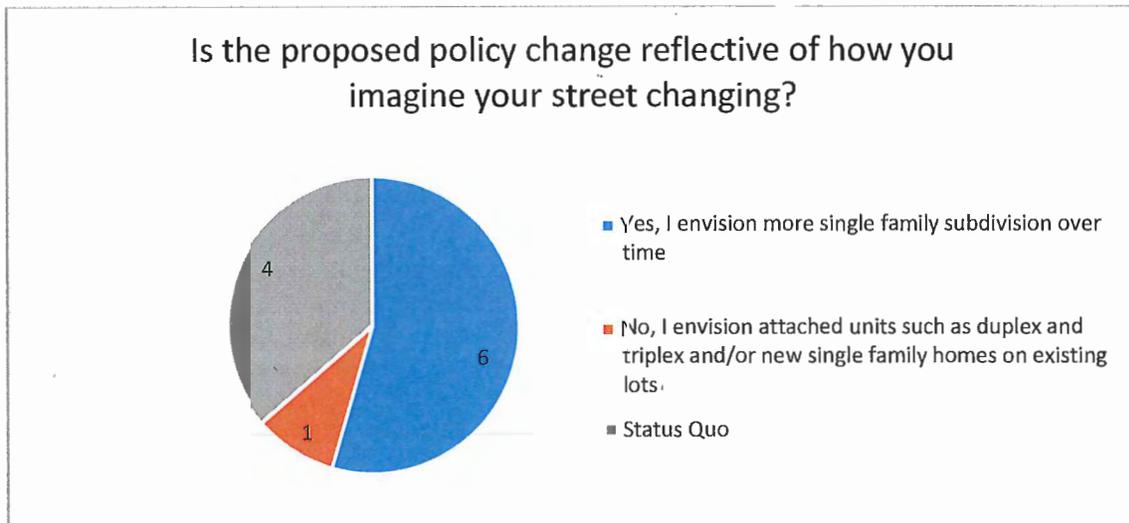
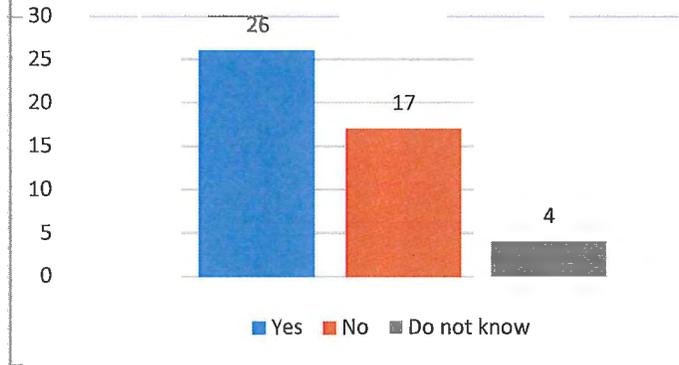


Table 7: Survey Question 11

The proposed amendment will provide another development option where lane access is not feasible, allowing more subdivision. Are you in support of this additional development option?



All respondents were asked if they supported the proposed policy change, which would create additional subdivision opportunities without a rear lane. The majority were in support. It is noted that three members of one household all answered 'no' to this question.

The last two questions addressed the virtual format of the open house, to better understand how accessible electronic consultation is compared to in-person events. A full listing of survey results, including concerns over the proposed policy change and additional feedback regarding the proposed policy change are included in Appendix H.

Survey Findings Summary:

In summary, the majority of respondents were in support of the proposed policy change, although there was a higher number of respondents opposed in the North-East sub-area (see Appendix G). While the survey respondents owned property throughout the Town Centre, there was a stronger rate of participation for owner occupiers (94% of respondents) compared to non-resident owners (4% of respondents).

There were two key timeframes that respondents identified that their street would change during: either change was felt to be already in progress and expected over the next five years, or respondents indicated a desire for no change. In terms of how their street would change, respondents communicated that all types of housing could be located on their street, likely due in part to the range of housing options that currently exist in the Town Centre. It is notable that in the North-East sub-area where eligibility was highest, respondents identified a smaller range of housing options.

The three most desirable existing elements that residents identified on their street were: trees and greenspace, the existing size of lots, and views. On the other hand, respondents identified elements such as trees and greenspace, and road design (road width, sidewalks, on-street parking) as desirable elements to enhance as change occurs.

**4.0 PLANNING ANALYSIS**

Given the feedback from the survey, combined with the intent of the Town Centre Area plan policies and objectives, this section provides an analysis of the impact of a policy 3-17 amendment.

Existing Conditions:

As part of the research for the proposed policy change, the *Single-Family Residential* designated properties were reviewed and the following characteristics emerged:

- There are 395 properties designated *Single-Family Residential* (about 30 hectares of land);
- The age of homes vary from 1940s/50s through to 2000s;

- The designation is geographically spread out throughout the Town Centre;
- There are a variety of lot sizes, from 370m<sup>2</sup> to 1,700m<sup>2</sup>;
- There are two bare land strata developments that have a single-family form, but are zoned RM-1 (Low Density Townhouse Residential). Due to the existing multi-family zoning, these properties are expected to have different redevelopment opportunities than fee simple properties;
- Some properties within this designation are located on Local, Collector, Major and Minor Arterial Roads.
- Some areas are small and may be better utilized for higher density housing options in the future.

While there has been consistent residential densification in the Town Centre since 2008, the newly constructed units have predominantly been apartment units, with only 1% of new units being constructed in the *Single-Family Residential* land use. While this is a relatively small amount of re-development, the single-family housing form contributes to the range of housing provided in the Town Centre and reflects the intent of the area plan. Furthermore, the level of change noted over the past 12 years also suggests the relative stability of *Single-Family Residential* streets due to factors that include relatively new housing stock, long-term residents, low re-development potential or a combination of more than one of these factors.

Over the past nine months, two rezoning applications have been made to subdivide land into new single family lots no less than 315 m<sup>2</sup> in area with vehicular access from the street rather than a rear lane. The applications proposed to use the R-2 (Single Detached (Medium Density) Urban Residential) zone. This zone is currently used outside of the Town Centre without a rear lane, and was created after the Town Centre Area Plan was adopted in 2008. The R-2 (Single Detached (Medium Density) Urban Residential) zone falls within the range of single-family lots currently permitted in the *Single-Family Residential* land use, and would provide a new development option for eligible properties.

To qualify for development under the proposed policy change using the R-2 (Single Detached (Medium Density) Urban Residential) zone, an eligible property must meet the following criteria:

- A minimum lot size of 630m<sup>2</sup> after necessary road dedication;
- A minimum lot width of 22m and lot depth of 27m;
- Be located on a local road, where there is no existing lane or conceptual lane plan;
- Does not meet the area for incorporating a rear lane (additional 7.5m depth in instances where a rear lane does not already exist).

Based on the above parameters, there are approximately 355 properties that would not be impacted by the proposed policy change (see Appendix A), due to their existing lot dimensions, frontage on a Major or Minor Arterial or Collector, current or future lane feasibility, or a combination of these three factors. The North-East sub-area of the Town Centre contains the main group of eligible properties concentrated on Lee Avenue, 123 Avenue, 122 Avenue and Hinch Crescent west of 227 Street.

It is noted that a proposed policy change is considered for policy 3-17; however, rear lanes will continue to be required through development for a number of locations and circumstances, as outlined below:

- Where properties currently have a rear lane;
- On collector, Major Arterial and Minor Arterial roads as identified in the Access Management Policy and the *Maple Ridge Subdivision and Development Servicing Bylaw*.

Rear lanes would continue to be the desired vehicular access point for *Single-Family Residential* designated properties, as they create an attractive streetscape that minimizes conflict between vehicles, cyclists, and pedestrians. Lanes also contribute to a denser road network, increasing the

number of routes for better connectivity. Currently, the City has identified lane concepts for lands fronting 227 Street and 228 Street north of Dewdney Trunk Road and the lanes are being created through rezoning and subdivision applications within these blocks. So far, small portions of these lanes have been constructed, with further extension expected with subsequent redevelopment. Streets such as Selkirk Avenue, 119 Avenue, and Cliff Avenue were originally developed with rear lanes. In all of these cases, rear lanes will still be required as the primary vehicular access when rezoning occurs.

Given the above noted criteria, approximately 10% of the 395 properties, or 40 lots appear to meet all of the evaluation criteria based on a high level mapping analysis. The proposed policy change will allow this subset of properties to have a redevelopment opportunity that otherwise would not exist, resulting in additional Town Centre residential units within a single-family form.

As is evidenced by the number of eligible properties, a change in policy to allow subdivision without a rear lane on streets where this type of access is not feasible will provide the opportunity to add approximately 40 new single-family homes, with most of these properties located in the North-East sub-area.

#### Recommendations:

With the policy impact analysis and public consultation process completed, staff are recommending that policy 3-17 of the Town Centre Area Plan be amended, as outlined in Appendix I in conjunction with application 2020-256-RZ. The text amendment wording for policy 3-17 is as follows, with proposed changes noted in bold:

*To enable some densification in areas designated for Single-Family Residential, Maple Ridge will consider:*

- a. A Detached Garden Suite, subject to consistency with the Maple Ridge Detached Garden Suites policy;*
- b. A Secondary Suite within a principle single-family use dwelling, subject to consistency with the existing Maple Ridge Secondary Suite Bylaws.*
- c. Lot size of **255m<sup>2</sup> to 314m<sup>2</sup>** is permitted, where **driveway** access is from a rear lane only.*
- d. Minimum lot size of **315m<sup>2</sup>** is permitted, where driveway access is **in compliance with Council's Access Management Policy 9.14 and subject to the following:**
  - i. **property fronting an Arterial or Collector road require rear lane access only.***
  - ii. **property fronting a Local road may have access from the street only, where rear lane access is not feasible.****
- e. Duplex development will be permitted on a corner lot or a lot with lane access to concealed parking. The minimum lot size for duplex development is 557 m<sup>2</sup> and the character of the development should be similar to a single-family development in its size, scale, and massing.*

The proposed policy change would reduce the lot size range where a rear lane access is required, thus allowing smaller lot sizes (minimum 315m<sup>2</sup>) to be accessed from the street where lane access is not feasible. Feasibility is determined by the road classification, the depth of existing lots, and the location of an existing or planned rear lane.

## Rationale:

The proposed policy change is supported for the following reasons:

1. **Consistent with development practice outside of the Town Centre.** Since its introduction in 2012 after adoption of the Town Centre Area Plan, the R-2 (Single Detached (Medium Density) Urban Residential) zone (minimum lot size 315m<sup>2</sup>) has been used throughout the City with driveway access from the street rather than a rear lane.
2. **Complies with access requirements stipulated by the Engineering Department.** New single-family subdivision will continue to comply with the Access Management Policy 9.14, which restricts access from Major Arterials, limits access on Minor Arterials; and the Maple Ridge Subdivision & Development Servicing Bylaw, which restricts access on Collector roads in the Town Centre.
3. **Supports the Town Centre Area Plan goals and objectives.** The Town Centre is a desired location for a range of housing forms, and a key location for residential densification.
4. **Results in a modest number of new units.** The properties that satisfy all of the eligibility criteria is approximately 10% of all *Single-Family Residential* designated properties.
5. **Supported by property owners identified through consultation.** Of the 47 survey responses, there were 26 responses in favour of the proposed policy change from 25 households.
6. **Regulated through development process.** Survey responses noted concerns over on-street parking and traffic, and a desire to see elements such as trees and greenspace, road design, and views addressed as change occurs. These considerations can be mitigated through design features and rezoning requirements. A rezoning application will be required as part of the re-development process, allowing Council and neighbourhood feedback for each development proposal.

## 5.0 INTERDEPARTMENTAL IMPLICATIONS:

The Engineering Department has reviewed the proposed policy change and has noted the following:

- The supply of parking for a lane accessed lot compared to a street accessed lot is similar;
- There is additional space for on-site stormwater management when the property is street accessed, and
- There are potential servicing cost savings for street accessed lots.

The Engineering Department is in support of the proposed policy change, although they do indicate that there are some instances where a lane may still be required. Direct vehicular access from arterial roads, such as 227 Street, is not supported. Conceptual lane plans that have previously been established will continue to be pursued, such as on 228 Street (identified as a collector) north of Dewdney Trunk Road.

## 6.0 ALTERNATIVE

Alternatively, Council may choose to keep the existing policy 3-17 language. In this case, where a lane cannot be feasibly constructed, redevelopment options may include detached garden suites, secondary suites, and new single family homes on the existing lot sizes. An alternative motion to the staff recommendation is:

1. That report "Proposed Policy 3-17 Change – Town Centre Area Plan" be received as information; and
2. That application 2020-256-RZ be brought forward to Committee of the Whole for Council consideration.

## CONCLUSION:

On January 12, 2021, Council directed staff to consult on a proposed policy change for the *Single-Family Residential* land use designation in the Town Centre, which would allow a smaller lot size (315m<sup>2</sup>) without a rear lane, where identified as feasible by the Planning and Engineering Departments. A consultation event was hosted virtually on February 18, 2021 and this report contains an overview of the process and feedback received regarding the proposed policy change. It is recommended that an amendment to policy 3-17 of the Town Centre Area Plan be brought forward with rezoning application 2020-256-RZ.

"Original signed by Amelia Bowden"

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**Prepared by:** Amelia Bowden, M.Urb, MCIP, RPP  
Planner 2

"Original signed by Chuck Goddard"

---

**Reviewed by:** Charles R. Goddard, BA, MA  
Director of Planning

"Original signed by Christine Carter"

---

**Approved by:** Christine Carter, M.PL, MCIP, RPP  
GM: Public Works & Development Services

"Original signed by Al Horsman"

---

**Concurrence:** Al Horsman  
Chief Administrative Officer

The following appendices are attached hereto:

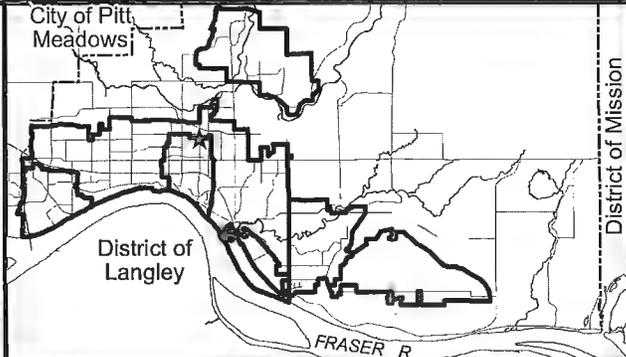
- Appendix A: Map of *Single-Family Residential* Designated Properties
- Appendix B: Development Application 2020-256-RZ Subject Map
- Appendix C: Virtual Open House Invitation Letter
- Appendix D: Virtual Open House Presentation Slides
- Appendix E: Virtual Open House Chat Transcript
- Appendix F: Survey Questions
- Appendix G: Geographic Display of Proposed Policy Change Support
- Appendix H: Survey Results
- Appendix I: Proposed Policy Change



APPENDIX B



Scale: 1:2,000



12333 227 STREET  
PID: 005-085-357



FILE: 2020-256-RZ  
DATE: Aug 19, 2020

BY: PC



Hi there!

The City of Maple Ridge is considering a change to a policy in the Town Centre Area Plan that may impact how your property (shown in yellow on the map below) could redevelop in the future. We want to hear what you think about this proposed land use policy change.



## DID YOU KNOW?

All properties are regulated by two main land use documents:

- Zoning Bylaw:
  - Permits and regulates certain uses on a property
  - Each property has a specific zone assigned to it
- Official Community Plan
  - Identifies a range of zones that may be supported for future redevelopment of a property
  - Guiding land use document for the City

The proposed change could allow subdivision without the current requirement for a rear lane to create properties 315 m<sup>2</sup> in lot area with a minimum frontage of 11 metres (13.5 metres for a corner property).

If approved by Council, this policy change may permit the creation of smaller properties without lanes in the Town Centre.

## OPEN HOUSE

You are invited to a virtual open house on Thursday, February 18, 2021 at 7:00 pm. Planning Department staff will present background information on proposed land use policy changes, answer your questions and request your feedback. Please RSVP at [planning@mapleridge.ca](mailto:planning@mapleridge.ca) to receive the Zoom meeting link. Feedback from the open house will be compiled into a report and presented to Council for consideration.

**Open House Date:** Thursday, February 18, 2021

**Time:** 7:00 - 8:30 pm

**RSVP:** [planning@mapleridge.ca](mailto:planning@mapleridge.ca) no later than 4:00 pm February 17, 2021



Want more information or to speak to the Planning Department directly? Call 604-467-7493 or visit [www.mapleridge.ca/2527](http://www.mapleridge.ca/2527)

 *Having technical difficulty? Please write in the chat and we will assist you.  
Or email [abowden@mapleridge.ca](mailto:abowden@mapleridge.ca)*

**Welcome to our Virtual Open House!**  
**PROPOSED TOWN CENTRE SINGLE  
FAMILY POLICY CHANGE**  
Thursday, February 18 2021



*Having technical difficulty? Please write in the chat and we will assist you.  
Or email [abowden@mapleridge.ca](mailto:abowden@mapleridge.ca)*

**Thank you for your participation in this decision  
making process.**

**Your city staff hosts for tonight are:**  
Amelia Lisa Chuck Mark Adam Tyson Rachel



## What You Can Expect Tonight

### AGENDA

- 7:00 Introduction
- 7:10 The Land Development Process  
Maple Ridge Town Centre Context
- 7:15 Current and Proposed Policy  
Feedback Opportunity – Survey  
Next Steps
- 7:20 \*\*\* Break\*\*\*
- 7:25 Question and Answer
- 8:30 End

### How to Contact Us:

Proposed Policy Change – Amelia Bowden  
[abowden@mapleridge.ca](mailto:abowden@mapleridge.ca) 604-467-7493

Development Applications – Tyson Baker  
[tbaker@mapleridge.ca](mailto:tbaker@mapleridge.ca)  
604-463-5221 EXT. 5621

Development Potential & General Inquiries  
[planning@mapleridge.ca](mailto:planning@mapleridge.ca) 604-467-7341



## What is a Policy?



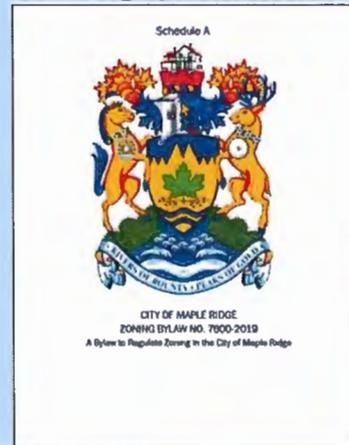
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### Official Community Plan



Policies

### Zoning Bylaw



Zoning Regulations



# What is a Policy?

**SINGLE-FAMILY RESIDENTIAL**

**Para 5.17**  
The Single Family Residential designation in the Town Centre provides options for increasing density and diversity of housing forms, while retaining the single family character as described in the Single Family Designation.

**PURPOSE**

5.17 To provide some designation to areas designated for Single Family Residential, Maple Ridge will consider:

- A Detached Garden Suite, subject to consistency with the Maple Ridge Detached Garden Suite policy;
- A Secondary Suite either a principal single-family use dwelling, subject to consistency with the existing Maple Ridge Secondary Suite Bylaw;
- Lot size of 1,100 sq. ft. or a parcel with a permitted, where vehicle access is both a rear and side;
- A maximum lot size of 37' x 110' if permitted, where driveway access is located from the rear side of the street.

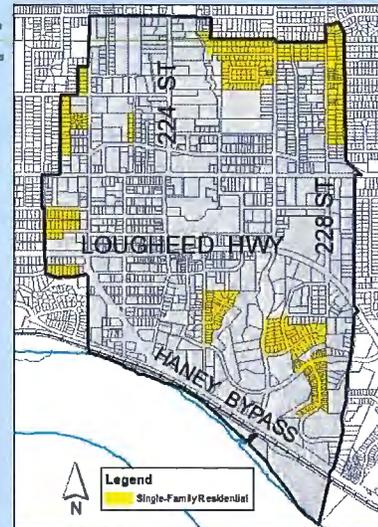
**Para 5.17.1**  
Dwelling and duplex developments will be permitted on a corner lot at a lot with front access to a collector parking. The maximum lot size for duplex development is 15,700 sq. ft. and the maximum lot size for duplex development is 7,000 sq. ft. The size of duplex and duplex developments should be similar to a single-family development in its size, scale, and massing.

# Town Centre Area Plan Vision

- The City has a target to have 50% of the City's population live in this area by 2050, so increasing density is a key part of the area plan vision.
- A range of housing options is desired
- The City has a target to increase jobs in the Town Centre
- Terminus for rapid bus line, which connects to the skytrain line in Coquitlam.
- Important commercial hub – largest commercial floorspace in the City

# The Same – But Different

- The proposed change may impact some properties more than others.
- Homes are different ages, condition, so they will redevelop at different times.
- Property size varies – subdivision minimums exist.



# The Land Development Process



- The land development process is initiated by the property owner(s) and their representative.
- City hall staff review the development proposal to ensure fit with policies and bylaws.
- Land development decisions are made by elected officials based on staff recommendations and public feedback.
- If approved, the change may allow new construction (ex: taller, bigger, more homes) or different uses (commercial, residential).



## Why is the City Considering a Change in Policy?



- Two development applications have been received.
- One has been denied, one is deferred pending the feedback from this meeting.
- Council directed staff to undertake a review and consult with property owners.



## Current Policy



## Proposed Policy

**Proposed Lane Required**

Lane

New lots created  
255m<sup>2</sup>- 314 m<sup>2</sup> in area  
(2744-3379 ft<sup>2</sup>) and  
duplex lots 557 m<sup>2</sup> in  
lot size

**Proposed No Lane Required**

Triplex Lot

New lots created  
315 m<sup>2</sup> (3390 ft<sup>2</sup>)  
in area or greater

MAPLE RIDGE  
British Columbia

## Current and Proposed Policy

<p><b>Current</b></p> <p>Properties currently may qualify for Rezoning these redevelopment options:</p> <ul style="list-style-type: none"> <li>• 213-370 m<sup>2</sup> (2292 -3983 ft<sup>2</sup>) sized lots require lane access</li> <li>• 370 m<sup>2</sup> (3380 ft<sup>2</sup>) and larger sized lots don't require a lane</li> <li>• 2-3 attached units on the same property (duplex, triplex)</li> </ul>	<p><b>Proposed</b></p> <p>Properties currently may qualify for Rezoning these redevelopment options:</p> <ul style="list-style-type: none"> <li>• 255-314 m<sup>2</sup> (2744-3379 ft<sup>2</sup>) sized lots require lane access</li> <li>• 315 m<sup>2</sup> (3390 ft<sup>2</sup>) and larger sized lots don't require a lane</li> <li>• 2-3 attached units on the same property (duplex, triplex)</li> </ul>
---	---

MAPLE RIDGE  
British Columbia

## How Might This Affect You?

Lane access will continue to be required for properties:

- That currently have a rear lane
- Identified by the Planning and/or Engineering Departments as requiring a lane (Access Management Policy or other)



## How Might This Affect You

- There may be no change for your development potential, if your property meets the requirement for needing a lane.
- Some of your neighbours may have new potential to subdivide their property.
- Your property may have new potential to subdivide.

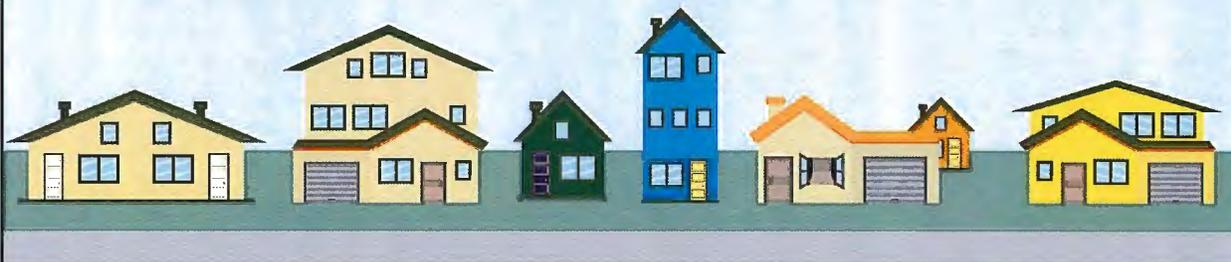


## We're Here to Listen

- Share your thoughts by completing the survey.
  - You have two weeks to complete – closes March 4
  - The survey link has been emailed to you
  - The survey is also available at [www.mapleridge.ca/2527](http://www.mapleridge.ca/2527)

## What's Happening Next

- A report will be presented to Council on March 30, outlining the consultation process and summarizing the survey results.
- Council will make a decision based on the staff recommendation.



## 5 Minute Pause

Ask us your questions after this short break

### How to Contact Us:

Proposed Policy Change – Amelia Bowden [abowden@mapleridge.ca](mailto:abowden@mapleridge.ca) 604-467-7493

Development Applications – Tyson Baker [tbaker@mapleridge.ca](mailto:tbaker@mapleridge.ca)  
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Development Potential & General Inquiries - [planning@mapleridge.ca](mailto:planning@mapleridge.ca) 604-467-7341



## Question & Answer



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18:08:01 From Krista Gowan - Planning Department : the host has me muted :)

19:02:05 From [REDACTED] : Cant hear anything

19:03:04 From [REDACTED] iPad to City of Maple Ridge Planning(Privately) :  
we can't see anyone

19:03:13 From [REDACTED] : I see my name, but not a picture of myself.

19:03:25 From [REDACTED] : I can hear well now.

19:03:25 From [REDACTED] iPad to City of Maple Ridge Planning(Privately) :  
me too

19:22:48 From [REDACTED] : 1) Is 228 St (between 122nd On North and  
Dewdney Trunk on South) within scope of policy change or no?

19:22:57 From [REDACTED] : 2. What about existing projects with lane  
already planned between 228 & Greenwell? (where access is to be provided to the  
homes off the lane).

19:23:01 From [REDACTED] : When would this policy changes come into effect?

19:23:31 From [REDACTED] iPhone : how do find out what you do if I there is a  
development change to your specific property?

19:24:04 From [REDACTED] : when we will be able to see the questionnaire  
in the email?

19:24:17 From [REDACTED] : We are strongly opposed to the proposed policy  
change

19:25:18 From [REDACTED] : What if my neighbor decides to re develop [REDACTED]  
property. What happens to my property value. Can a property be rezoning if there is  
no potential for laning.?

19:25:34 From [REDACTED] : How does this effect Cliff Ave with [REDACTED]  
properties for subdividing

19:25:35 From [REDACTED] : I am in the favour of proposed plan

19:25:41 From [REDACTED] : What about west of 227street on 123 Ave where there is  
no lane currently, would smaller lots be allowed without lane on west of 227 street  
on north of 123 Avenue.

19:25:48 From [REDACTED] : How would you put a lane in on  
brickwoodclose? we are in a ravine and a cul-de-sac

19:26:16 From [REDACTED] : Will rezoning take place on all highlighted  
properties or select few?

19:26:32 From [REDACTED] : Can you email a copy of the information you presented  
this evening to me, so I can distribute to my two neighbors I represent [REDACTED]  
[REDACTED]

19:26:33 From [REDACTED] : I think this is great initiative by City of Maple  
Ridge moving forward to build more units which are affordable in . I think building  
density is the way of future rather than having a sprawling city. Since housing  
prices are soaring sky high we need more housing and smaller single family lot is  
way to go. I am strongly in favor of this change

19:26:37 From [REDACTED] : Why change the policy for now based on these  
two developments?

19:27:07 From [REDACTED] : is there a rep for the development properties on  
Lougheed south side?

19:27:24 From [REDACTED] : Is the rezoning requirement related to area only and  
there is no constrains on the width/length?

19:27:28 From [REDACTED] : My property has a gas line behind it. There is

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no potential for a lane.

19:27:36 From [REDACTED]: I am opposed to the policy change.  
19:27:37 From [REDACTED]: Leave out brickwood close because there are no

rear lanes anyway. Otherwise if Brickwood Close is included, I oppose the policy change.

19:27:46 From [REDACTED]: I feel that we havw

19:27:52 From [REDACTED]: e

19:27:54 From [REDACTED]: we strongly support this proposed change

19:28:13 From [REDACTED]: We are heavily opposed to this proposed change.

19:28:20 From [REDACTED]: I'm strongly opposed to the proposed policy change

19:28:31 From [REDACTED]: It appears proposed plan will bring good value to a lot of property owners. I am in support of City proceeding with it.

19:29:31 From [REDACTED]: I'm strongly in favour to the proposed change. I need affordable housing to live in

19:29:36 From Galaxy S9 : strongly in favor of proposed change

19:29:39 From [REDACTED]: I am strongly in favour of this proposed policy. More housing is needed.

19:29:51 From [REDACTED]: its true, [REDACTED]

19:30:07 From [REDACTED]: There was a proposed development on Lougheed that was put into place before the haney bypass improvements. If this proposal goes through what kind of development would [REDACTED] be allowed to go through with that would impact the use of [REDACTED] We share the [REDACTED] with the owner of these houses so if [REDACTED] was to put in garden suites would the impact to neighbours be taken into consideration?

19:30:55 From [REDACTED]: I am strongly in favour of this proposed policy

19:31:01 From [REDACTED]: I believe the change will increase the value of my property.

19:31:28 From [REDACTED]: I am strongly in favour of this proposed policy

19:31:48 From [REDACTED]: How many properties in the highlighted area do these changes actually apply to? Ie, how many properties meet the minimum 315m<sup>2</sup> and 11m frontage requirements

19:32:07 From [REDACTED]: is this the same policy that the areas just north of Haney Bypass

19:32:26 From [REDACTED]: I am strongly in favour of this proposed policy

19:32:34 From [REDACTED]: opps sent to soon. The

19:32:34 From [REDACTED]: if you don't see the raise your hand option and it should pop up.

19:33:15 From [REDACTED]: We are opposed to the proposed policy change too. We do not hear any overall blue print of re-development of city centre and the change of policy proceeded that may cause more urban slumming.

19:33:15 From [REDACTED]: I am strongly in favour of this proposed policy as well. We need more housing and more people in Maple Ridge. More people, more businesses, more jobs.

19:33:17 From [REDACTED]: I agree with [REDACTED] comment above that we should

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create more affordable units for residents. The city is growing quickly and more and more people are needing accommodation in Maple Ridge. This policy change will allow for more people to benefit from the land.

19:33:33 From [REDACTED]: Although the idea of a laneway has its merits and is on the OCP for lots on 228th, I think it is a deterrent to some development. The issue for these owners is that we have to provide the land for the lane and the other lots to the rear will benefit but not provide land. I am in favor of this proposal along 228.

19:33:43 From [REDACTED] iPad: if this policy gets amended...would our property taxes increase?

19:33:49 From [REDACTED]: I agree [REDACTED]

19:34:10 From [REDACTED]: \How would this type of development be approved with the escarpment / haney slide? (Cliff ave)

19:34:42 From [REDACTED] iPhone: Shopping centers and schools need to be filled by people who live in the area. and it needs to be attractive and affordable for the people to come.

19:35:12 From [REDACTED]: Infratructure to support high density?

19:36:19 From [REDACTED]: Well said [REDACTED] More shopping centers will be no good if we don't have people there to shop.

19:36:22 From [REDACTED] iPhone: This will help fulfill the City's plan to bring more than half the population into town Centre are by 2050

19:36:26 From [REDACTED]: I agree with [REDACTED]

19:36:38 From [REDACTED]: Goods points [REDACTED]

19:37:48 From [REDACTED]: Strongly opposed to the change as there is no consistency in this plan from one street to another. With this plan the neighbourhood

19:37:59 From [REDACTED]: Those that can't afford these large lots should possibly consider moving into a townhome. Rather than changing the character of these neighbourhoods

19:39:47 From [REDACTED] iPhone: this last fellow made some great points as well

19:39:49 From [REDACTED]: where will this presentation be posted?

19:39:53 From [REDACTED] iPad: secondary suite that could be added to each higher density properties could really affect traffic etc...

19:41:08 From [REDACTED]: We do not have the infrastructure for the population. Because of all the development over the years volume of traffic has gone through the roof. Trying to commute in and out of Maple Ridge is extremely long

19:41:51 From [REDACTED]: [REDACTED] will the salvation army caring place be staying in their current location and do they have a say in this laneway proposal [REDACTED]

19:42:00 From [REDACTED] iPhone: [REDACTED] going east to west in may city in the lower mainland is a nightmare

19:42:12 From [REDACTED] iPhone: in any city

19:43:41 From [REDACTED]: How will this affect drainage . We and our neighbors currently have [REDACTED] and that of our neighbors. This is now being used by the City for drainage purposes and includes drainage from the developments on the other side of Lougheed Highway. When we first

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moved here there was little water in the creek and during the summer there was no water flow at all. The amount of water is now considerable. thernowThe City has a system under our back lane with a number of easements and covenants concerning the use of the property with respect to the water / creek flow. With the increased density on the other side of Loughheed in the past the flow of water has increased considerably. How will the proposed changes affect the water flow to this creek. A number of years ago there was virtually no water running through this creek. There is concern of erosion due to the increased water flow as a result of a the continued development and use of the creek as drainage.

19:44:05 From [REDACTED] : [REDACTED] other cities have other options

19:44:56 From [REDACTED] iPhone : awesome question

19:45:15 From [REDACTED] : Could I apply for rezoning of my property if the policy is approved but not redevelop until a later time when I am ready, or must I wait until I'm ready to redevelop to apply for rezoning?

19:45:46 From [REDACTED] to City of Maple Ridge Planning(Privately) : On [REDACTED] Street there is still no walkway. This is already dangerous for the young kids and familys. Putting more people in the area only increases the risk and danger to the citizens. I suggest fixing and making safe the

19:46:12 From [REDACTED] to City of Maple Ridge Planning(Privately) : Areas for pedestrians and cycles before adding more people to the area

19:46:22 From [REDACTED] : We don't understand and want to know on what base [REDACTED] Street area is included in redevelopment policy change?

19:51:15 From [REDACTED] : I understand this is a general statement, but this seems very exciting for developers but for actual residents, people that Live in Maple Ridge, this has nothing but downsides

19:52:32 From [REDACTED] : The temporary lane that has to be built every time each owner on 228th applies for subdivision is a waste of time effort and money. There has to be a better plan than to ask each owner to build the lane to exit 228th and then later demolish it.

19:52:47 From [REDACTED] : What happens if there is a developer that wants to redevelop an area or block to put townhouses or a condo development? Is that a different type of zoning?

19:55:47 From [REDACTED] : This sounds like an opportunity, when we can attract more people to move to Maple Ridge, we can have enough people to build Evergreen Line extension soon

19:56:18 From [REDACTED] : That was a good point raised earlier. Vast majority of people can not afford new houses on big luxury lots. Smaller lots will clearly increase affordability to more families. Development and increased density is a norm for any city as population increases. It can be delayed but not stopped. It is eventually bound to happen. From affordability aspect, it appears to be a good idea. As to someone saying earlier that those who can't afford big lots, should go live in townhomes; similar can be said that those who do not want smaller lots can live in an area without any proposed development. Such negative remarks obviously aren't helpful. If it benefits the majority, why not! Development will create more opportunities in Maple Ridge.

19:57:31 From [REDACTED] : If we subdivide our properties

19:58:51 From A23688 : I guess the city is not ready yet to increase population/ Roads are flooded with cars. The roads are too narrow to accept more

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cars. If you decide to increase population you should do infrastructure job first !  
The city has a lot of space to build new tiny houses with wider road, new schools  
and e.t.c. !

19:59:22 From [REDACTED] : K  
19:59:30 From [REDACTED] : I totally agree  
19:59:41 From [REDACTED] : Subdividing to allow more housing one single  
family lots. There would be no room for a yard . will increase the already congested  
traffic. Opposed  
20:00:06 From [REDACTED] : I absolutely agree  
20:00:30 From [REDACTED] : Opposed strongly !!!  
20:01:49 From [REDACTED] : We are the last street before city centre .  
We already have increased the congestion 100%.  
20:02:01 From [REDACTED] : I think we can all live happily, people who are  
enjoying larger lots, they can keep their properties by not subdividing and enjoy  
the larger lots. However moving forward for next decades to come we need more  
housing. Traffic is bound to increase with new apartments and townhouses, so having  
100 more single family lots spread over whole city is not really going to impact as  
much as 100 unit apartment on one corner.  
20:02:32 From [REDACTED] iPhone : great point [REDACTED]  
20:02:42 From [REDACTED] : Heavily opposed. 2 applications doesn't  
warrant a policy change of this nature. Character and maturity of these  
neighbourhoods are hugely compromised by these random newer houses sandwiched in  
between older homes  
20:03:01 From [REDACTED] iPhone : don't subdivide if you don't want. this  
change is a tool in the event you or future owner decides to subdivide  
20:03:57 From [REDACTED] iPhone : that's what the leaflet said [REDACTED]  
20:04:05 From [REDACTED] : Living in the 1960's or 1970's is not possible when  
everyone demands services of 2021... we need to build more density and bring more  
business and jobs to the city center...  
20:05:27 From [REDACTED] iPhone : the leaflet said "may permit creation of  
smaller properties without lanes in the town Centre"  
20:07:33 From [REDACTED] : we support this change as higher density will allow the  
city to bring more facilities into the area that will benefit everyone, skytrain can  
be extended as the population grows  
20:08:39 From [REDACTED] : Look around people. Where are the  
schools, shopping green space? We have seen the changes in the past 27 years why  
don't they take away the Alouette Height NO Barrier housing out of brown ave and 222  
st.? This is prime property and is a nightmare as far as the noise ,crime and  
property theft. It uses up the majority of the Emergency response team!  
20:09:15 From [REDACTED] : Property tax is going to increase no matter what....  
my property value went down in 2019 and tax went up.... It all depends on how much  
money government needs...  
20:09:44 From [REDACTED] : The rich get richer and the poor get poorer  
20:11:00 From [REDACTED] : I agree [REDACTED]... Lookh gas companies right  
now....  
20:11:26 From [REDACTED] : Lol  
20:12:16 From [REDACTED] : We need schools and shopping [REDACTED]  
20:12:47 From [REDACTED] iPhone : This is a good tool for the city and

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potential developers to make the most of the town Centre. I approve

20:13:00 From [REDACTED]: Thank you

20:13:13 From [REDACTED]: thank you

20:13:14 From [REDACTED]: Thank You

20:13:20 From [REDACTED]: thank you

20:13:27 From [REDACTED]: Thank you for taking the time to consult with us.

We appreciate your time.

20:13:43 From Galaxy S9: Thank you for all the information

20:13:43 From [REDACTED]: Thank you

20:13:48 From [REDACTED]: thanks

20:13:49 From [REDACTED]: We are still strongly opposed. Thank you for the information

20:13:51 From [REDACTED]: Is it the city's policy to underground aerial utilities with these developments?

20:13:56 From [REDACTED]: Thank you.

20:13:56 From [REDACTED]: Thank you

20:14:01 From [REDACTED]: Thank you for consultaion for City of Maple Ridge

20:14:37 From [REDACTED]: thank you, we strongly support this change for the benefit of the citizen

20:15:00 From [REDACTED]: thank you for the information. I will be sending you specific questions regarding the properties.

20:15:01 From [REDACTED]: Thank you.

20:15:11 From [REDACTED]: Thank you for the info.

20:15:23 From [REDACTED]: I strongly support this. Thank you,

20:15:32 From [REDACTED]: Thank you for your presentation.

20:15:40 From [REDACTED]: thank you maple ridge city.

20:17:08 From [REDACTED]: thank you !

20:19:05 From [REDACTED] to City of Maple Ridge Planning(Privately) : Just thank you for now, I have some questions that I will mail them to you.

20:19:07 From [REDACTED]: [REDACTED] of 227 Street... [REDACTED] 123 Ave, So I would have to put in hydro underground ... If I subdivide under this policy

20:19:54 From [REDACTED]: ok got it... thanks

20:21:30 From [REDACTED]: sorry what this list is for again?

20:22:12 From [REDACTED]: ok thanks

20:22:46 From [REDACTED]: good night everyone .

20:22:50 From [REDACTED]: Fortis ROW behind 228th - how can that be laned

20:23:31 From [REDACTED]: TY

20:24:52 From [REDACTED]: for lots that are only 100 ft deep, I don't think we can put lane behind those [REDACTED] 123 Ave [REDACTED] of 227 st... so would you allow subdivision under this policy without lane...

20:26:37 From [REDACTED]: ok sounds good... thanks

20:27:56 From [REDACTED]: Thanks, good night everyone,

## Proposed Single Family Land Use Policy Change in the Town Centre

The City of Maple Ridge is considering a policy change that will provide a new redevelopment option for Single Family designated properties in the Town Centre (shown in yellow on the map below). The proposed policy change is to allow subdivision without the current requirement for a rear lane where identified by the Planning and Engineering Departments to create properties 315 sq. metres in lot area with a minimum frontage of 11 metres (13.5 metres for a corner property).

We are asking you for your general opinion about housing change and timing on your street, and your specific feedback on the proposed policy change.

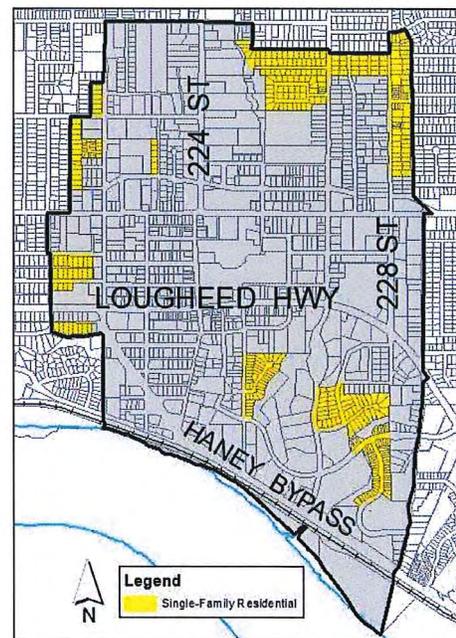
Learn more at [www.mapleridge.ca/2527](http://www.mapleridge.ca/2527)

Have Questions? Please contact Amelia Bowden by email: [abowden@mapleridge.ca](mailto:abowden@mapleridge.ca) or by phone 604-467-7493 This survey will be available until Thursday, March 4 at 4:00 pm.

## Understanding You and Your Perspective

In this section we are asking about your general opinion about housing change and timing on your street.

1. What is the address of the property you own in the Town Centre Area Plan shown in yellow (corresponds with Single Family Residential designated properties)?



2. Please tell us how you identify

- I am a resident landowner - less than 10 years at this address
- I am a resident landowner - 10 years or more at this address
- I am a non-resident landowner
- I am a renter

3. What element(s) do you love about your street today? Select all the apply.

- Trees and greenspace
- View
- Road design (road width, sidewalk, street parking, street trees)
- The existing size of properties
- The style and architecture of existing homes
- None of the above
- 

Other, specify

4. What element(s) would you like to see on your street as it changes? Select all the apply.

- Trees and greenspace
- View
- Road design (road width, sidewalk, street parking, street trees)
- The existing size of properties
- The style and architecture of existing homes
- None of the above
- 

Other, specify

5. Over what time frame do you anticipate seeing your street changing with new homes?

- Change is already happening
- 0-5 years
- 6-14 years
- 15-29 years
- 30 or more years
- No idea!
- I don't think this street will ever change
- I don't want my street to change

6. As change occurs, what types of homes do you envision on your street? Check all that apply.

- New single family homes on properties the same size as mine.
- New single family homes on properties half the size as mine.
- Attached homes with units joined by a common wall (duplex, triplex).
- Townhouses
- Apartments (4 storeys)

Other, specify

## Proposed Policy Change

In this section, we are asking you to comment on what you think about the proposed policy change. The proposed policy change is to allow subdivision without the current requirement for a rear lane where identified by the Planning and Engineering Departments to create properties 315 sq. metres in lot area with a minimum frontage of 11 metres (13.5 metres for a corner property).

7. Is the property you own located on Lee Avenue, Hinch Crescent, 122 Avenue or 123 Avenue (west of 227 Street)

- Yes
- No

If yes:

8. The proposed policy change is anticipated to provide additional subdivision options on your street, and potentially for the property you own. Is subdivision without the requirement for a rear lane a redevelopment option that you would consider for the property that you own?

- Yes
- No
- Do not know

9. Is the proposed policy change reflective of how you imagine your street changing?

- Yes, I envision more single family subdivision over time.
- No, I envision attached units such as duplex and triplex and/or new single family homes on existing lots.
- No, I envision development such as townhouse and apartment on my street.
- Other

10. Please explain how you imagine your street changing.

For all respondents:

11. The proposed amendment will provide another development option for single family designated properties where a rear lane access is not feasible, allowing more Single Family designated properties to subdivide. Are you in support of this additional development option?

- Yes
- No
- Do not know

12. Is there any other feedback you would like to provide the City regarding the proposed policy change? Let us know in the space below.

13. Due to restrictions on public gatherings, the City held a virtual meeting via Zoom. Was the virtual format easier for you to attend than an in-person open house during a week day evening?

- Yes
- No
- Both formats are equally accessible/ in-accessible

14. For future Planning Department initiatives that involve meeting with residents such as you, what are your preferred options for engagement, from most preferred to least preferred.

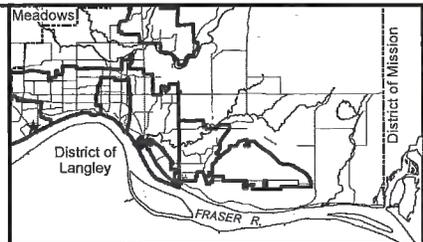
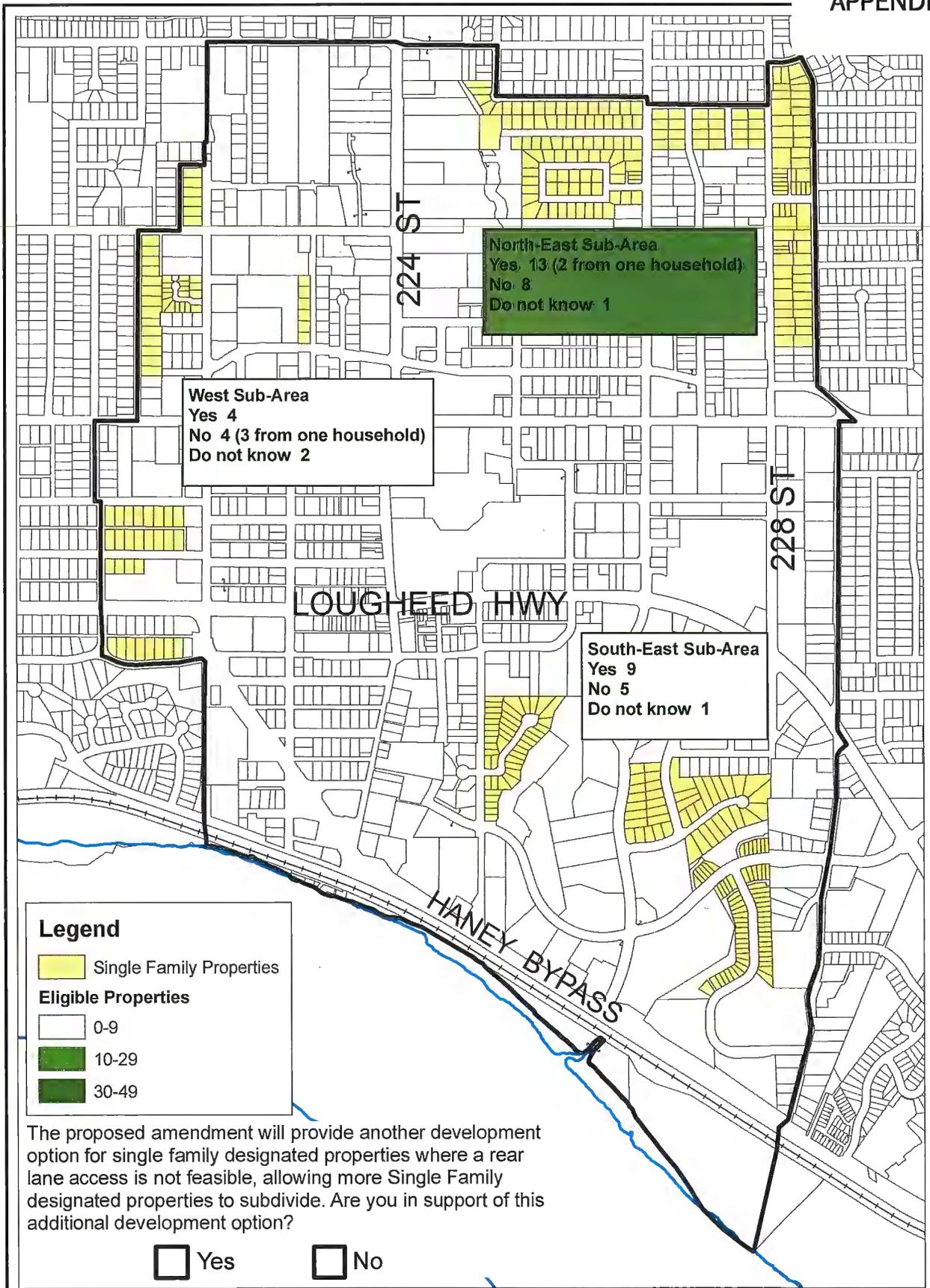
Online Open House

In-Person Open House

Information Booth at Events

Other

Thank you for completing this survey. Your feedback is valued.



Town Centre Single Family Land Use

PLANNING DEPARTMENT  
  
 mapleidge.ca

FILE: TownCentreSFD\_Survey\_Eligibility.mxd  
 DATE: Mar 18, 2021    BY: DT

1. What is the address of the property you own in the Town Centre Area Plan shown in yellow (corresponds with Single Family Residential designated properties)?

47 Responses

ID	Name	Responses
<b>Redacted for Privacy</b>		
2. Please tell us how you identify		
	I am a resident landowner - less than 10 years at this address	17
	I am a resident landowner - 10 years or more at this address	27
	I am a non-resident landowner	2
	I am a renter	1
	Other	0

3. What element(s) do you love about your street today? Select all the apply.

Trees and greenspace	21
View	18
Road design (road width, sidewalk, street parking, street trees)	12
The existing size of properties	18
The style and architecture of existing homes	10
None of the above	9
Other	15

Other:

- Being in walking distance to the stores, schools and being able to walk to work everyday.
- Roadside Parking! Parking Lot! Public Greenspace!"
- My Neighbours
- Convenient location, walking distance to city center and easy access to downtown Vancouver by West Coast Express train.

- Street has good lighting and sidewalk.
- Privacy between lots
- Neighbourhood feel
- close to town centre ,reasonably quiet area
- Close to city center
- cul de sac
- Quiet and low traffic
- Close to municipal recreation centre
- The street need more improvement. It is close to school and very busy in the morning
- Sense of Community
- Nothing

4. What element(s) would you like to see on your street as it changes? Select all the apply.

Trees and greenspace	18
View	15
Road design (road width, sidewalk, street parking, street trees)	18
The existing size of properties	14
The style and architecture of existing homes	14
None of the above	9
Other	15

Other:

- Do not change anything on Brickwood Close as there are no rear lanes anyways!!
- new houses and new development
- Street lights
- Need more designated parking once high density multi family construction is complete.
- Street lights specially at intersection of 227 St. & 123 Ave.
- Traffic Calming . Lots of racing cars that try to miss the traffic light at 222 & Dewdney Trunk
- I would like the street to remain the same
- Less Crime on the neighborhood
- quiet and low traffic
- More street lights not by bc hydro but by Maple Ridge City
- More street lights needed(too dark) and several breaking ins
- More organized power lines, optical cable lines, as well as better street lights!
- Street Lighting
- Apartments

- Most of the houses on the east side of 228 from 123 south to Purdy are a mish mash of old dilapidated houses in need of renovation or demolition and development. I would like to see the zoning to allow for single family homes similar to the 3 new houses on 228 just north of 122.

5. Over what time frame do you anticipate seeing your street changing with new homes?

Change is already happening	13
0-5 years	9
6-14 years	4
15-29 years	2
30 or more years	3
No idea!	3
I don't think this street will ever change	1
I don't want my street to change	12

6. As change occurs, what types of homes do you envision on your street? Check all that apply.

New single family homes on properties the same size as mine.	20
New single family homes on properties half the size as mine.	20
Attached homes with units joined by a common wall (duplex, triplex).	14
Townhouses	19
Apartments (4 storeys)	14
Other	6

Other:

- Condominiums

- I'm hoping all the homes stay as they are. Most residents on our street are long time residents in the neighborhood that have no interest in changing the styles of homes on our street.
- No more attached homes, Townhouses as well as apartments. This street is already too crowded with school near this area
- No more townhouses, apartments nor attached homes
- No more townhouses, attached homes and apartments

7. Is the property you own located on Lee Avenue, Hinch Crescent, 122 Avenue or 123 Avenue (west of 227 Street)

Yes	11
No	36

8. The proposed policy change is anticipated to provide additional subdivision options on your street, and potentially for the property you own. Is subdivision without the requirement for a rear lane a redevelopment option that you would consider for the property that you own?

Yes	5
No	6
Do not know	0

9. Is the proposed policy change reflective of how you imagine your street changing?

Yes, I envision more single family subdivision over time.	6
No, I envision attached units such as duplex and triplex and/or new single family homes on existing lots.	1
No, I envision development such as townhouse and apartment on my street.	0
Other	4

10. Please explain how you imagine your street changing.

4 Responses

ID	Name	Responses
1	anonymous	I am hoping our street changes in other ways other than subdivision of properties. Such as more trees, street lights, etc.
2	anonymous	The houses on our street are for the most part have been kept in good condition. There are a few that need upgrading and could possibly be replaced in the future . The neighborhood is lovely for families and the school is close by.although the schools are full and portables are necessary. I believe someone said we need more people in the area but this is obviously not the case . I would hope our street remains as it is . We are an attractive street for families . It would be nice to see more green spaces and schools in the area possibly a skate park . There is property up for development across from Eric Langton . It could be used for a park or an extension of the school with a walkway across the road. There are a number of multi family units being built all around us . I would not like to see our street broken into smaller lots . We are on a cul de sac with one way in and out . The street parking would be unbearable with two houses on each lot.
3	anonymous	I do not want any subdivision in this area, it will take away our view, more cars parking on the street, its dangerous enough for the kids to walk to school with all the cars parking as is.
4	anonymous	I do not imagine it changing as there is no room for more lots and I do not want to see the existing lots subdivided

11. The proposed amendment will provide another development option for single family designated properties where a rear lane access is not feasible, allowing more Single Family designated properties to subdivide. Are you in support of this additional development option?

Yes	26
No	17
Do not know	4

12. Please share with us your concerns over the proposed policy change.

## 17 Responses

ID	Name	Responses
1	anonymous	<p>There is already driving congestion on Brickwood Close due to the lack of rear lanes. We see first responders with large vehicles (e.g. Fire Trucks) struggle to navigate the existing driveway. This is already a design issue for emergency response. There have been a lot of accidents, neighbors yell at each other, all due minimal visibility of the meandering drive, especially with large truck drivers unfamiliar with the twists and turns of the close. Changing policy to permit smaller lots just raises temperature of the existing driving hazards needlessly when there is no rear lane access in the first place. Not everything in Town Center needs a cookie-cutter solution!</p>
2	anonymous	<p>I believe townhomes would be more Suitable</p>
3	anonymous	<p>The City of MR allows too large of new homes to be built in lots. This effects the appeal of the neighbourhood and is an eyesore.</p>
4	anonymous	<p>The street is already so congested with cars parking on both sides of the street you cant pass each other people are parking in front of the fire hydrant every night we live on a cul de sac people are even parking on there lawns enough cars on the street already</p>
5	anonymous	<p>We have resided in Maple Ridge since 1995. We have already seen numerous changes throughout the city. We have adequate housing available already. The Property from t to 224 St is a huge affordable housing. Not to mention the surrounding areas growth. What we really need is Shopping Centres for all of the recent development as well as the continued plans for future development plans that have already been passed by council. We really need to assess the disruption of the soil for environmental purposes. We have already noticed a shift in the land around our property from the recent on going housing development projects We are Strongly Opposed to the Proposal for the policy change. Thank you.</p>
6	anonymous	<p>It will density older neighborhoods and affect the mature streetscape these neighborhoods offer. Houses will be closer together and will potentially contain suites which will create more vehicles, more parking on streets where space is already limited and more traffic. Random newer houses will be sandwiched between older homes and will not fit in with the older style architecture of the current homes. I do support development and new housing construction just not at the cost of changing existing mature neighborhoods. The town center is already developing at a rapid pace with condos and townhomes being built. We need to protect these older single family lots in theses town center neighborhoods.</p>

ID	Name	Responses
7	anonymous	This is currently a relatively quiet family orientated neighbourhood. There is currently no more space for vehicles. Densifying this neighbourhood without traffic that simply isn't manageable or safe. This is a proposal for developers That do not live here to make money. It is not a proposal for residence and taxpayers that actually want to live in Maple Ridge.
8	anonymous	The community would be overcrowded,the street parking would be unbearable, the peaceful nature of the neighbour hood would be gone.
9	anonymous	higher density would mean more traffic, more infrastructure upgrades (taxes increases to pay for this feature)) , and less serenity greenspace being reduced to make way for development (and bird life being dispersed, ect).
10	anonymous	We moved to Maple Ridge from the Commercial Drive area where duplex, triplex, row home, etc. are abundant. We want to keep the street traffic to a minimum so our kids can play freely in the neighborhood. There is already a lot of people that rent out their basements (illegally) on the street so the population is likely almost double what it should be.
11	anonymous	I feel we are a small cul de sac and do not need double single family homes on these lots.
12	anonymous	My area is already crowded with townhouses and apartments with a school nearby - too much traffic in the morning and in the afternoon. We experienced several thefts, neighborhood houses caught on fire a couple of times. I saw the constructive changes in other cities while Maple Ridge became urban slumming. Please improve the safety of the street. I wish our city would focus more on the quality of life of the community members other than the quantity or size of community only. Please more street lights and improved road condition - at least painting lanes.
13	anonymous	Our area is already crowded with townhouses and apartments and also laneway house around my place. I didn't see changes in extension or improvement of roads or street lights. The quality of living conditions are not really attractive and welcoming. Once I warned a stranger checking the mailbox of the next door but found out that the stranger is the new tenant of the laneway house of the next door. That is only certain parts.
14	anonymous	This area is already crowded and became less safe than before. The school near by causes traffic jams and dark. I experienced several theft and plants on our front yard and houses on this street and near caught on fire. We couldn't park our RV due to lowed power line once. We cannot have optical cable service. It is not improving at all for long time.

<b>ID</b>	<b>Name</b>	<b>Responses</b>
15	anonymous	This policy change would not only destroy a unique residential area but the increased homes would add traffic to an already challenged area.
16	anonymous	Lack of parking and will create massive street congestion with vehicles.
17	anonymous	Parking

13. Is there any other feedback you would like to provide the City regarding the proposed policy change? Let us know in the space below.

30 Responses

<b>ID</b>	<b>Name</b>	<b>Responses</b>
1	anonymous	Great idea, good for all. If any developers call you please give them my address
2	anonymous	As the city is getting denser and denser with more and more families looking for affordable housing, I think it makes sense to rezone this area. The lots are huge with tiny homes. Only a few families can reside in this configuration. We need to make changes to the zoning policy to make it possible for more people to redevelop their homes so that more families can move in. I strongly support the new proposed rezoning policy.
3	anonymous	I am looking forward to see more new houses built in my area.
4	anonymous	We are strongly in favor of the change, development is happening all around us lets not let a rear lane be the reason to not allow density.
5	anonymous	For Brickwood Close residents, a subdivide rezone request should be satisfied with existing policy to allow subdivisions to have more parking square footage. I do not support the smaller lot subdivision concept as that creates driving hazards in a neighborhood with history of driver related misgivings. City needs to think policy based an inclusive approach and not cookie-cutter / one-size for all approach. Homes are for people, so please understand the microcosms and sub-cultures before submitting policy changes.
6	anonymous	I strongly support the change, I want the Maple Ridge city grow faster. Learn from Coquitlam city. Welcome a new comer for better future better business better income for everyone.
7	anonymous	No

ID	Name	Responses
8	anonymous	There already is no room for parking
9	anonymous	Strongly Opposed
10	anonymous	Please protect our single family lots and not proceed with this policy change. There is plenty of areas just outside the town center that can accommodate single family homes on smaller lots. The town center is booming with townhouse and condo developments which offer plenty of housing for future Maple Ridge residents.
11	anonymous	I feel like the commercial area in the downtown in Maple Ridge seems dead. Some of the residential area in the downtown doesn't seem to be safe. In order to bring development and diverse dynamics, I think changes are inevitable.
12	anonymous	It is my understanding that when Wanting to develop your property the city requires you to install the sidewalk if it's not already there. This should not be a blanket policyAs this does not work in all areas or property sizes
13	anonymous	This policy change would damage our street. The houses would be very close to property lines with no lanes any privacy would be gone .
14	anonymous	I wonder what idea the city has with the creek in my backyard. Is the new policy aware that there is a creek running on Dunbar Street? How would the creek affect land usage?
15	anonymous	We do not wish any change to our alleyway while we live here, however if the price was right we would go.
16	anonymous	We are newer to Maple Ridge (15 months) and although we love the area we feel our neighborhood is in dire need of revitalization. The homes are not well maintained for the most part and we feel the appearance of the are belies how much it has to offer. We have already seen much growth in the are and population and support zoning changes that allow revitalization of the town.
17	anonymous	Would love to see the area cleaned up and built up
18	anonymous	Skytrain, we need Skytrain to move the people. We need this sooner rather than later.
19	anonymous	I think smaller lot size is great for families with kids
20	anonymous	I think that there should only be a certain percentage of houses on the specific street/crescent/...allowed to be subdivided. People who own the properties should all have at least one parking spot on the street per house Otherwise it's just a parking lot.
21	anonymous	The new policy can accelerate the transformation of old communities and build more affordable houses

**ID      Name                      Responses**

22	anonymous	this is an unique neighbourhood (culdesac close) and we like the form and character of the houses within this neighbourhood.
23	anonymous	No
24	anonymous	I want my street excluded. PLEASE OPT OUT MY STREET! One more thing I want to mention is city should send mail to the residents who are not fond to computer or electronic technology or find various ways to contact people who are not able to access emails or regular mails for survey at least.
25	anonymous	Please better roads lights and not really close rehap facility near residential areas.
26	anonymous	Please take my street out from this proposal. We don't want our street became worse than right now. Please no more rehab. facilities near this area. The city just seems to overlooked the need of overall improvement on this area preceding policy change.
27	anonymous	The 122 Avenue/Hinch Crescent Circle is a well maintained area which we all bought into because it provide nice home located close to the town core and schools. Most have completed upgrades and renovations to maintain the value of their homes and the neighborhood in which they live.
28	anonymous	there have been 2 apRtments built on my street already. The parcel of land that I am on is ideal for apartment or townhouses. I see this area full of those type of buildings in the future. We are very near the town centre, for access to public transit, as well as elementary and secondary schools close by. I think the city needs to work on the current downtown core to make it more inviting to residents. With the density of people in the area, we need a nicer area to shop.
29	anonymous	Most of the houses on the east side of 228 from 123 south to Purdy are a mish mash of old dilapidated houses in need of renovation or demolition and development. I would like to see the zoning to allow for single family homes similar to the 3 new houses on 228 just north of 122. My concern is that if the lane access requirement stands then many of the properties along 228 will not be developed fully. The example is full development of my property at 12330 228 will have to wait years for the lane to push north from the 122 access. And this may never happen if one of the property owners does not want to develop, which of course is their prerogative. Or the City mandates the lane and expropriates land for it; which is not going to occur. Thanks for the opportunity for input.
30	anonymous	There should be options for people who want to live in the downtown area. There are tons of condos, apartments etc. going in already. The option for a family to have some space and have access to downtown amenities also should remain available. It should not be ALL 'small house' options.

14. Due to restrictions on public gatherings, the City held a virtual meeting via Zoom. Was the virtual format easier for you to attend than an in-person open house during a week day evening?

Yes	36
No	3
Both formats are equally accessible/ in-accessible	8

15. For future Planning Department initiatives that involve meeting with residents such as you, what are your preferred options for engagement, from most preferred to least preferred.

<b>Rank</b>	<b>Options</b>
1	Online Open House
2	In-Person Open House
3	Information Booth at Events
4	Other

## Single-Family Residential

The Single Family designation provides options to create a dense urban streetscape while retaining the single-family character in these established neighbourhood blocks. Housing forms such as detached garden suites, secondary suites, duplexes and triplexes will compliment single-family dwellings in form and character.

Policy 3-17 To enable some densification in areas designated for Single-Family Residential, Maple Ridge will consider:

- a. A Detached Garden Suite, subject to consistency with the Maple Ridge Detached Garden Suites policy;
- b. A Secondary Suite within a principle single-family use dwelling, subject to consistency with the existing Maple Ridge Secondary Suite Bylaws.
- c. Lot size of **255m<sup>2</sup> to 314m<sup>2</sup>** is permitted, where vehicle access is from a rear lane only.
- d. Minimum lot size of **315m<sup>2</sup>** is permitted, **where driveway access is in compliance with Council's Access Management Policy 9.14 and subject to the following:**
  - i. **property fronting an Arterial or Collector road require rear lane access only.**
  - ii. **property fronting a Local road may have access from the street only, where rear lane access is not feasible.**
- e. Duplex development will be permitted on a corner lot or a lot with lane access to concealed parking. The minimum lot size for duplex development is 557 m<sup>2</sup> and the character of the development should be similar to a single-family development in its size, scale, and massing.

**TO:** His Worship Mayor Michael Morden  
and Members of Council  
**FROM:** Chief Administrative Officer

**MEETING DATE:** March 30, 2021  
**FILE NO:** 01-0690-02  
**MEETING:** Council Workshop

**SUBJECT:** Provincial Legislation Enhancements to Reduce Community GHG Emissions

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**EXECUTIVE SUMMARY:**

Throughout 2020, Council received information highlighting the need to take action to reduce community greenhouse gas emissions, and a staff report scheduled in April will bring forward regulations to enable specific actions. Further reductions in community emissions could be attained with enabling legislation at the Provincial level.

**RECOMMENDATIONS:**

1. WHEREAS retrofitting buildings across British Columbia is crucial to reducing greenhouse gas emissions and meeting provincial and local climate targets, and would create opportunities for green economic recovery from the COVID-19 pandemic;

WHEREAS the upfront costs of retrofitting homes and businesses for climate resilience are financially prohibitive for many property owners, and Property Assessed Clean Energy (PACE) lowers those barriers while adding building value and enhancing occupant health and comfort;

**THEREFORE, BE IT RESOLVED THAT the Mayor write a letter to relevant Provincial Ministers and PACE BC expressing support for legislation enabling PACE by third-party administration and confirming the City's interest in having a PACE program if it becomes available in BC.**

2. WHEREAS climate policy modelling completed for the Help Cities Lead campaign shows current actions to reduce greenhouse gas (GHG) emissions from buildings are insufficient to achieve the provincial targets for 2030 and 2050;

WHEREAS the November 2020 mandate letters to Provincial ministers include direction to move forward with three of the five policy measures included in the Help Cities Lead climate policy modelling: GHG requirements for new buildings, Property Assessed Clean Energy (PACE) financing, and home energy labelling;

**THEREFORE, BE IT RESOLVED THAT the Mayor write a letter to relevant Provincial ministers expressing the City's endorsement of the Help Cities Lead campaign; support for the directions set out in the November 2020 ministerial mandate letters regarding GHG requirements for new buildings, PACE financing, and home energy labelling; and requesting that the Province empower local governments with the option to take action on the two remaining items of the**

Help Cities Lead's campaign, namely GHG requirements for existing buildings and building energy benchmarking.

**CONCLUSION:**

Provincial legislation is required to enable community greenhouse gas emissions reduction actions such as Property Assessed Clean Energy (PACE) financing, building energy benchmarking, and GHG requirements for new and existing buildings. The City of Maple is committed to supporting the Provincial Government in their effort to achieve lower greenhouse gas emissions.



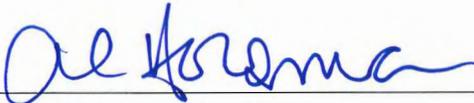
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Prepared by: **Laura Benson, CMA, CPA**  
Senior Policy and Sustainability Analyst



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Approved by: **Christina Crabtree**  
GM Corporate Services



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Concurrence: **Al Horsman**  
Chief Administrative Officer

Attachments:

- (A) Sample letter to endorse Property Assessed Clean Energy (PACE) financing
- (B) Sample letter to endorse the Help Cities Lead (HCL) campaign

Related Content:

- [Pace BC](#) website
- [Help Cities Lead](#) website

Draft support letter to endorse Property Assessed Clean Energy (PACE) financing

The Hon. Minister George Heyman, Minister of Environment and Climate Change Strategy,  
ENV.Minister@gov.bc.ca

The Hon. Josie Osborne, Minister of Municipal Affairs, MAH.Minister@gov.bc.ca

The Hon. Bruce Ralston, Minister of Energy, Mines, and Low Carbon Innovation,  
EMPR.Minister@gov.bc.ca

The Hon. David Eby, Attorney General and Minister responsible for Housing, AG.Minister@gov.bc.ca

The Hon. Selina Robinson, Minister of Finance, FIN.Minister@gov.bc.ca

Dear Honourable Ministers,

During the council meeting of [Date], the City of Maple Ridge passed a resolution in support of Property Assessed Clean Energy (PACE) financing.

Our Province's aggressive new climate targets require us to reduce emissions by 40% over the next decade. The City of Maple Ridge is updating our Official Community Plan with similarly ambitious targets. The majority of BC's residential and commercial building stock is not energy efficient, and accounts for a significant percentage of province-wide GHGs. The Pembina Institute has calculated that in order to meet our climate targets, British Columbians will need to retrofit 3% of our building stock — that's 30,000 homes, 17,000 apartment units, and 3 million square metres of commercial space — every year until 2050.

Climate change is the greatest challenge of our time, and though local governments are at the front lines, we do not have all the tools we need to meaningfully tackle mitigation or adaptation, let alone both at once. We know that building operations are one of the biggest drivers of emissions [not everyone is urban so I removed that reference]; however, the start-up costs and staff time required to establish community-wide retrofit programs are prohibitive for local governments smaller than Vancouver, and even then such programs have not demonstrated extensive uptake in Canada. This means that retrofits and building GHG reductions are available solely to property owners who can access considerable upfront financing, thereby excluding the majority of our community.

PACE programs with third party administration and opt-in bylaws for local governments have been implemented in the United States since 2009, and have created hundreds of thousands of projects and clean local jobs. In the wake of COVID-19, we feel that PACE and the resulting ecosystem of retrofitting programs, would give our economy a boost and provide a path toward a just transition away from fossil fuel infrastructure, all the while complementing Clean BC and Resilient BC. It will also support the BC Poverty Reduction Strategy, as energy poverty is a major concern for BC residents, and those with the lowest incomes will be most impacted by more extreme temperatures, trying to keep their homes cool or warm.

## Draft support letter to endorse Property Assessed Clean Energy (PACE) financing

Upfront cost is one of the most significant barriers to retrofitting and the installation of renewable energy options by citizens, businesses and institutions despite the fact that these investments will save property-owners money over the long term. PACE solves that problem by using an innovative financing instrument which permits building and land owners to upgrade their buildings with energy- and resource-saving retrofits, or install renewable energy systems, without putting any money down, with the repayment of the financing done via an assessment on the building's property tax bill. The capital used to finance the PACE upgrades typically comes from private sources, such as insurance companies and pension funds, who are attracted by the long term secure investment PACE provides. This type of program is favoured compared to public funding in part because it is not subject to political will during changes in government. Therefore, the jobs provided and GHG reductions would not be affected by changes of elected decision-makers.

The City of Maple Ridge requests that the Provincial Government take immediate steps to enact PACE-enabling legislation as advocated for by PACE BC that ensures the program:

- Is voluntary and opt-in for all parties
- Allows for capital investment from the private sector
- May be administered by third-party organizations
- Makes PACE available for a broad spectrum of building level improvements including most energy efficiency and resiliency upgrades, and renewable energy projects
- Is available for both residential and commercial property owners
- Is available for retrofits and new construction
- Makes financing available for 100% of the projects hard and soft costs
- Ensures loans are tied to the property, and not the individual borrower, such that in the event of a property sale, remaining loan payments become transferable to the new owner.
- Protects consumers from predatory practices

Thank you.

Mayor Mike Morden, on behalf of the City of Maple Ridge Council

Draft support letter to endorse the Help Cities Lead (HCL) campaign

The Hon. Minister George Heyman, Minister of Environment and Climate Change Strategy,  
ENV.Minister@gov.bc.ca

The Hon. Josie Osborne, Minister of Municipal Affairs, MAH.Minister@gov.bc.ca

The Hon. Bruce Ralston, Minister of Energy, Mines, and Low Carbon Innovation,  
EMPR.Minister@gov.bc.ca

The Hon. David Eby, Attorney General and Minister responsible for Housing, AG.Minister@gov.bc.ca

The Hon. Selina Robinson, Minister of Finance, FIN.Minister@gov.bc.ca

Dear Honourable Ministers,

During the council meeting of [Date], the City of Maple Ridge passed a resolution in support of the Help Cities Lead (HCL) campaign.

As you are aware, municipalities are on the front lines of climate change dealing with the impacts of floods, droughts, forest fires, heat waves, etc. We directly influence about half of Canada's energy use and emissions. The success of the Province in achieving deep emissions reductions from the building sector is directly connected to the success of local governments in achieving their own targets. While municipalities have shown strong climate leadership, expanded regulatory authority is needed for taking bolder steps to achieving our climate targets.

HCL is an education and awareness campaign focused on accelerating building decarbonization through collaboration between the Province of British Columbia and local governments. The group is led by Climate Caucus and supported by local governments and environmental NGO's.

Why buildings? Emissions from buildings account for about 11% of the Province's greenhouse gas (GHG) emissions, and for municipalities, GHG emissions from existing buildings account for 40-60% of community emissions. The City of Maple Ridge is updating our Official Community Plan with more ambitious targets to significantly reduce GHG emissions over the next 10 years.

However, local governments are largely limited to information campaigns and incentives for pursuing these ambitious reduction targets. Recent climate policy modelling shows that on their own, these policy tools are insufficient to achieve broad and deep energy and GHG reductions given limited budgets.

The HCL campaign recommends a suite of expanded authorities for local governments that will enable communities to take bolder action on reducing GHG emissions from new and existing buildings:

- Property assessed clean energy (PACE) financing
- Mandatory home energy labelling
- Regulating GHG emissions for new buildings

Draft support letter to endorse the Help Cities Lead (HCL) campaign

- Regulating GHG emissions for existing buildings
- Mandatory building energy benchmarking and reporting

We are pleased to see that the November 2020 mandate letters to the Ministers of Municipal Affairs and Energy, Mines and Low Carbon Infrastructure support the implementation of PACE financing.

We also note that the mandate letter for the Minister of Finance supports home energy labelling.

Finally, we are pleased to see that the mandate letter to the Attorney-General and Minister Responsible for Housing includes support for regulation of GHG emission of new buildings.

We support the directions set out in these new mandate letters regarding PACE financing, home energy labelling, and GHG requirements for new buildings and request that the Province empower local governments to opt to take action, if they so choose, on the two remaining items of the Help Cities Lead's campaign, namely GHG requirements for existing buildings and building energy benchmarking. Additional information about each of the initiatives can be found at <https://www.helpcitieslead.ca/>.

It is our hope that you will consider meeting with a delegation from Help Cities Lead for further discussion on these initiatives.

Thank you.

Mayor Mike Morden, on behalf of the City of Maple Ridge Council

March, 2021

**Subject: Request for Support for Delivering Community Power**

Dear Municipal Leaders,

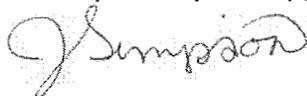
In 2016, the Canadian Union of Postal Workers, with a coalition of allies, launched Delivering Community Power – a visionary program for Canada Post to confront climate change, promote better access to expanded services, bring financial inclusion to unbanked and underbanked communities, and address other social inequalities – all by making the most of our existing public postal service network.

Today, while progress has been made on many of the initiatives in the vision, the situation has become more urgent. Effects of climate change are deadly and are affecting nearly every part of society all around the world. The COVID-19 pandemic has revealed the need for a more equal, more resilient society that prioritizes the health of our most vulnerable neighbours and loved ones, *before* profit. We are relying more than ever on the internet to connect people and to do our business, but rural residents are getting second-class service.

The continuing decline of letters combined with a dramatic rise in parcels from e-commerce makes it plain to see: the postal service has to adapt to a new reality. This is a great opportunity to address multiple problems at once, with a valued public infrastructure that connects everyone in their own community.

Please consider proposing the attached resolution to have your municipality endorse the campaign for expanded services, financial viability, climate action, and – all through leveraging our public postal system. The time is now!

Thank you for your support!



Jan Simpson  
National President  
Canadian Union of Postal Workers

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## SUPPORT DELIVERING COMMUNITY POWER

**Whereas** there is an urgent need for banking services among the unbanked or underbanked, given that thousands of villages and rural municipalities do not have a bank branch and more than 900 municipalities have expressed their support for postal banking;

**Whereas** thousands of Canadians do not have access to affordable high-speed Internet, and the federal government has long promised to bridge the rural broadband gap;

**Whereas** urgent action is needed to establish a robust network of electric vehicle charging stations;

**Whereas** to achieve carbon-neutral targets by 2050, Canada Post must greatly accelerate the electrification of its fleet;

**Whereas** the extensive network of post offices in our communities can provide a wide range of services as community hubs;

**Whereas** Canada Post's letter carriers and RSMCs can check-in on vulnerable residents to help keep us in our homes longer as we age;

**Whereas** Canada Post must play its part for a more equitable post-pandemic recovery;

**Whereas** "The Way Forward for Canada Post," the report of the 2016 federal public review of the postal service, recommended that Canada Post expand services and adapt its services to the changing needs of the public;

**Whereas** the Canadian Union of Postal Workers has advanced *Delivering Community Power*, a vision of the post-carbon digital-age postal service that address the above needs and more;

**Be it resolved that** \_\_\_\_\_ endorse *Delivering Community Power*, and write to the Honourable Anita Anand, Minister for Public Services and Procurement, with its rationale and a copy of this resolution.

## **MAILING INFORMATION**

Please send your resolution to: Anita Anand, Minister of Public Services and Procurement, Rm 18A1, 11 Laurier Street Phase III, Place du Portage, Gatineau, QC, K1A 0S5

Please send copies of your resolution to:

Jan Simpson, President, Canadian Union of Postal Workers, 377 Bank Street, Ottawa, Ontario, K2P 1Y3

Your Member of Parliament. You can get your MP's name, phone number and address by calling 1-800 463-6868 (at no charge) or going to the Parliament of Canada website: <https://www.ourcommons.ca/Members/en>

*Please save this document using the name of your organization or municipality in the document's name.*

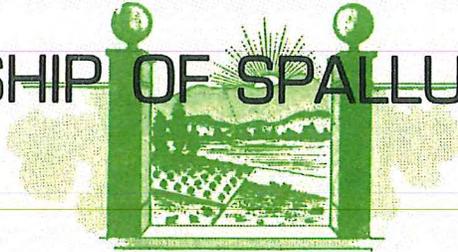
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THE CORPORATION OF THE  
TOWNSHIP OF SPALLUMCHEEN

TEL. (250) 546-3013  
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OUR FILE NO.

4144 Spallumcheen Way  
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Email: [mayor@spallumcheentwp.bc.ca](mailto:mayor@spallumcheentwp.bc.ca)



[www.spallumcheentwp.bc.ca](http://www.spallumcheentwp.bc.ca)

March 5, 2021

OFFICE OF THE MAYOR

File: 0320-20-01

The Honourable Patty Hajdu

*sent via email*

House of Commons  
Ottawa, Ontario,  
Canada  
K1A 0A6

[Patty.Hajdu@parl.gc.ca](mailto:Patty.Hajdu@parl.gc.ca)

**Re: Support for 988 Crisis Line**

Please be advised that at the Monday, March 1, 2021 Regular Council Meeting, the Township of Spallumcheen Council passed the following resolution:

***“THAT the Township of Spallumcheen Council pass the following motion and direct a letter indicating such support to the local MP, MPP, Federal Minister of Health, the CRTC and local area municipalities as outlined in the letter from Member of Parliament Mel Arnold, North Okanagan - Shuswap for support for a National Suicide Prevention Hotline:***

***WHEREAS the Federal government has passed a motion to adopt 988, a National three-digit suicide and crisis hotline;***

***AND WHEREAS the ongoing COVID-19 pandemic has increased the demand for suicide prevention services by 200 percent;***

***AND WHEREAS existing suicide prevention hotlines require the user to remember a 10-digit number and go through directories or be placed on hold;***

***AND WHEREAS in 2022 the United States will have in place a national 988 crisis hotline;***

***AND WHEREAS the Township of Spallumcheen Council recognizes that it is a significant and important initiative to ensure critical barriers are removed to those in a crisis and seeking help;***

***NOW THEREFORE BE IT RESOLVED THAT the Township of Spallumcheen Council endorses this 988 crisis line initiative.”***

Council understands, now more than ever, that Canadians may need access to additional resources amidst the COVID-19 pandemic. It is imperative, we as elected officials, do everything that we can to help everyone come out stronger on the other side of this unprecedented and challenging time.

Thank you for your attention to this matter, if you have any questions in this regard please contact the undersigned.

Respectfully,

A handwritten signature in black ink, appearing to read "C. Fraser". The signature is written in a cursive style with a large initial "C".

Christine Fraser  
Mayor

cc. Member Municipalities  
MP Todd Doherty  
MP Mel Arnold  
Canadian Radio-Television and Telecommunications Commission (CRTC)