metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

METRO VANCOUVER REGIONAL DISTRICT
REGIONAL PLANNING COMMITTEE

MEETING

Friday, May 12, 2023
9:00 am
Meeting conducted electronically/in-person pursuant to the Procedure Bylaw
28th Floor Committee room, 4515 Central Boulevard, Burnaby, British Columbia

A G E N D A[1]

1. ADOPTION OF THE AGENDA

1.1 May 12, 2023 Meeting Agenda
That the Regional Planning Committee adopt the agenda for its meeting scheduled for May 12, 2023 as circulated.

2. ADOPTION OF THE MINUTES

2.1 April 14, 2023 Meeting Minutes *pg. 4*
That the Regional Planning Committee adopt the minutes of its meeting held April 14, 2023 as circulated.

3. DELEGATIONS

4. INVITED PRESENTATIONS

4.1 David Williams, Vice President of Policy, Business Council of British Columbia *pg. 9*
Subject: Canada and BC Head Offices and Jobs Report

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Metro 2050 Amendment Request - Township of Langley (23699 and 23737 Fraser Highway) *pg. 24*
That the MVRD Board:
a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Rural to Industrial for the lands located at 23699 and 23737 Fraser Highway;
b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023"; and

[1] *Note: Recommendation is shown under each item, where applicable.*

c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.

5.2 Office Development in Metro Vancouver - 2022 Inventory and Report *pg. 81*

That the MVRD Board receive for information the report dated April 6, 2023, titled "Office Development in Metro Vancouver - 2022 Inventory and Report".

5.3 Agricultural Ecosystem Services in Metro Vancouver *pg. 219*

That the MVRD Board direct staff to prepare a white paper considering the feasibility of the recommendations contained in the Scoping Ecosystem Services on Agricultural Land within Metro Vancouver study, as presented in the report dated April 19, 2023, titled "Agricultural Ecosystem Services in Metro Vancouver".

5.4 Regional Land Use Assessment *pg. 312*

Verbal Update

Designated Speaker: Sinisa Vukicevic, Program Manager, Planning Analytics, Regional Planning and Housing Services

5.5 2023 Agriculture Awareness Grant Recommendations *pg. 331*

That the MVRD Board award the annual Agriculture Awareness Grants, as presented in the report dated April 20, 2023, titled "2023 Agriculture Awareness Grant Recommendations", to the following 14 non-profit organizations:

a) BC Agriculture in the Classroom, for "Take a Bite of BC" in the amount of $5,000;
b) BC Chicken Grower's Association, for "Poultry in Motion Educational Mini Barn Program" in the amount of $4,000;
c) CEED Centre Society, for "CEED Centre Farm Market + Urban Ag Educational Series" in the amount of $2,000;
d) Delta Farmland and Wildlife Trust, for "Day at the Farm" in the amount of $1,750;
e) Earthwise Society, for "Tomato Festival" in the amount of $2,000;
f) Environmental Youth Alliance, for "Plant Gifts for Community Projects" in the amount of $5,000;
g) Farm Folk/City Folk, for "Sustainable Bites: Growing Agricultural Awareness" in the amount of $5,000;
h) BC Association of Farmer's Markets, for "In the Raw: BC Farm and Food Champions" in the amount of $4,000;
i) Growing Chef's Society, for "Classroom Gardening & Cooking Program" in the amount of $3,000;
j) Langley Environmental Partners Society, for "Langley Eats Local" in the amount of $3,000;
k) The Sharing Farm, for "Garlic Festival" in the amount of $2,250;
l) Lower Mainland Sheep Producers Association, for "Wool n' Ewe A'Fair" in the amount of $4,500;
m) Society Promoting Environmental Awareness (SPEC), for "Growing Food Literacy and Food System Engagement Campaign" in the amount of $4,750; and

n) Village Vancouver Transition Society, for "Permaculture Corridor Expansion" in the amount of $3,750.

5.6 Manager's Report *pg. 338*

That the Regional Planning Committee receive for information the report dated April 18, 2023, titled "Manager's Report".

6. INFORMATION ITEMS

6.1 Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap *pg. 351*

7. OTHER BUSINESS

8. BUSINESS ARISING FROM DELEGATIONS

9. RESOLUTION TO CLOSE MEETING

Note: The Committee must state by resolution the basis under section 90 of the Community Charter on which the meeting is being closed. If a member wishes to add an item, the basis must be included below.

10. ADJOURNMENT/CONCLUSION

That the Regional Planning Committee adjourn/conclude its meeting of May 12, 2023.

Membership:

Woodward, Eric (C) – Langley Township
Kruger, Dylan (VC) – Delta
Albrecht, Paul – Langley City
Dueck, Judy – Maple Ridge
Girard, Angela – North Vancouver City
Hodge, Craig – Coquitlam
Hurley, Mike – Burnaby
Knight, Megan – White Rock
Lahti, Meghan – Port Moody
Lambur, Peter – West Vancouver
Locke, Brenda - Surrey
McEwen, John – Anmore
West, Brad – Port Coquitlam

METRO VANCOUVER REGIONAL DISTRICT
REGIONAL PLANNING COMMITTEE

Minutes of the Regular Meeting of the Metro Vancouver Regional District (MVRD) Regional Planning Committee held at 9:00 am on Friday, April 14, 2023 in the 28th Floor Committee Room, 4515 Central Boulevard, Burnaby British Columbia.

MEMBERS PRESENT:
Chair, Mayor Eric Woodward, Langley Township
Vice Chair, Councillor Dylan Kruger*, Delta
Councillor Paul Albrecht, Langley
Councillor Judy Dueck*, Maple Ridge
Councillor Angela Girard, North Vancouver City
Councillor Craig Hodge*, Coquitlam
Mayor Mike Hurley, Burnaby
Mayor Megan Knight*, White Rock
Mayor Meghan Lahti*, Port Moody
Councillor Peter Lambur*, West Vancouver
Mayor Brenda Locke*, Surrey
Mayor John McEwen*, Anmore
Mayor Brad West*, Port Coquitlam

MEMBERS ABSENT:
None.

STAFF PRESENT:
Jerry W. Dobrovolny‡, Chief Administrative Officer
Heather McNell, Deputy Chief Administrative Officer, Policy and Planning
Rapinder Khaira, Legislative Services Coordinator, Board and Information Services

1. ADOPTION OF THE AGENDA

1.1 April 14, 2023 Meeting Agenda

It was MOVED and SECONDED
That the Regional Planning Committee adopt the agenda for its meeting scheduled for April 14, 2023 as circulated.

CARRIED

*denotes electronic meeting participation as authorized by section 3.6.2 of the *Procedure Bylaw*
‡denotes electronic meeting participation

2. ADOPTION OF THE MINUTES

2.1 March 10, 2023 Meeting Minutes

It was MOVED and SECONDED
That the Regional Planning Committee adopt the minutes of its meeting held March 10, 2023 as circulated.

CARRIED

3. DELEGATIONS

No items presented.

4. INVITED PRESENTATIONS

4.1 Ruby Sandher, Chan Kooner, Stephen Richardson, Township of Langley

Ruby Sandher, Chan Kooner, Stephen Richardson, Township of Langley, provided an update on the proposed Land Use Designation Amendment to *Metro 2050* – for the Gloucester Industrial Park, highlighting regional considerations including the site's proximity to the existing Gloucester Estates and the need for the industrial land in the region.

Presentation material titled "Land Use Designation Amendment to *Metro 2050* – Gloucester Industrial Park" is retained with the April 14, 2023 Regional Planning Committee agenda.

5. REPORTS FROM COMMITTEE OR STAFF

5.1 Land Use Designation Amendment to Metro 2050 Township of Langley – Gloucester Industrial Park

Report dated March 31, 2023, from Victor Cheung, Senior Policy and Planning Analyst, Regional Planning and Housing Services, seeking MVRD Board initiation and first through third reading of the Township of Langley's request to amend *Metro 2050.*

Members were provided with an overview of the proposed amendment and regional planning analyses in relation to *Metro 2050's* goals, strategies, and policy actions.

Discussion ensured about the status of the site in relation to the Agricultural Land Reserve, the regional need to additional industrial space near the goods movement network, and efforts to ensure environmental and agricultural buffers for the site.

Presentation material titled "*Metro 2050* Amendment Request from Township of Langley" is retained with the April 14, 2023 Regional Planning Committee agenda.

It was MOVED and SECONDED

That the MVRD Board:

a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Agricultural to Industrial for the lands located at 26477, 26695, 26601, 26575, 26713 – 56 Avenue; 26500 Block of 56 Avenue; 5670 – 264 Street; and 5625 – 268 Street;
b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1364, 2023"; and
c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.

CARRIED

5.2 Costs of Providing Infrastructure and Services to Different Forms and Densities of Housing – Scope of Work

Report dated March 15, 2023, from Eric Aderneck, Senior Planner, Regional Planning and Housing Services, providing the MVRD Board information on the scope of work for the Costs of Providing Infrastructure and Services to Different Forms and Densities of Housing study.

It was MOVED and SECONDED

That the MVRD Board receive for information the report dated March 15, 2023, titled "Costs of Providing Infrastructure and Services to Different Forms and Densities of Housing – Scope of Work".

CARRIED

5.3 Regional Planning Transportation Portfolio Update

Report dated March 21, 2023, from Mark Seinen, Senior Planner, Regional Planning and Housing Services, providing the Regional Planning Committee an overview of the Regional Planning transportation portfolio.

It was MOVED and SECONDED

That the Regional Planning Committee receive for information the report dated March 21, 2023, titled "Regional Planning Transportation Portfolio Update".

CARRIED

5.4 Moving Towards Density and Diversity

Sinisa Vukicevic, Program Manager, Planning Analytics, Regional Planning and Housing Services, provided a verbal update on Land Use change from 2016-2020 and the land use diversity of the region's Urban Centres, highlighting land use change over time, land use dynamics, municipal analysis, residential year-build analysis, and dwelling units by structure type.

Presentation material titled "Moving Towards Density and Diversity" is retained with the April 14, 2023 Regional Planning Committee.

5.5 Updates to the Regional Tree Canopy Cover and Impervious Surfaces Datasets – Scope of Work

Report dated March 21, 2023, from Laurie Bates-Frymel, Senior Planner, Regional Planning and Housing Services, providing the Regional Planning Committee with the scope of work for the project to update the regional tree canopy cover and impervious surfaces spatial datasets.

It was MOVED and SECONDED

That the Regional Planning Committee receive for information the report dated March 21, 2023, titled "Updates to the Regional Tree Canopy Cover and Impervious Surfaces Datasets – Scope of Work".

CARRIED

5.6 Manager's Report

Report dated March 21, 2023, from Heather McNell, Deputy Chief Administrative Officer, providing the Regional Planning Committee with an update on the Committee's work plan, equity indicator maps updated with 2021 census data, an upcoming webinar on social equity in regional planning, and the development of the Metro 2050 *Regional Context Statement* Implementation Guideline to support members in developing RCSs to reflect alignment with Metro 2050.

It was MOVED and SECONDED

That the Regional Planning Committee receive for information the report dated March 21, 2023, titled "Manager's Report".

CARRIED

6. INFORMATION ITEMS

No items presented.

7. OTHER BUSINESS

No items presented.

8. BUSINESS ARISING FROM DELEGATIONS

No items presented.

9. RESOLUTION TO CLOSE MEETING

No items presented.

10. ADJOURNMENT/CONCLUSION

It was MOVED and SECONDED
That the Regional Planning Committee conclude its meeting of April 14, 2023.

CARRIED
(Time: 9:43 am)

Rapinder Khaira,
Legislative Services Coordinator

Eric Woodward,
Chair

59180640 FINAL

MAY 12, 2023

CANADA AND B.C. ARE LOSING HEAD OFFICES AND STAFF

PRESENTED TO:
METRO VANCOUVER REGIONAL PLANNING COMMITTEE

Dr. David Williams, Vice President of Policy
Jock Finlayson, Senior Policy Advisor

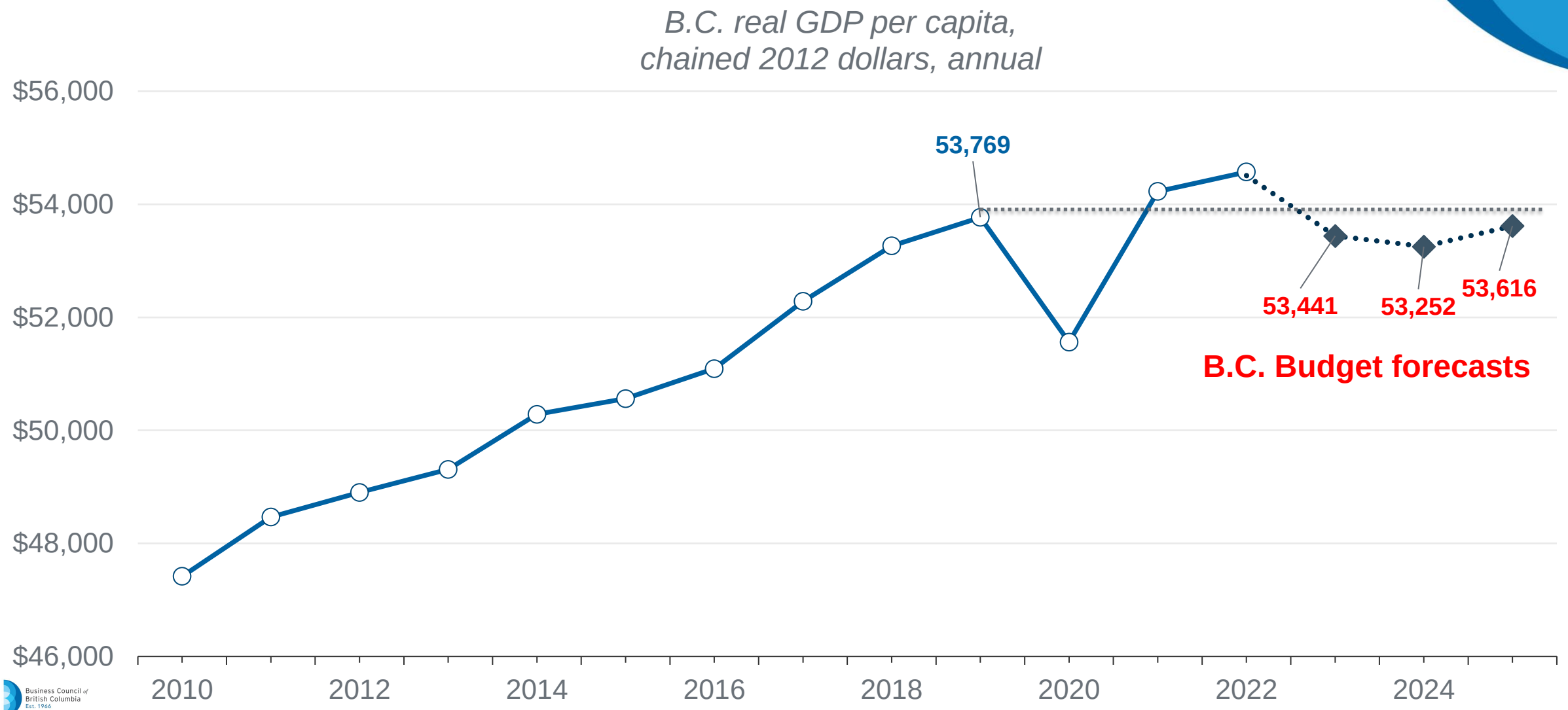
Business Council *of* British Columbia
Est. 1966

BENEFITS OF HEAD OFFICES

- Decision-making centres
- Direct/indirect benefits for local economy
- High-skilled workers (and consumers) earning high wages
- Demand for ancillary business services – accounting, legal, scientific, IT, consulting, creative, advertising, conferences facilities, buildings & real estate
- Innovation “clusters” – knowledge spillovers, efficiencies, specialisation gains
- Tax revenues
- Collaborations with universities, arts, charities and community

- *Examples: Silicon Valley, Bay St, Wall St, Martin Place, West Georgia St*

SIX YEARS OF STAGNATION IN B.C. REAL INCOMES

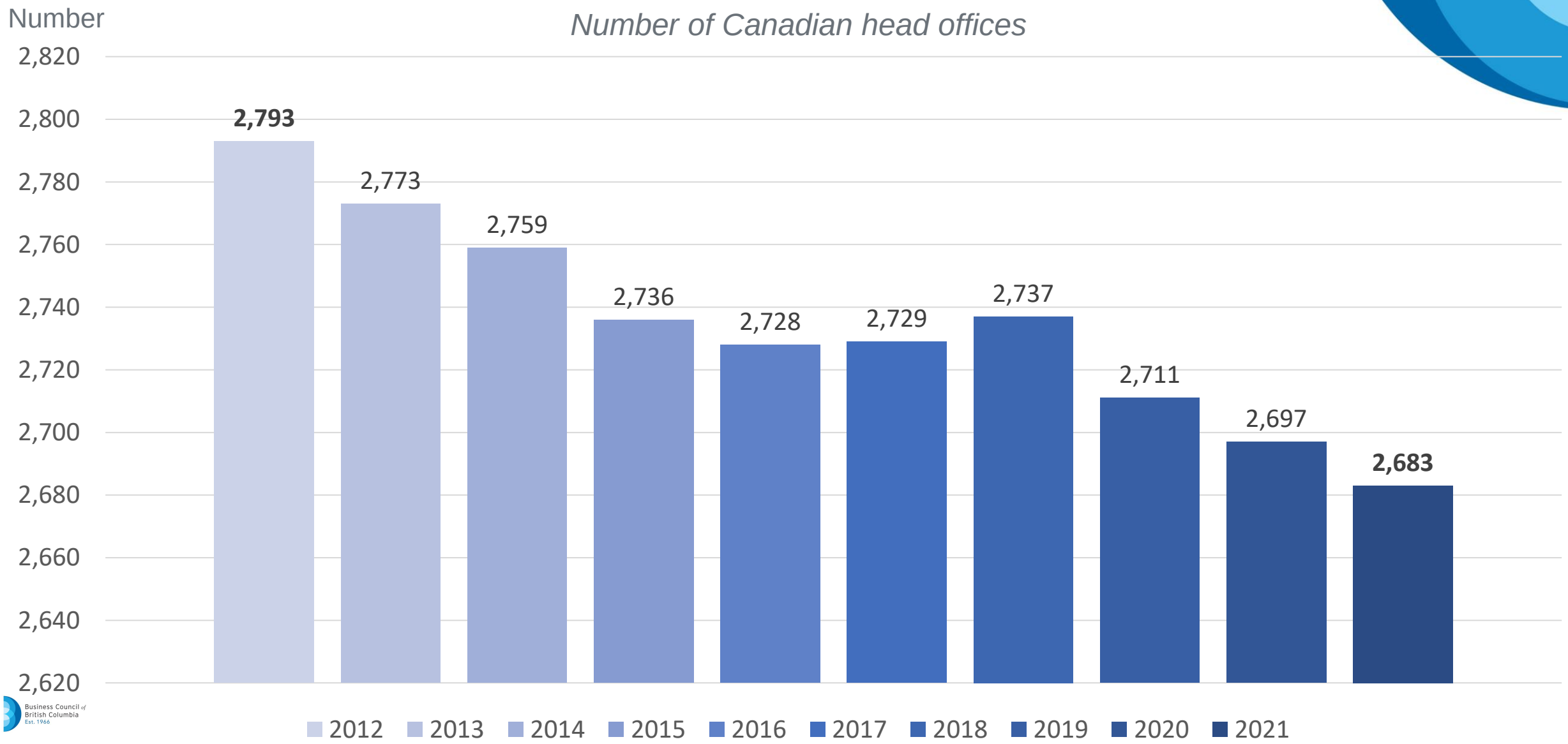


Business Council of British Columbia Est. 1966

Source: B.C 2023 Budget; Statistics Canada; BCBC

NUMBER OF HEAD OFFICES

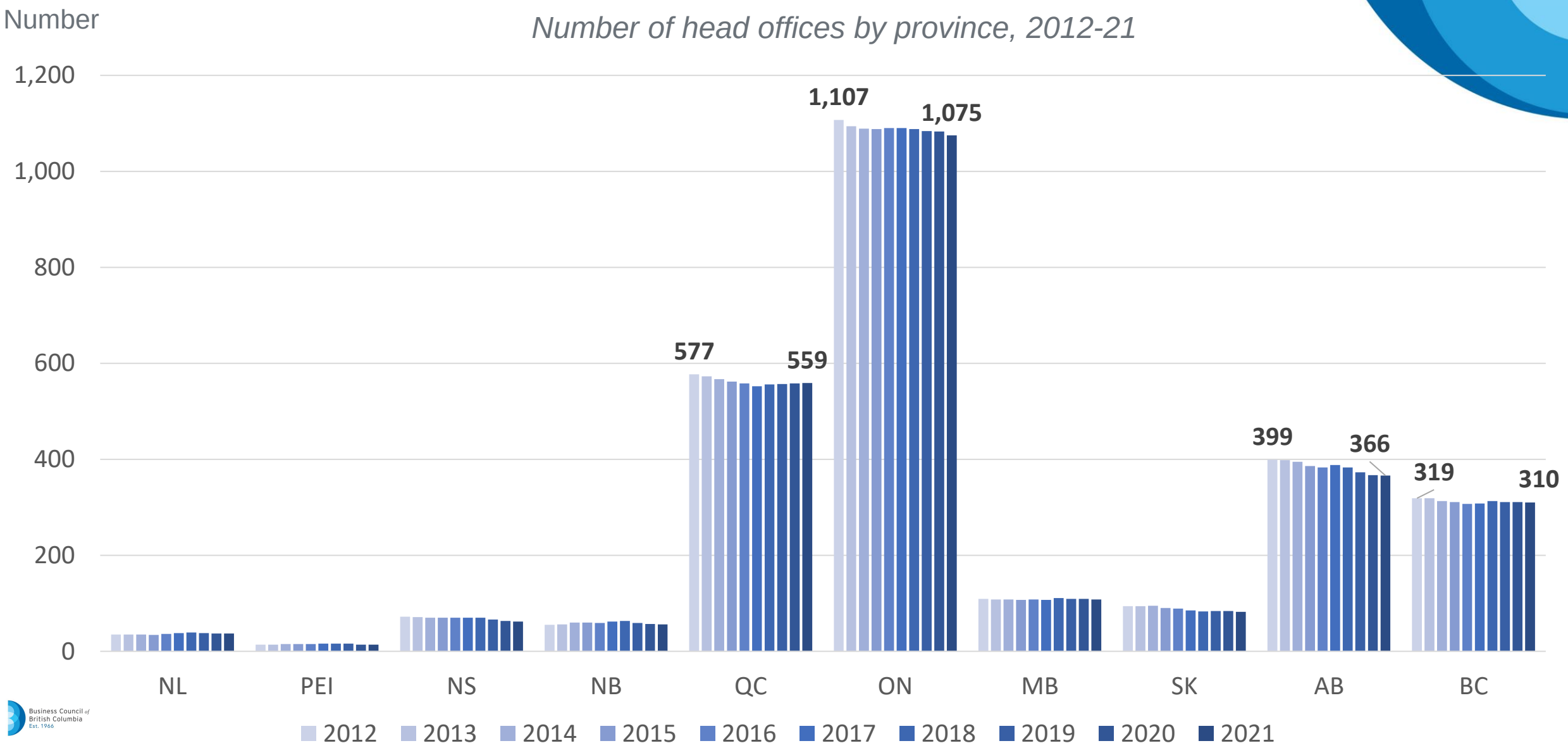
CANADA LOST 110 HEAD OFFICES OVER 2012-21



Business Council of British Columbia Est. 1966

Source: Statistics Canada, BCBC

MOST PROVINCES HAVE LOST HEAD OFFICES

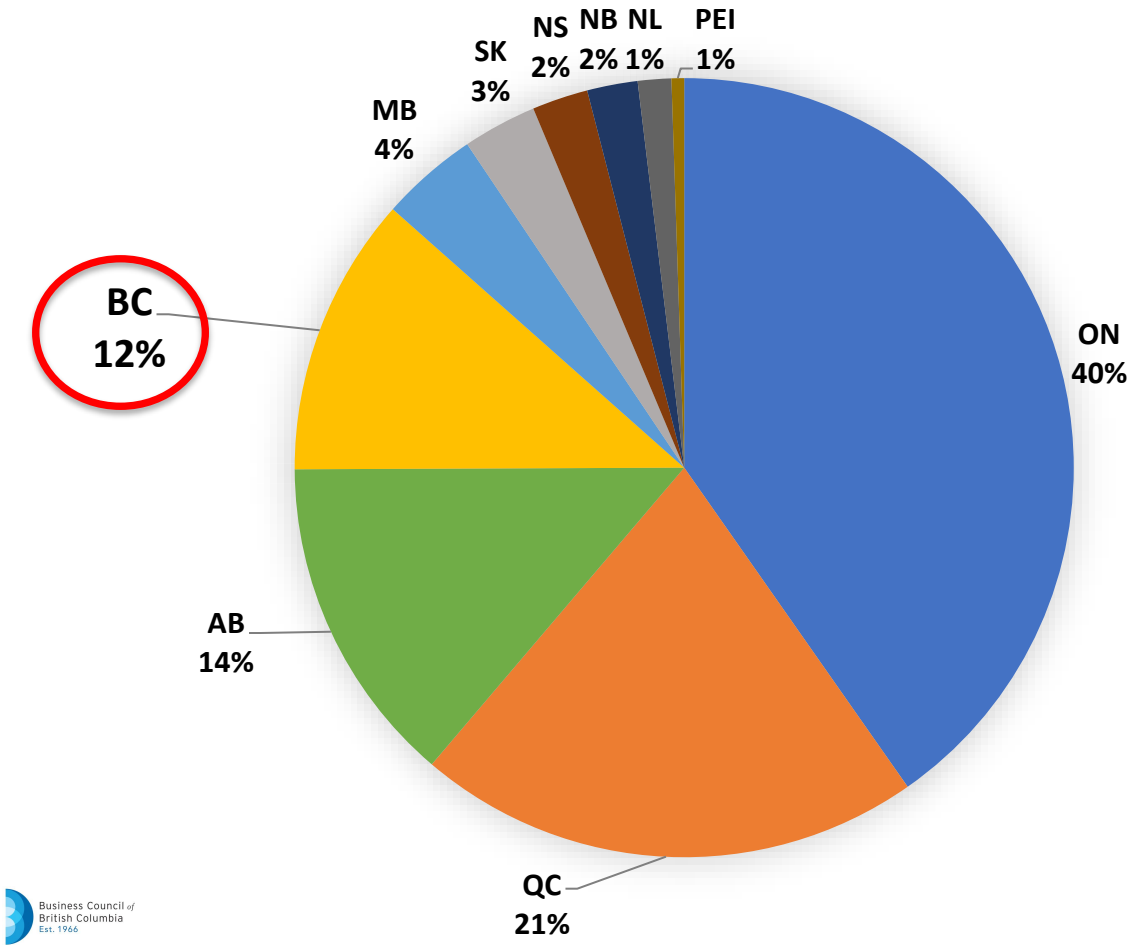


Business Council of British Columbia Est. 1966

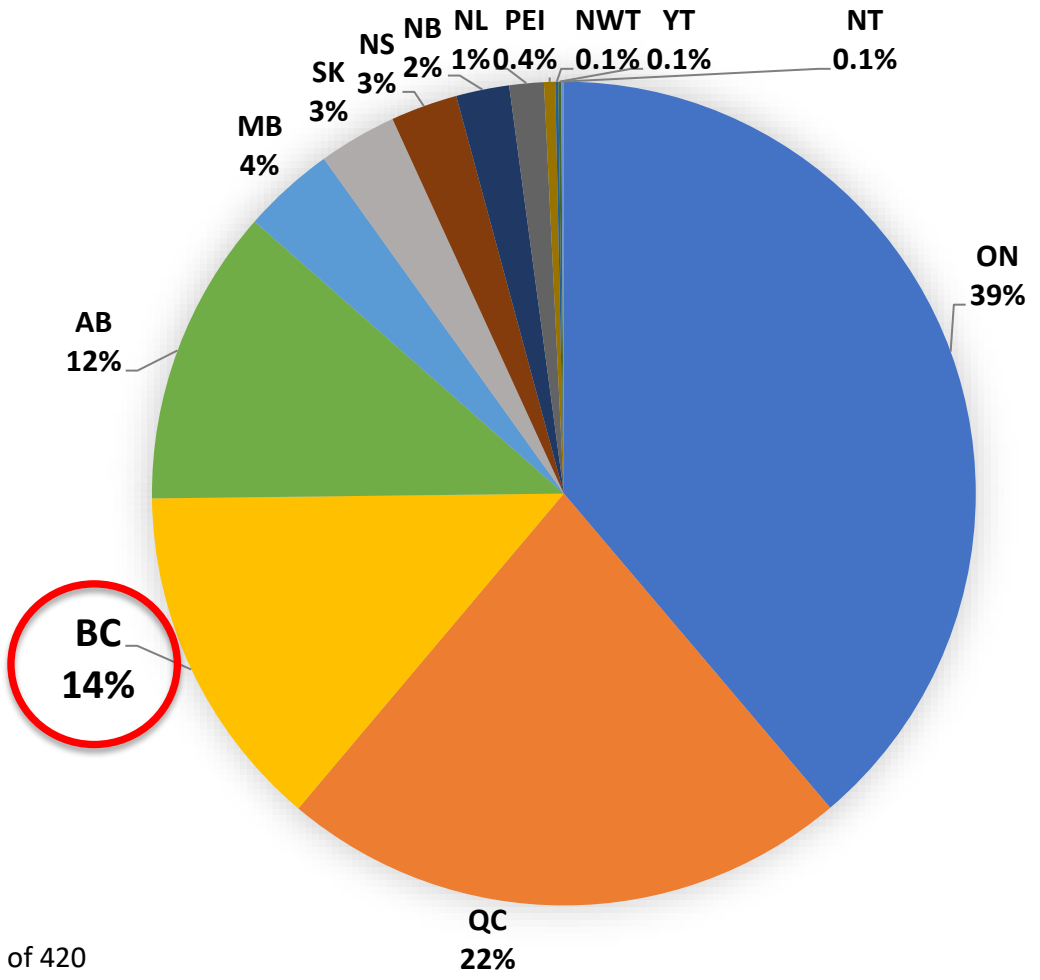
Source: Statistics Canada, BCBC

B.C. PUNCHES *BELOW* ITS POPULATION WEIGHT ON NUMBER OF HEAD OFFICES

Share of Canadian head offices (number), 2021



Share of Canadian population, July 1, 2022

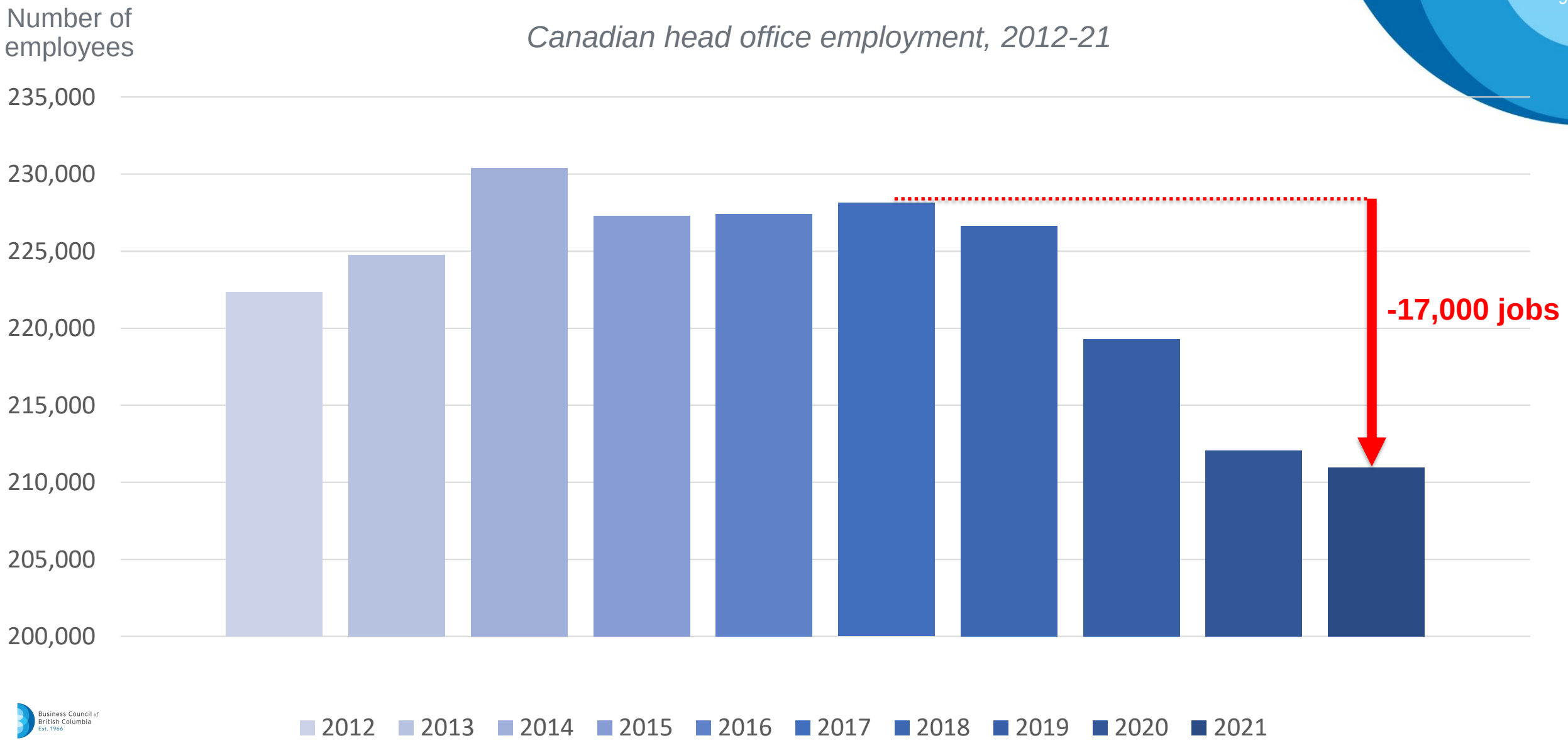


Business Council of British Columbia
Est. 1966

Source: Statistics Canada, BCBC

HEAD OFFICE EMPLOYMENT

CANADIAN HEAD OFFICES SHED 17,000 JOBS OVER 2017-21

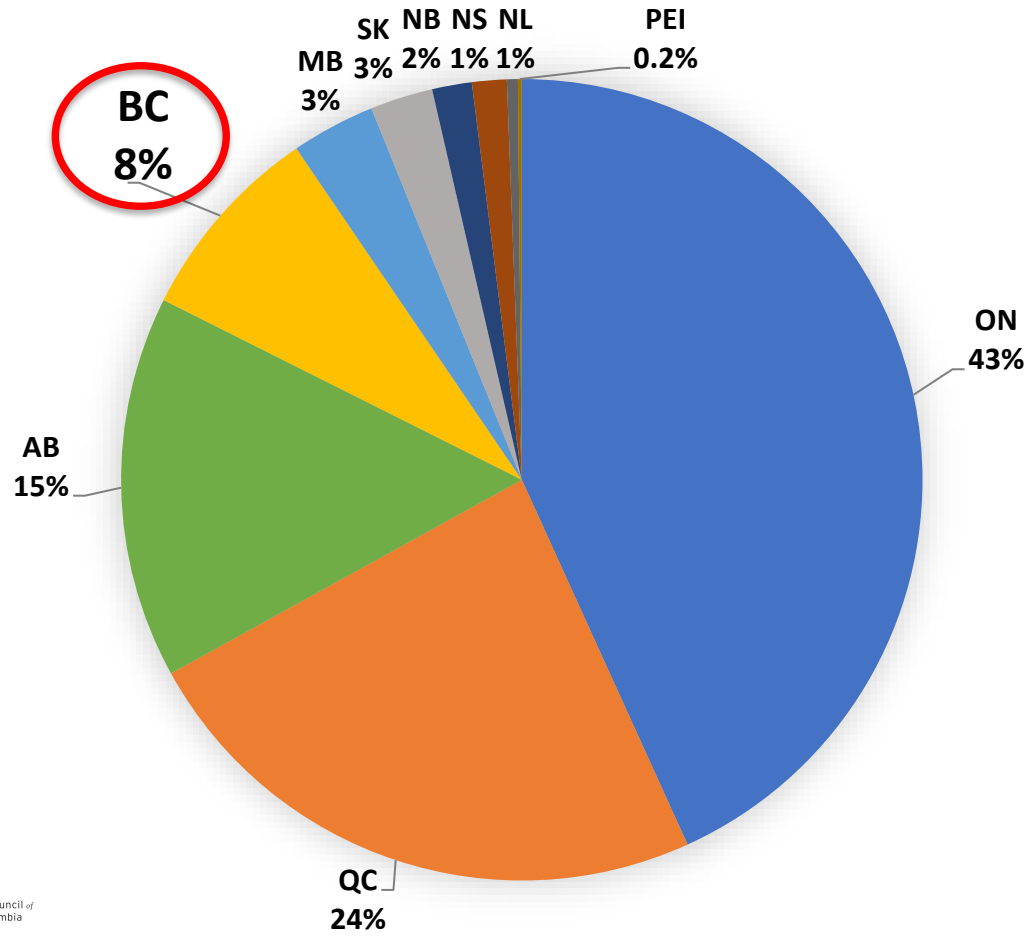


Business Council of British Columbia Est. 1966

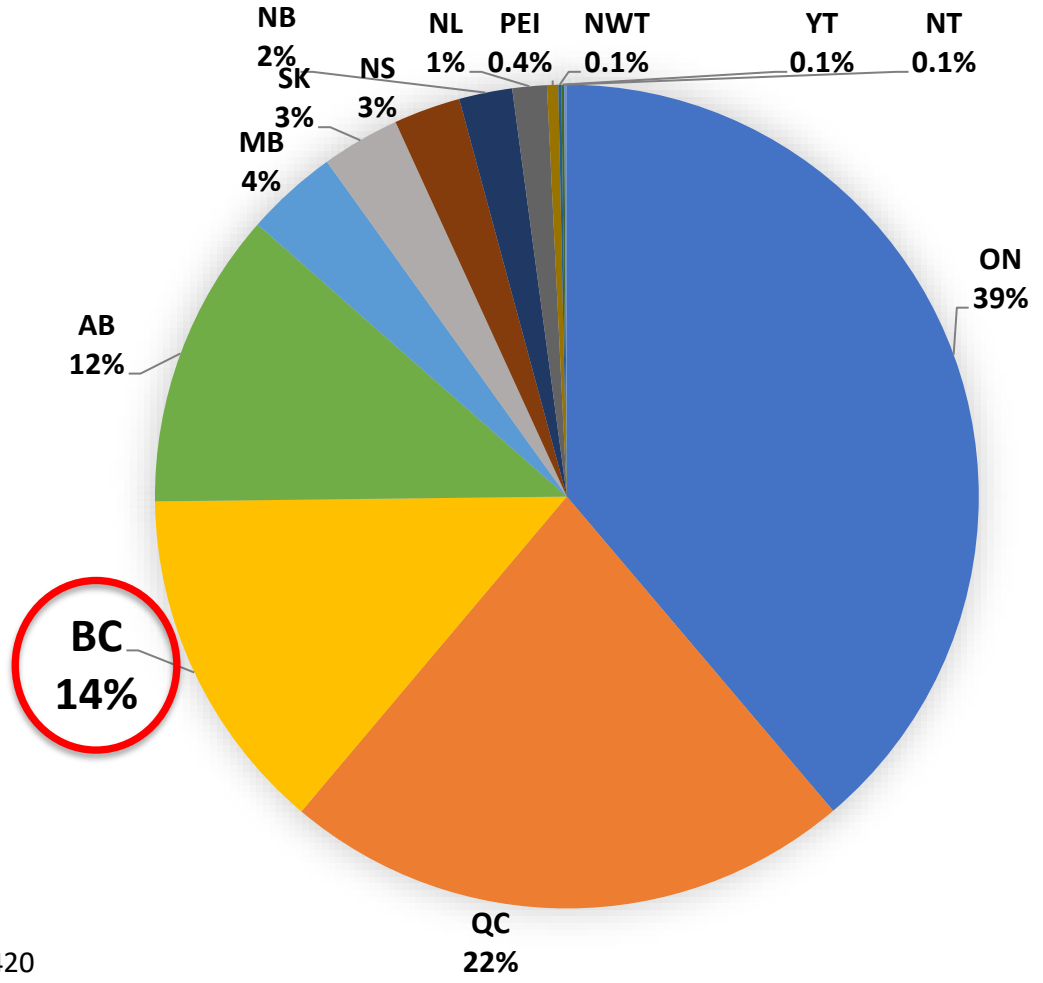
Source: Statistics Canada, BCBC

B.C. PUNCHES *WELL BELOW* ITS POPULATION WEIGHT ON HEAD OFFICE EMPLOYMENT

Share of Canadian head office employment, 2021



Share of Canadian population, July 1, 2022

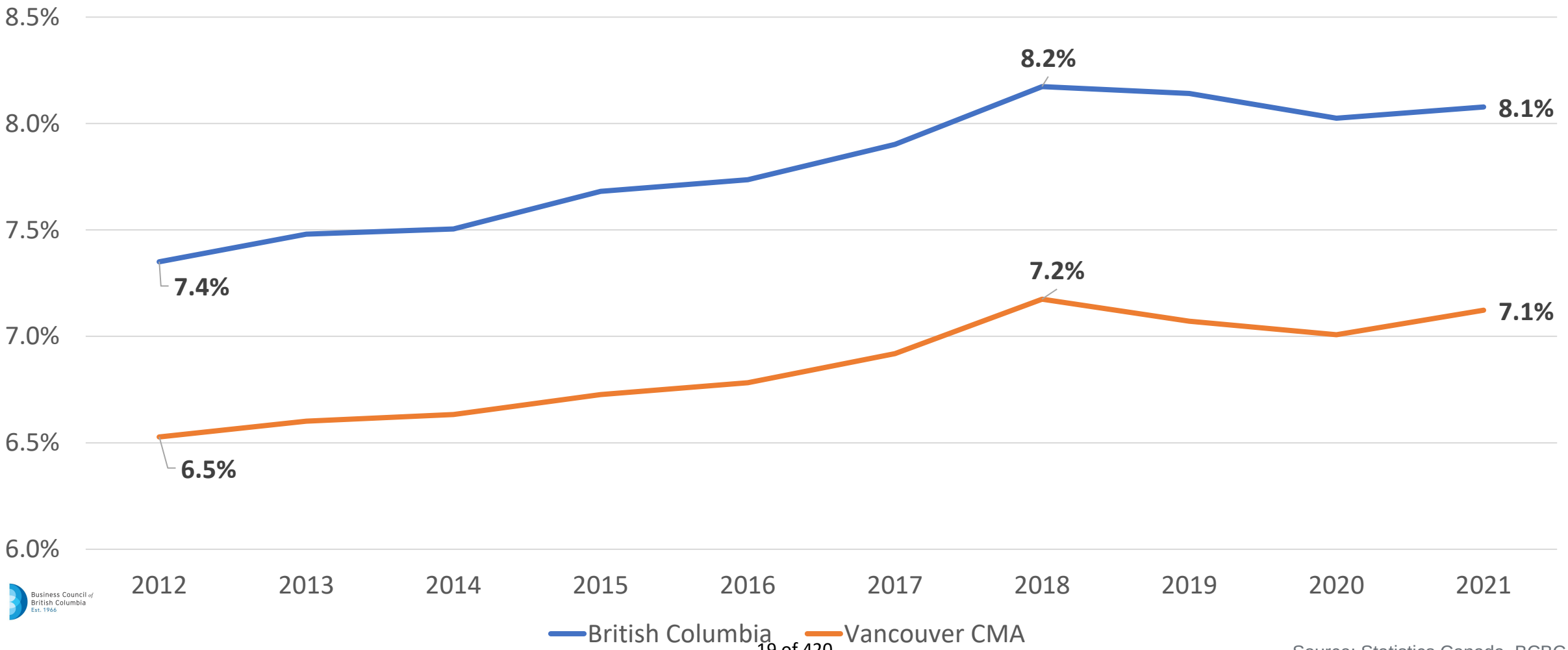


Business Council of British Columbia Est. 1966

Source: Statistics Canada, BCBC

B.C. WAS INCREASING ITS SHARE OF CANADIAN HEAD OFFICE EMPLOYMENT UNTIL 2018

Share of total Canadian head office employment, 2012-21, B.C. and Vancouver CMA



Business Council of British Columbia Est. 1966

Source: Statistics Canada, BCBC

POLICY APPROACH

"POACHING" STRATEGY UNLIKELY TO SUCCEED

- No evidence that subnational jurisdictions can entice head offices to relocate
  - Costly race-to-the-bottom in subsidies and enticements

- Better strategy is to improve the operating environment for
  - Current HQs
  - Growing local companies to international scale
  - Clusters

POLICY AREAS FOR IMPROVEMENT

- Skilled employees face very high personal tax rates at comparatively modest incomes
- PST is repellent to new capital investment – applies to business inputs, unlike GST/HST
- Sextupling of provincial business tax rate when net income exceeds $500,000
- Red tape – long and uncertain regulatory processes
- Barriers to cross-Canada trade – hard to achieve domestic scale
- Barriers to foreign investment & competition in product markets
- Municipal property tax burdens rising and shifting from households to firms
- Scarcity and insecurity of industrial land, especially along trade corridors
- Loss of skilled Canadian workers to U.S. – higher market wages, lower taxes
- Long mortgage debt boom has inflated residential land values relative to incomes

david.williams@bcbc.com

To: Regional Planning Committee

From: Jessica Jiang, Regional Planner, Regional Planning and Housing Services

Date: April 14, 2023 Meeting Date: May 12, 2023

Subject: **Metro 2050 Amendment Request - Township of Langley (23699 and 23737 Fraser Highway)**

RECOMMENDATION

That the MVRD Board:

a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Rural to Industrial for the lands located at 23699 and 23737 Fraser Highway;
b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023"; and
c) direct staff to notify affected local governments as per section 6.4.2 of *Metro 2050*.

EXECUTIVE SUMMARY

The Township of Langley is requesting a Type 2 Amendment to *Metro 2050* for 4.12 hectares of land located at 23699 and 23737 Fraser Highway, owned by Bath Investments Ltd. The proposed amendment would re-designate the regional land use designation from Rural to Industrial to permanently allow for industrial uses (open storage of building materials, parking of commercial vehicles and/or equipment, and vehicle storage) granted under a temporary use permit set to expire in May 2024, as well as allow for additional industrial uses subject to meeting certain development prerequisites.

The proposed amendment has been considered in relation to *Metro 2050*'s goals, strategies, and policies. The analysis demonstrates that on balance, the proposed amendment is supportable and is aligned with *Metro 2050*'s goals and strategies. The proposed amendment:

- allows for existing industrial uses to permanently operate on the subject properties;
- is consistent with the surrounding land use context and is in close proximity to other industrial designated uses along Fraser Highway; and
- provides employment generating uses in close proximity to the Regional Truck Route Network.

PURPOSE

To provide the Regional Planning Committee and the Metro Vancouver Regional District (MVRD) Board with the opportunity to consider the Township of Langley's request to amend *Metro 2050* and re-designate 23699 and 23737 Fraser Highway from Rural to Industrial through a Type 2 Amendment.

BACKGROUND

On July 11, 2022, the Township of Langley Council granted third reading to the Langley Official Community Plan (OCP) Bylaw 1979 No. 1842 Amendment (Rural Plan), Bylaw 1933 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793. On September 21, 2022, Metro Vancouver received the request from the Township to consider a regional growth strategy amendment for the subject properties (Attachment 1). If adopted, the Township's Bylaw No. 5793 would amend the Langley Official Community Plan by changing the land use designation from Rural to Industrial.

The update to the regional growth strategy, *Metro 2050* was adopted on February 24, 2023, and *Metro 2040* was subsequently rescinded. As such, the application is now being brought forward under *Metro 2050*. The requested Type 2 amendment requires adoption through an affirmative two-thirds weighted vote of the MVRD Board. Since the Township of Langley is a signatory to *Metro 2050*, final adoption of the amended OCP Bylaw cannot occur until the MVRD Board has adopted the amending bylaw for *Metro 2050*.

SITE CONTEXT

The two properties at 23699 and 23737 Fraser Highway total 4.12 hectares. Property details and existing land use designations are provided in Table 1.

Table 1 – Existing Site Designations

Site Size	4.12 hectares (10.19 acres)
Site Location	23699 and 23737 Fraser Highway
Current RGS Designation	Rural
Current OCP Designation	Rural
Current Rural Plan Designation	Small Farms/Country Estates
Current Zoning	Rural Zone RU-1
Current Subdivision & Development Servicing	Level 4 – Rural
Agricultural Land Reserve (ALR)	No
Urban Containment Boundary	Outside of Urban Containment Boundary

On October 21, 2019, Township Council authorized issuance of a temporary use permit for 23699 and 23737 Fraser Highway, which allows:

a) open storage of building materials;
b) parking of commercial vehicles and/or equipment (excluding transportation and trucking terminals and compounds including public transportation depots);
c) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats);

The temporary use permit will expire on May 14, 2024. The Township is proposing to amend the regional land use designation, and corresponding local bylaws to permanently allow the uses permitted by the temporary use permit, as well as to permit additional industrial uses on the subject properties.

The subject properties are located within 150m of existing Industrial properties to the east. The subject properties are bound by properties with an Agricultural designation and that are in the ALR

to the north, Fraser Highway to the south, Rural designated properties not within the ALR to the east and west. There are some Industrial designated properties along Fraser Highway, though most properties in the area are designated Rural or Agricultural (Figure 1).

PROPOSED REGIONAL LAND USE DESIGNATION AMENDMENT

The Township of Langley can only adopt the proposed OCP Bylaw, No. 5793 after the MVRD Board approves the corresponding regional growth strategy amendment. The proposed Bylaw would amend the Township's OCP and Zoning Bylaws for the subject properties to permanently accommodate industrial use on the site, and add the properties to Development Permit Area 'B' – Rural Commercial/Industrial. The proposed designations are outlined in Table 2.

Table 2 – Proposed Site Designations

Designation	Current	Proposed
RGS	Rural	Industrial
OCP	Rural	Industrial
Rural Plan	Small Farms/Country Estates	Small Farms/Country Estates with site specific text amendment to permit industrial uses
Zoning	Rural Zone RU-1	Service Industrial Zone M-1B
Subdivision & Development Servicing	Level 4 – Rural	Level 1 – Urban

The new designations would permanently allow for the industrial uses permitted under the Temporary Use Permit, as well as allow for additional industrial uses subject to meeting certain development prerequisites. These additional uses are outlined under the M-1B zoning provisions.

Figure 1 – Existing Regional Land Use Designation

Figure 2 – Proposed Regional Land Use Designation

The Township has stipulated as a part of its application that the registration of a restrictive covenant is a development prerequisite, which prohibits any building on the site until full urban services pursuant to the Township's subdivision and development servicing bylaw service level 1 have been provided. Development permit applications will be required to allow Council to review the form, character, and siting of future developments on the site. See Attachment 2 for additional information.

The proposed amendment is a Type 2 amendment to Metro 2050, requiring an amendment bylaw passed by a two thirds weighted vote of the Metro Vancouver Board. The proposed amendment will be posted on the Metro Vancouver website, will have a comments form on the Metro Vancouver website, and materials from the Township of Langley public hearing will be provided to the MVRD Board.

Should the application proceed, an updated Regional Context Statement (RCS) that reflects the proposed regional land use designation change will be required. It is expected that the Township will submit the updated RCS for consideration of acceptance if the Board chooses to initiate the proposed amendment process for *Metro 2050* and gives 1st, 2nd and 3rd readings to the amendment bylaw.

REGIONAL PLANNING ANALYSIS

The Township of Langley's proposed amendment has been assessed in relation to applicable *Metro 2050* goals and policies. The intent of the assessment is not to duplicate the municipal planning process, but rather to identify any potential regional planning implications and the regional significance of the proposed land use changes in consideration of *Metro 2050*. A summary of the regional planning analysis is provided as follows.

Goal 1: Create a Compact Urban Area

Strategy 1.1 Contain urban development within the Urban Containment Boundary is committed to concentrating urban development within the urban containment boundary (UCB) and supporting the efficient and cost-effective provision of infrastructure and services and amenities. *Metro 2050* generally considers Industrial to be an Urban Land Use Designation, but Industrial lands may be identified outside of the Urban Containment Boundary, as is the case with this application.

In *Metro 2050* Rural lands are intended to protect the existing character, landscapes, and environmental qualities of rural communities outside the Urban Containment Boundary. Land uses in these areas include low density forms of residential; agricultural; and small-scale commercial, industrial, or institutional uses, that do not require the provision of urban services such as sewerage or transit. As such, Rural lands are not intended as future urban development areas and generally will not have access to regional sewerage services.

There are existing light industrial uses on the site that do not require connection to regional sewerage services. There are three Rural designated properties to the east of the site, with six Industrial properties beyond that. Given this, there is a likelihood that if successful, this re-designation could incentivize adjacent Rural designated properties to also seek re-designation.

Strategy 1.4: Protect Rural lands from urban development states Rural designated lands located outside the Urban Containment Boundary are not intended for urban forms of development. Policy 1.4.1 states that Metro Vancouver will "direct the Greater Vancouver Sewerage and Drainage District (GVS&DD) to not allow connections to regional sewerage services to lands with a Rural regional land use designation." Should the amendment application proceed, and the properties be re-designated to Industrial, the Township may apply for the site's inclusion in the regional sewerage area at the discretion of the GVS&DD.

Goal 2: Support a Sustainable Economy

Strategy 2.2: Protect the supply and enhance the efficient use of industrial land, contains policies that support protecting and appropriately using the region's limited supply of Industrial and Employment lands. The Metro Vancouver region is facing a critical shortage of industrial lands. Specifically, there is a constrained land supply, pressure on industrial lands to convert to other uses, site specific development issues, and a complex jurisdictional environment. The Metro Vancouver region has one of the tightest industrial markets in North America, with extremely low vacancy rates and escalading industrial lease prices. The limited industrial land options constrain possible economic and employment growth within the region. Industrial lands are crucial to support a prosperous, sustainable regional economy and to provide space to accommodate the many industrial activities and services needed in a growing region. While representing just 4 per cent of the region's land base, industrial lands accommodate over 25 per cent of the region's total employment, and contribute to the region's economic well-being, with important links to transportation, trade, and tax dollars. The proposed amendment, if approved, would be adding 4.12 hectares of Industrial land to the region's supply and formalizing the current use and operations of the subject properties. Furthermore, the site is located in close proximity to other industrial designated lands to the east. Should the subject properties be re-designated from Rural to Industrial, the use would be consistent with existing

industrial operations in the immediate vicinity. The site is also strategically located from a goods movement perspective, as Fraser Highway is a part of the Truck Route Network.

Strategy 2.3: Protect the supply of agricultural land and strengthen agricultural viability, contains policies that support protecting land for agricultural production. Urban uses adjacent to agricultural land, regardless of whether it is in the Agricultural Land Reserve (ALR), can negatively impact the ability for that agricultural land to remain viable and productive. *Metro 2050* policy 2.3.7 supports working with stakeholders to require agriculture impact assessments for development adjacent to agricultural land as a necessity to protect that land. Extending urban uses into areas that support agricultural production may result in exposing adjacent agricultural land to the negative effects of urban development. The application does not indicate analysis has been undertaken to assess how a permanent change from to Rural to Industrial for the subject properties will impact the adjacent rural lands which are indicated for small farm uses in the Township's Rural Plan.

Should the application be advanced, edge planning and appropriate interface management between urban and agricultural uses are encouraged in accordance with *Metro 2050* policy 2.3.12 c) iv). Appropriate interfacing is necessary to ensure the urban uses do not negatively impact the agricultural lands identified. The Township could consider including a condition of approval as a part of the OCP and Zoning bylaw amendment process to accomplish this.

Goal 5: Support Sustainable Transportation Choices

Strategy 5.1 Coordinate land use and transportation to encourage transit, multiple-occupancy vehicles, cycling and walking recognizes that the coordination of land use and transportation supports positive region building by ensuring communities are connected to sustainable transportation networks while investing in transportation improvements for existing neighbourhoods. The site is not well supported by walking and cycling infrastructure, or by public transportation. Should the proposed regional land use designation amendment be advanced by the MVRD Board, the Township of Langley is encouraged to integrate active transportation facilities into the site design and adjacent neighbourhood, while working with the applicant and TransLink to develop Transportation Demand Management programs (e.g. vanpools, secure bicycle parking) for future commuters to and from the site.

Strategy 5.2 Coordinate land use and transportation to support the safe and efficient movement of vehicles for passengers, goods, and services recognizes that roadways and truck routes play a vital role in supporting the regional economy, shaping regional growth, and connecting Metro Vancouver to other regions. The strategy also recognizes that making the most of the goods movement system requires protecting industrial lands. The subject properties are strategically located from a goods movement perspective, as Fraser Highway is a designated truck route that connects to several nearby industrial sites and the broader Truck Route Network. From a commuter standpoint, the site has limited transit service and is not well-connected to regional walking and cycling infrastructure. The majority of trips to and from this location will be made by private vehicle.

REGIONAL PLANNING ADVISORY COMMITTEE COMMENTS

An information report on the amendment application was provided to the Regional Planning Advisory Committee (RPAC) for comment on April 6, 2023. Staff from the Township of Langley presented on

the amendment application and were available to answer questions from committee members. One committee member inquired about the anticipated completion date for the Township's upcoming Fraser Highway Employment Lands Area Plan that was highlighted in the Townships' presentation. The study area of the Fraser Highway Employment Lands Area Play encompasses the subject properties.

IMPLICATIONS FOR METRO VANCOUVER UTILITY SERVICES

A summary of anticipated impacts on Metro Vancouver's utilities is as follows:

Liquid Waste Services (Greater Vancouver Sewerage & Drainage District)

Following an initial review of the amendment application, Liquid Waste Services (LWS) note that the Township proposes a restrictive covenant prohibiting buildings on the properties until such time that urban services are provided. LWS interprets this clause as the Township may consider requesting regional sewer services for the properties in the future. LWS confirms that the subject properties are located more than 7km from the nearest Metro Vancouver sewer facility (Langley Connector No. 3). However, the amendment application does not contain sufficient details to allow Metro Vancouver to provide informed comments on current or future servicing. Should a detailed servicing plan for the properties be developed, LWS requests that the Township submit details to Metro Vancouver through the established application process so that an impact analysis can be completed. The Township is also encouraged to consider integrating effective inflow and infiltration management approaches to limit extraneous inflows from any new development.

Water Services (Greater Vancouver Water District)

A drinking water demand forecasts was not provided as a part of the Township's application, as such the exact hydraulic impacts on the regional drinking water system cannot yet be determined. Based on the Township's GIS maps and water system map in the OCP (Map 10), the subject properties are not currently serviced by the Township of Langley's municipal drinking water system. The subject properties are located about 1.5km from the terminus of the Township's western drinking water system on the Fraser Highway. The Report to Mayor and Council included in the Township's application package recommends utility upgrades in accordance with the Township's Subdivision and Development Servicing Bylaw, which includes the provision of water services. Water Services would like confirmation that the subject properties will be serviced by the Township's drinking water system if the properties are re-designated. Should the proposed regional land use designation amendment be approved by the MVRD Board, Water Services would request that the Township provide a demand forecast and assessment of the anticipated impacts to the municipal and regional water systems, as well as a servicing plan for this development.

REGIONAL GROWTH STRATEGY AMENDMENT PROCESS AND NEXT STEPS

If the amendment bylaw receives 1st, 2nd, and 3rd readings, it will then be referred to affected local governments and relevant agencies, as well as posted on the Metro Vancouver website for a minimum of 45 days to provide an opportunity for comment. Comments received will be summarized and included in a report advancing the bylaw to the MVRD Board for consideration of final adoption. An updated RCS from the Township will be considered at the same Board meeting as final adoption of the proposed amendment.

ALTERNATIVES

1. That MVRD Board:
   a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Rural to Industrial for the lands located at 23699 and 23737 Fraser Highway;
   b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023"; and
   c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.

2. That the MVRD Board decline the proposed amendment for 23699 and 23737 Fraser Highway and notify the Township of Langley of the decision.

FINANCIAL IMPLICATIONS

If the MVRD Board chooses Alternative 1, there are no financial implications for Metro Vancouver related to the acceptance of the Township of Langley's Type 2 Amendment. If the MVRD Board chooses Alternative 2, a dispute resolution process may take place as prescribed by the *Local Government Act*. The cost of a dispute resolution is prescribed based on the proportion of assessed land values. Metro Vancouver would be responsible for most of the associated costs.

SUMMARY/CONCLUSION

The Township of Langley has requested that the MVRD Board consider a Type 2 amendment to *Metro 2050* for two lots totalling 4.12 hectares located along Fraser Highway. The amendment to re-designate the site from a Rural to Industrial land use will permanently allow for industrial uses on the subject properties. Additional information is required to fully assess liquid waste and water servicing implications of this application should it proceed. This information can be received post adoption during the development planning stage.

Overall, the proposed amendment allows for existing industrial uses to continue operations on the subject properties. The subject properties are in close proximity to other industrial uses along Fraser Highway. The amendment also ensures employment generating uses in close proximity to the Regional Truck Route Network. Staff recommend Alternative 1.

Attachments

1. Correspondence dated September 21, 2022, from Township of Langley, to Metro Vancouver Board re: Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793
2. Township of Langley Report, dated June 27, 2022 (File: 10-33-0104)
3. Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023

References

Metro 2050

59165548

Township of Langley

Est. 1873

September 21, 2022 Bylaw No. 5793

James Stiver, Division Manager,
Growth Management and Transportation
Metro Vancouver
Via Email: James.stiver@metrovancouver.org

Dear Mr. Stiver: James

Re: Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793

On July 11, 2022, Township of Langley Council granted third reading to Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793.

Bylaw No. 5793 amends the Langley Official Community Plan (OCP) by amending the land use designation of the subject lands from "Rural" to "Industrial."

Attached, please find the Report to Council, Bylaw No. 5793, and adopted Council Minutes submitted for your consideration of what is believed to be a "Type 2" Regional Growth Strategy Amendment application. Staff note that the proposed amendment to the Regional Context Statement is applicable only to Map A-1, which will bring the RCS into alignment with the proposed land use changes.

If you have any questions, please contact Joel Nagtegaal, Development Planner, at 604.533.6044 or via email at jnagtegaal@tol.ca.

Yours truly,

Ramin Seifi
GENERAL MANAGER, COMMUNITY DEVELOPMENT

Attachments
1. Report to Council and attachments dated June 27, 2022
2. Bylaw No. 5793
3. July 11, 2022 adopted Council Minutes

copy: Bath Investments Ltd./1083876 BC Ltd.
Ben Neff, Giesbrecht & Company

Attachment 1

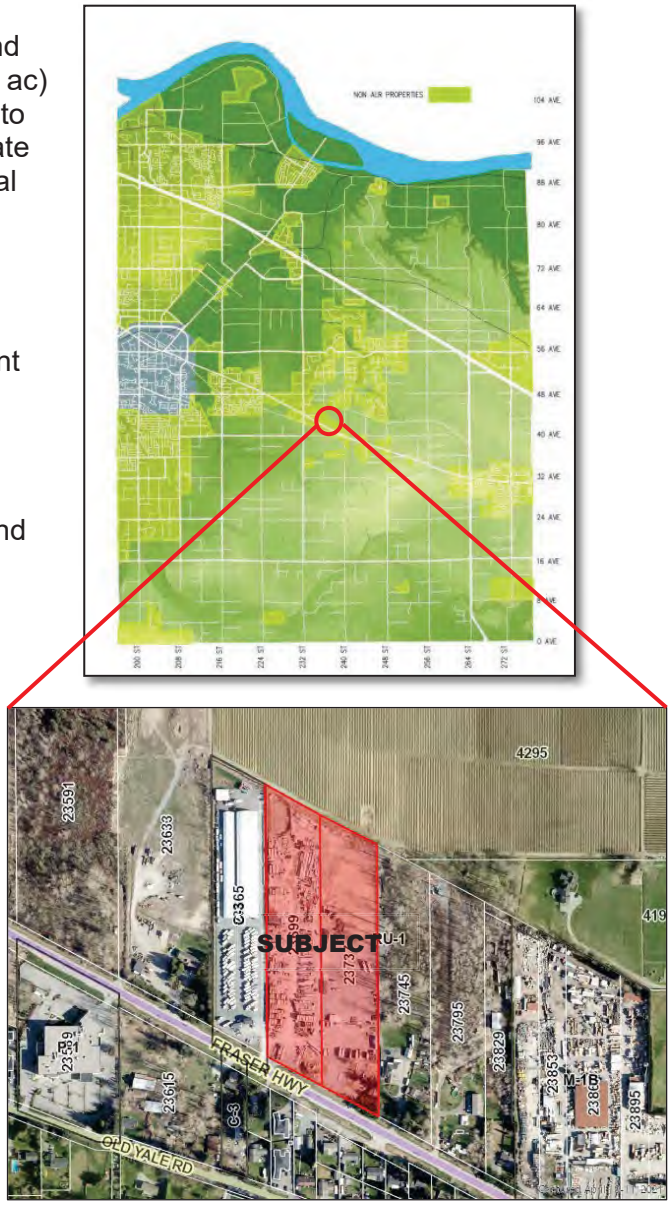
Township of Langley
Est. 1873

REPORT TO MAYOR AND COUNCIL

PRESENTED:	JUNE 27, 2022 - REGULAR MEETING	**REPORT:**	22-70
FROM:	COMMUNITY DEVELOPMENT DIVISION	**FILE:**	10-33-0104
SUBJECT:	OFFICIAL COMMUNITY PLAN AMENDMENT AND REZONING APPLICATION NO. 100201 (BATH INVESTMENTS LTD. / 23699 AND 23737 FRASER HIGHWAY)		

PROPOSAL:

Application to amend the Official Community Plan and Rural Plan and rezone approximately 4.12 ha (10.19 ac) of land located at 23699 and 23737 Fraser Highway to Service Industrial Zone M-1B in order to accommodate current temporary uses as well as additional industrial uses.



RECOMMENDATION SUMMARY:

That Council consider first and second reading of Bylaws No. 5793 and 5794 subject to 13 development prerequisites being satisfied prior to final reading of Rezoning Bylaw No. 5794; that Council consider first, second, and third readings to Bylaw No. 5803; and that staff be authorized to schedule the required public hearing should Council give the Bylaws first and second reading.

RATIONALE:

The proposed development is consistent with the overall objectives of the Official Community Plan with respect to creation of employment opportunities.

RECOMMENDATIONS:

That Council consider first and second reading of Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793 amending the Official Community Plan to change the designation of the lands from "Rural" to "Industrial" and amending the Rural Plan to permit industrial uses on the subject properties; and Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794, rezoning 4.12 ha (10.19 ac) of land located at 23699 and 23737 Fraser Highway to Service Industrial Zone M-1B to permanently accommodate the uses permitted under Temporary Use Permit No. TU000001 as well as additional industrial uses subject to the following development prerequisites being satisfied to the acceptance of the Township of Langley General Manager of Engineering and Community Development, unless noted otherwise, prior to final reading:

1. A Servicing Agreement being entered into with the Township to secure required road and utility upgrades and extensions associated with proposed Fraser Highway transportation related items in accordance with the Township's Subdivision and Development Servicing Bylaw;
2. Submission of an erosion and sediment control plan in accordance with the Erosion and Sediment Control Bylaw;
3. Provision of road dedications, widenings, and necessary traffic improvements for Fraser Highway (including deceleration lane), in accordance with the Township's Master Transportation Plan, Subdivision and Development Servicing Bylaw, and the Street Trees and Boulevard Plantings Policy;
4. Secure a 10 m wide statutory right of way along the north portion of the site for future access;
5. Secure a 20 m wide statutory right of way on the central portion of the site for future access;
6. Provision of a final tree management plan incorporating tree retention, replacement, protection details, and security in compliance with the Subdivision and Development Servicing Bylaw (Schedule I – Tree Protection);
7. Provision of final landscape plans and security to the acceptance of the Manager of Green Infrastructure Services;
8. Registration of restrictive covenants:
    a. Restricting building construction (i.e., "no building") until a Development Permit is issued for the site and full services are provided in compliance with Subdivision and Development Servicing Bylaw 2019 No. 5382 Service Level 1;
    b. Restricting left hand turning movements from the western driveway onto and from Fraser Highway; and
    c. Requiring installation of an accepted landscape plan;
9. Demolition of the existing single family dwelling;
10. Approval of the necessary amendments to the Metro Vancouver Regional Growth Strategy (RGS) and Greater Vancouver Sewerage and Drainage District;
11. Completion of all relevant external agency, federal, provincial, regional, and Township approvals;
12. Compliance with Item 5.2(g) of Community Amenity Contributions (CAC) Policy in support of the OCP amendment; and
13. Payment of supplemental Rezoning fees, Development Engineering and Green Infrastructure service fees, Development Works Agreement (DWA) and Latecomer charges;

That Council consider the Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793 as consistent with the Township's Five Year Financial Plan as updated annually and with Metro Vancouver's Integrated Liquid Waste Resource Management Plan and Integrated Solid Waste and Resource Management Plan, the Housing Needs Report, and with the consultation requirement of Official Community Plan Consultation Policy (07-160);

That (at the time of third reading of Bylaw No. 5793) Council authorize staff to advance the application to Metro Vancouver for the proposed amendments to the Regional Growth Strategy;

That Council grant first, second, and third reading to Subdivision and Development Servicing Bylaw 2019 No. 5382 Amendment (Bath Investments Ltd.) Bylaw No. 5803 (and grant final reading at time of final reading of Bylaw No. 5794); and further

That Council authorize staff to schedule the required public hearing for the Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793 and Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794.

EXECUTIVE SUMMARY:

On October 21, 2019, Council authorized issuance of a temporary use permit to temporarily permit a) open storage of building materials, b) parking of commercial vehicles and / or equipment (excluding transportation and trucking terminals and compounds including public transportation depots), and c) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats) on properties located at 23699 and 23737 Fraser Highway.

Giesbrecht & Company, on behalf of the owners, has applied to amend the Official Community Plan (OCP) and the Zoning Bylaw to permanently allow the uses permitted by the temporary use permit as well as permit additional industrial uses.

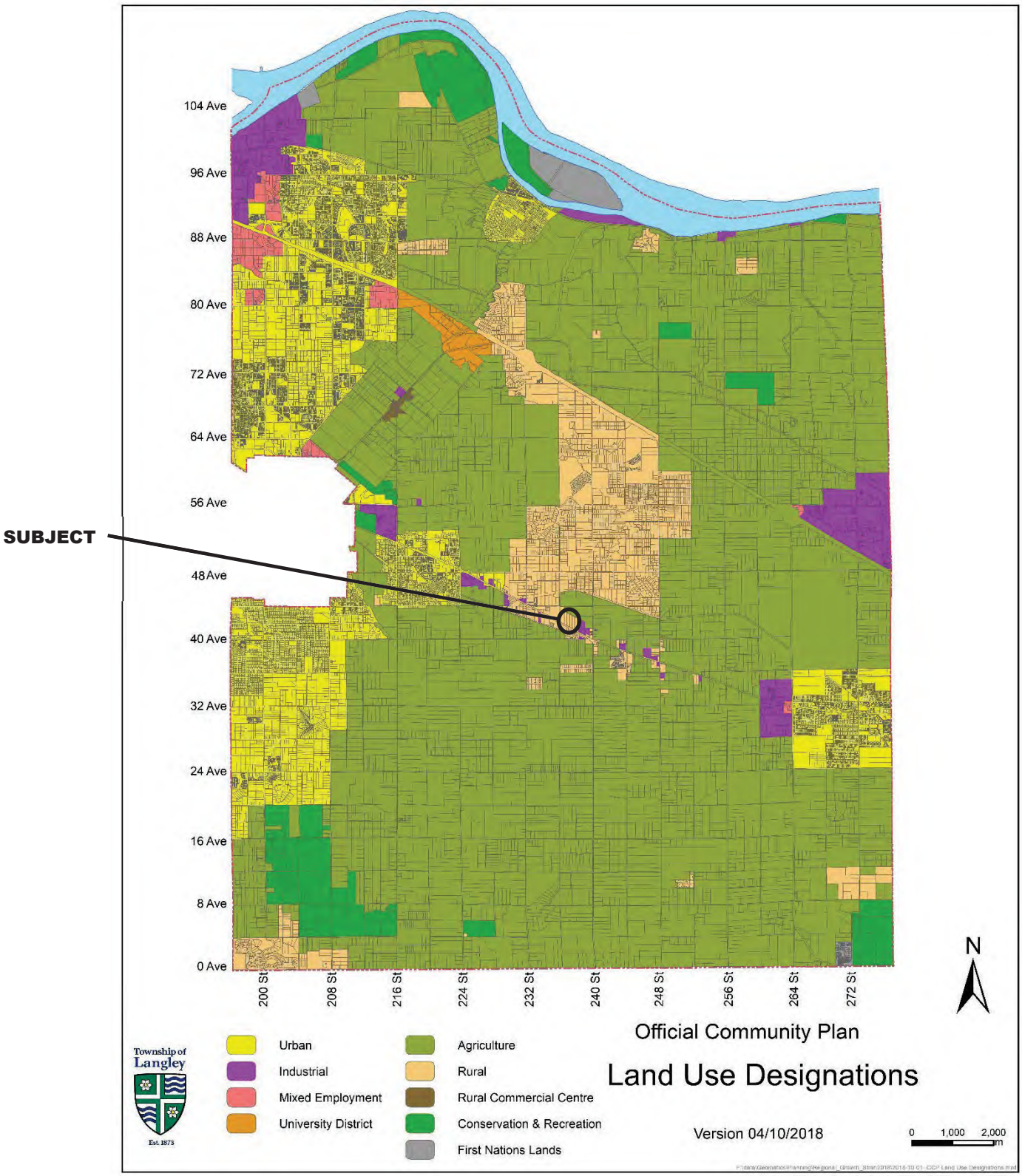
The subject lands are adjacent to an existing service commercial property and are within 150 m of other existing industrial properties on the north side of Fraser Highway. The subject application proposes to increase the industrial land base in the Township of Langley. Given the existing commercial and industrial properties in close proximity to the subject site and that the subject properties are not located in the Agricultural Land Reserve, staff recommend Council consider the application.

An amendment to the Subdivision and Development Servicing Bylaw 2019 No. 5382 is required to amend the site's service level from Level 4 – Rural to Level 1 – Urban. Staff note that an amendment to the Metro Vancouver Regional Growth Strategy (RGS) will also be required to accommodate the proposal should the Bylaws proceed to third reading.

Future development permit applications will be necessary to allow Council the opportunity to review the form, character, and siting of future developments on the site. Staff recommend that the Official Community Plan and rezoning amendments be considered subject to the development prerequisites listed in this report being satisfied prior to Council's consideration of final reading of the applicable bylaws.

PURPOSE:

The purpose of this report is to advise and make recommendations to Council with respect to proposed Official Community Plan Amendment Bylaw No. 5793, Rezoning Bylaw No. 5794, and Subdivision and Development Servicing Bylaw Amendment Bylaw No. 5803.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Township of Langley
Est. 1873
Urban
Industrial
Mixed Employment
University District
Agriculture
Rural
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Conservation & Recreation
First Nations Lands
Official Community Plan
Land Use Designations
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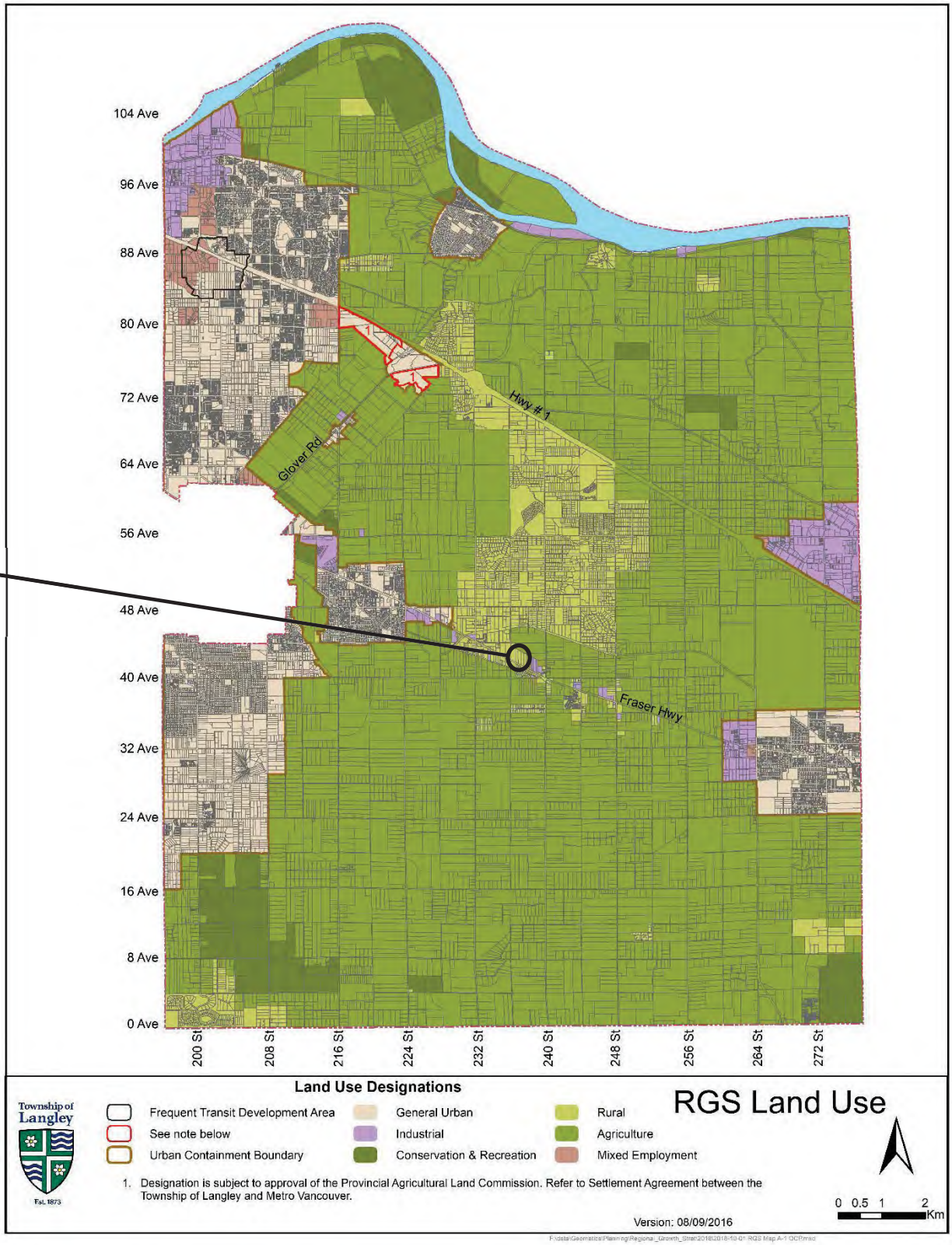
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264 St
272 St
Hwy # 1
Glover Rd
Fraser Hwy
Land Use Designations
Township of Langley
Est. 1873
Frequent Transit Development Area
See note below
Urban Containment Boundary
General Urban
Industrial
Conservation & Recreation
Rural
Agriculture
Mixed Employment
RGS Land Use
1. Designation is subject to approval of the Provincial Agricultural Land Commission. Refer to Settlement Agreement between the Township of Langley and Metro Vancouver.
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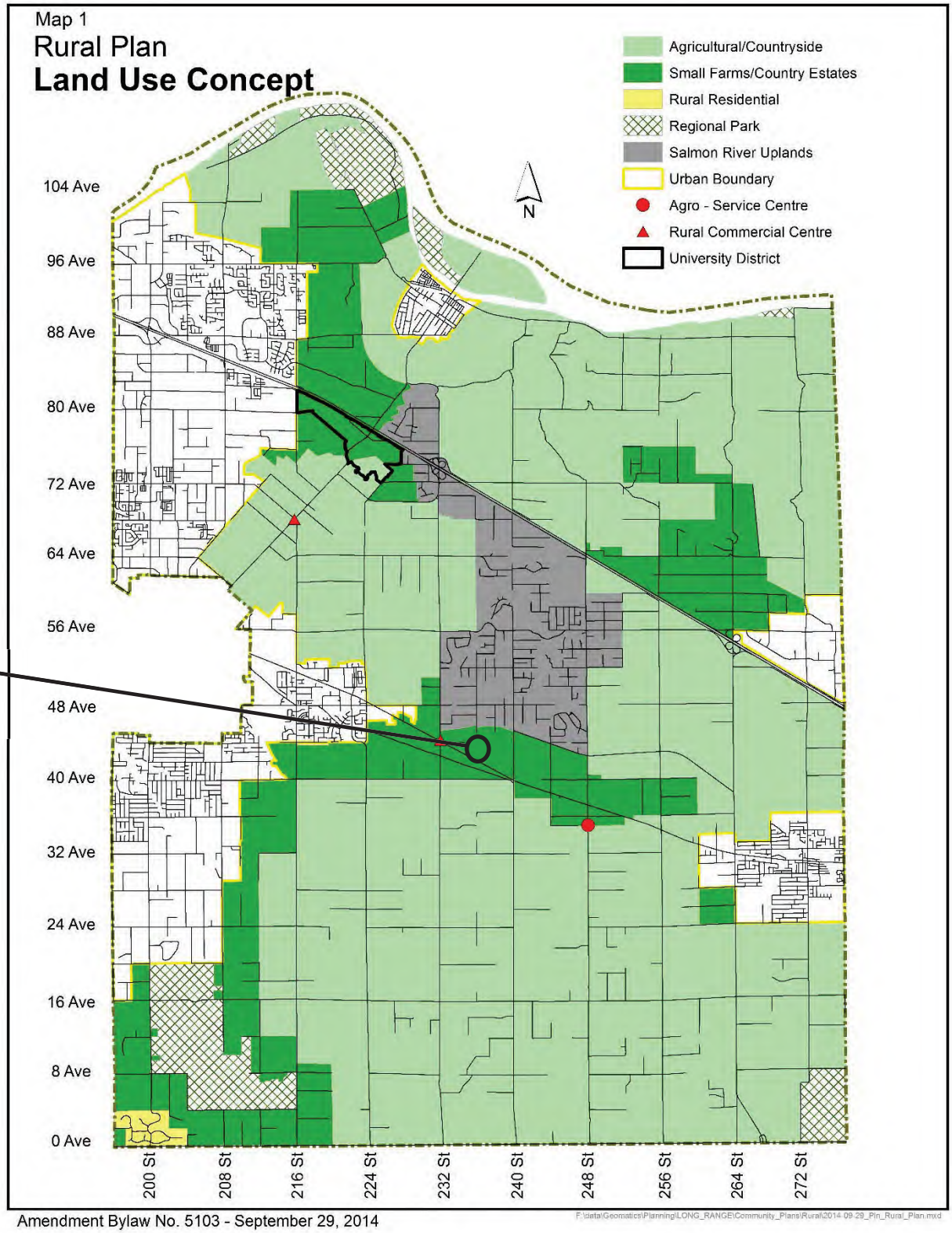
Map 1
Rural Plan
Land Use Concept
Agricultural/Countryside
Small Farms/Country Estates
Rural Residential
Regional Park
Salmon River Uplands
Urban Boundary
Agro - Service Centre
Rural Commercial Centre
University District
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SUBJECT
Amendment Bylaw No. 5103 - September 29, 2014
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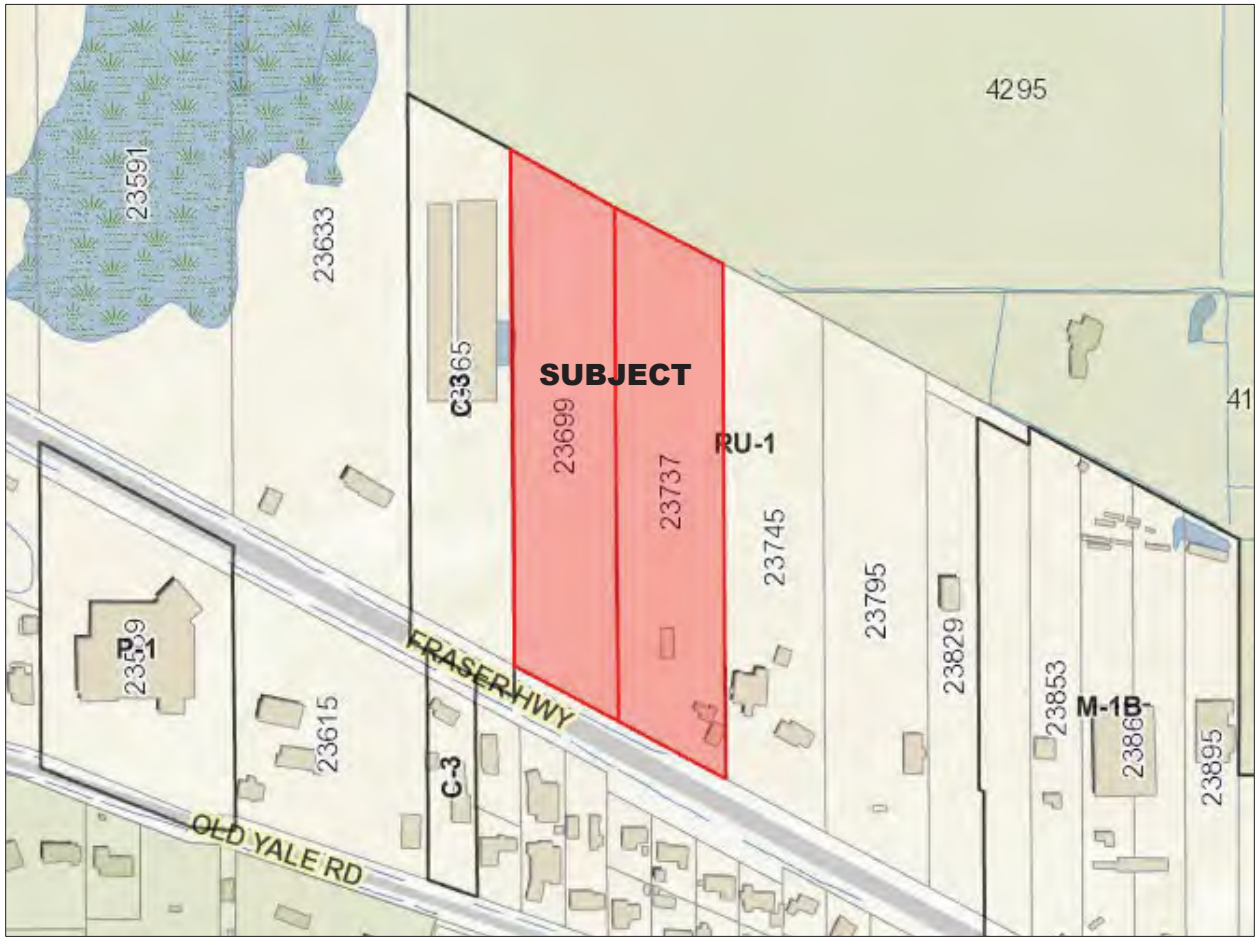
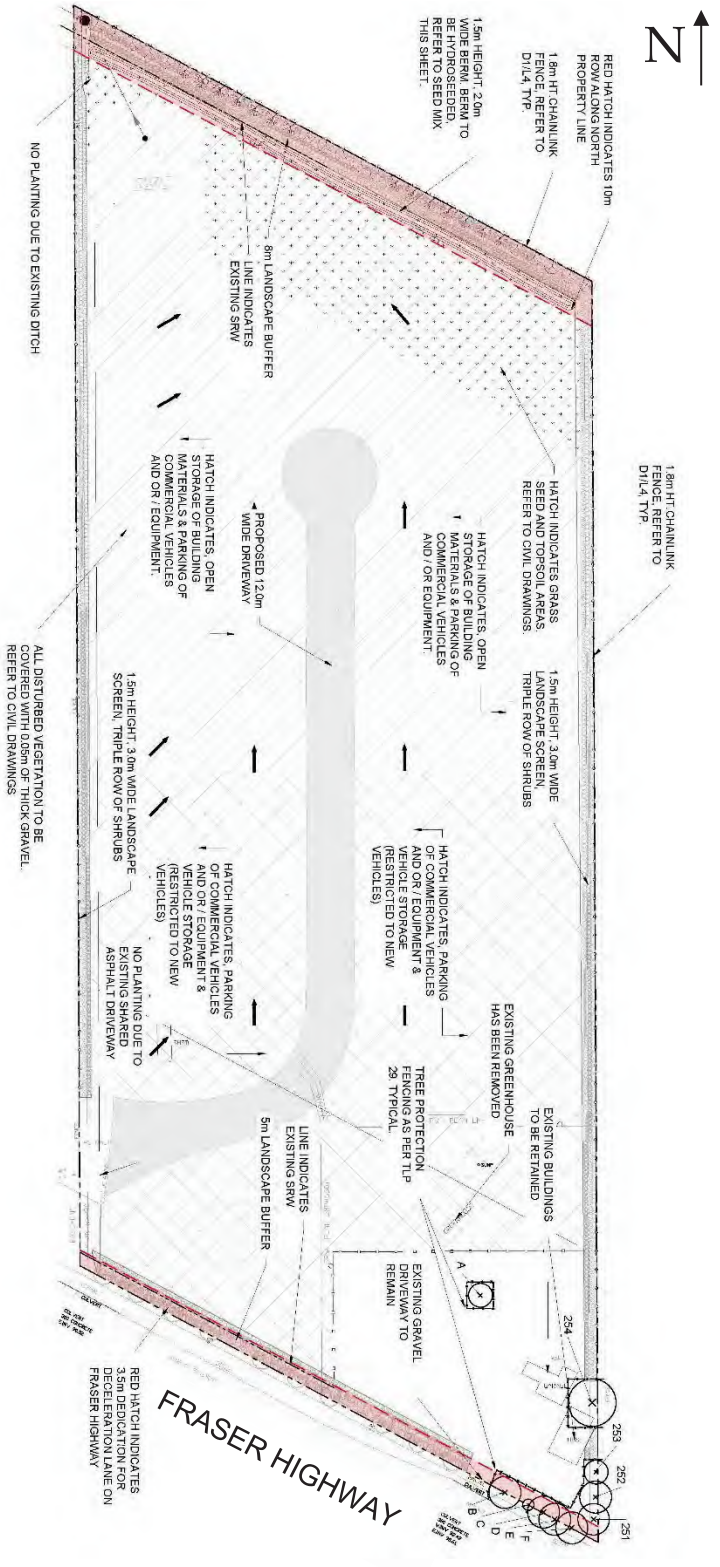


ZONING BYLAW NO. 2500



SITE PLAN – SUBMITTED BY APPLICANT

REFERENCE:

Owner:	Bath Investments Ltd. 23867 Fraser Highway Langley BC V2Z 2K5 1083876 BC Ltd. 23867 Fraser Highway Langley BC V2Z 2K5
Agent:	Giesbrecht & Company 353 PO Box 8000 Abbotsford BC V2S 2M5
Legal Description:	Lot 8 Section 33 Township 10 New Westminster District Plan 8793 Parcel "A" (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793
Civic Address:	23699 and 23737 Fraser Highway
Area:	4.12 ha (10.19 ac)
Official Community Plan: (existing)	Rural
Official Community Plan: (proposed)	Industrial
Rural Plan: (existing)	Small Farms / Country Estates
Rural Plan: (proposed)	Small Farms / Country Estates (with site-specific text amendment to permit industrial uses on the subject properties)
Existing Zoning:	Rural Zone RU-1
Proposed Zoning:	Service Industrial Zone M-1B

BACKGROUND/HISTORY:

The subject lands are currently zoned Rural Zone RU-1, designated Small Farms / Country Estates in the Rural Plan and accommodate a single family dwelling and accessory building on the southeast portion of the site and outdoor storage of equipment and vehicles on the rest of the site. On October 21, 2019, Council authorized issuance of a temporary use permit to temporarily permit a) open storage of building materials, b) parking of commercial vehicles and/or equipment (excluding transportation and trucking terminals and compounds including

public transportation depots), and c) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats) on properties located at 23699 and 23737 Fraser Highway. The properties are currently being used for the uses permitted by the temporary use permit. Stormwater management, including construction of an onsite detention stormwater pond, has been addressed in conjunction with a soil permit application on the subject properties.

The existing single family dwelling does not comply with proposed zoning siting provisions. Accordingly, a condition of Rezoning Bylaw No. 5794 has been included to remove the building.

DISCUSSION/ANALYSIS:

To accommodate the proposal to rezone the property to permanently allow the uses permitted by the temporary use permit as well as permit additional industrial uses (Attachment B), the applicant has applied for amendments to the Township's Official Community Plan (OCP) and Rural Plan. Staff note that an amendment to the Metro Vancouver Regional Growth Strategy (RGS) is also required. Given urban services are not available to the site, registration of a restrictive covenant prohibiting any building on the site until such time as full urban services pursuant to Subdivision and Development Servicing Bylaw Service Level – 1 have been provided is a development prerequisite.

Future Development Permit applications are required for any future buildings at which time Council will have the opportunity to review form, character, and siting matters prior to building permits being issued. A Development Permit typically details the form and character of each development including siting, access, parking, landscaping, building materials, colours, building elevations, and other site development items.

Adjacent Uses:

North:	A rural property within the ALR, 14.95 ac (36.95 ac), designated Small Farms / Country Estates in the Rural Plan and zoned Rural Zone RU-1;
South:	Fraser Highway, beyond which are lots designated Small Farms / Country Estates in the Rural Plan, zoned Rural Zone RU-1, not within the ALR;
East:	A rural property, designated Small Farms / Country Estates in the Rural Plan, zoned Rural Zone RU-1, not within the ALR; and
West:	A commercial property, designated Small Farms / Country Estates in the Rural Plan, zoned Service Commercial Zone C-3, not within the ALR.

Official Community Plan Amendment:

The subject lands are currently designated Rural in the OCP which intends to maintain the existing rural residential character of the area.

Section 2.2.9 of the OCP provides the following:

2.2.9. Consider undertaking more detailed plans to provide a vision and appropriate policies for the Salmon River Uplands and Fraser Highway corridor areas.

Staff note that as a development prerequisite for ToL Project No. 10-33-0091 (Oakbrook Foundation / 23400 – 44 Avenue), the proponent was required to provide a Fraser Highway Corridor Land Use Study which included the subject lands. While the study is not a Township plan, nor has it been endorsed by the Township, it did include conceptual land use information

indicating that lands on the north side of Fraser Highway between 232 Street and 240 Street could accommodate industrial uses, noting:

> *A shrinking industrial land supply in Metro Vancouver, high historical industrial growth rates in the Township, and the well-situated location of the Study Area at the convergence of 3 major truck routes, positions it as an attractive opportunity for industrial development. Fraser Highway is a provincial highway providing connections west to the City of Langley, Surrey, and east to Abbotsford and beyond. 232 Street provides a direct connection north to Highway 1 and south to 16 Avenue. 40 Avenue provides a connection west towards the Campbell Heights Industrial Area of Surrey.*
>
> *Industrial land-use within the Study Area is envisioned primarily north of Fraser Highway where some existing industrial-related uses are located, larger parcelization is conducive to larger format industrial users and consolidation, and because this area is generally separated from existing residential uses.*

The OCP outlines goals for employment lands in Section 3.7 - Employment Land Goals:

- *3.7.2 Ensure a long-term supply of employment lands is maintained, with a match between available land and the requirements of future market demand.*
- *3.7.4. Encourage industrial development that has a high employment ratio*
- *3.7.6. Consider designation of new employment lands where appropriate.*

Given the above, the proposal is, in staff's opinion, consistent with the above OCP goals.

Rural Plan Amendment:

The subject lands are currently designated Small Farms / Country Estates in the Rural Plan. Section 2.1 of the Rural Plan states "The primary goal of the Rural Plan is to enhance agricultural viability through recognition and protection of the diverse agricultural lands, preservation of larger lot sizes, creation of policies that reinforce designation of much of the land as ALR and encouragement of the agricultural industry within Langley…"

Policies for the Small Farms / Country Estates designation (Section 5.6 of the Rural Plan) indicate that the designation should provide for agricultural uses. Section 5.14 of the Rural Plan provides the following information with respect to industrial development:

> *Industrial development shall not be permitted in the rural area, but shall be directed to areas designated industrial growth and, where it meets the criteria, the Agro-Service Centre. Expansion of existing industrial uses on their present sites may be considered, subject to review of impacts on surrounding land and uses.*

Section 2.1 of the Rural Plan includes the following as a goal of the plan:

> *The plan recognizes the wide variety of uses currently existing in the area and is designed to accommodate continued agricultural use, expanded recreational opportunities, some additional small*

> *farms/country estates use and limited new commercial and industrial activities.*

Section 5.14.2 of the Rural Plan provides the following with respect to industrial development within the rural area:

> *5.14.2 Industrial development shall not be permitted in the rural area, but shall be directed to areas designated industrial growth and, where it meets the criteria, the Agro-Service Centre. Expansion of existing industrial uses on their present sites may be considered, subject to review of impacts on surrounding land and uses.*

According to the applicant, the intent of the proposal is as follows:

> *The intention of the proponent is for approximately 50 percent of the property to be used by the owner-occupier, Surrey Cedar Ltd., which would use the property to compliment its operations at 23867 Fraser Hwy, Langley, which employs 30 people. These complimentary uses would include overflow material and equipment for the mill. The remaining 50 percent of the site is intended to be rented out to various tenants for uses in-line with the TUP and future M-1B designation*

As indicated by the proponent, the current proposal accommodates, in part, expansion of an existing industrial use 150 m to the east.

Historically, industrial uses in the Rural Plan have been recognized under the Small Farms / Country Estates land use designation. Accordingly, Bylaw No. 5793 amends the Rural Plan by:

a) Adding provisions to the Small Farms / Country Estates designation to accommodate industrial development on a site specific basis on the subject properties; and
b) Adding the subject properties to Development Permit Area 'B' – Rural Commercial/Industrial.

Metro 2040 – Metro Vancouver Regional Growth Strategy (RGS):

The subject lands are designated Rural in the RGS. This designation is intended to limit development to a scale, form, and density consistent with the intent of the rural land use, and support agricultural uses within the ALR and, where appropriate, outside of the ALR. Staff note that the subject properties are not located in the ALR. Given the proposed OCP amendment and the need for the Township's OCP to align with the RGS, an amendment to the RGS is necessary to accommodate the proposed industrial land use.

The RGS states that additional industrial lands are needed in the region to meet the day to day needs of the population:

> *Market pressure to convert industrial lands to office, retail and housing has resulted in a diminished supply of industrial land in the region, while demand for land for industrial activities continues to increase as the population and economy of the region grow. Many industries provide for*

> *the day-to-day needs of the region's population, such as repair and servicing activities, and renovation and construction functions for shops, homes, hotels and restaurants. Additional lands are needed for container storage, freight forwarding, warehouses, and other distribution functions.*

The RGS and the Regional Context Statement Section 1.1.7(3) of the OCP provides guidance for redesignating land from Agriculture to Industrial as outlined below:

a) the proposed use is consistent with the general intent of the 'Industrial' land use designation contained in the Township of Langley's OCP;
b) the subject site is no more than 10 hectares in size;
c) the subject site is contiguous with the existing Urban Containment Boundary specified in the Regional Growth Strategy; and
d) the subject site is not contiguous with a site previously re-designated pursuant to Revised Context Statement Section 1.1.7.

While the proposal generally aligns with the above criteria as the proposed industrial use would be consistent with the general intent of the "industrial" land use designation contained in the Township's OCP and is less than 10 ha in size, staff note that the subject site is not contiguous with the urban containment boundary specified in the RGS.

A Type 2 – Minor Amendment to the Regional Growth Strategy requires a 'two-thirds weighted vote and regional public hearing' as identified in Section 6.3.3(c) of the RGS below:

> *6.3.3(c) amendment from Rural land use designation to Industrial, Mixed Employment or General Urban land use designations;*

Should Council grant third reading to the subject application, staff will advance application to Metro Vancouver for consideration of the necessary amendments to the RGS and the Greater Vancouver Sewerage and Drainage District (GVS & DD) catchment in order to accommodate the proposed change in land use.

Access:

The subject site is currently accessed via a shared driveway with the property to the east from Fraser Highway. The existing single-family dwelling is accessed via a separate driveway on Fraser Highway. As part of the development, the applicant will be required to provide a deceleration lane in front of the subject properties. Additionally, the applicant will be required to register a restrictive covenant limiting the existing shared driveway to right in / right out movements only. These requirements have been included in the list of development prerequisites to be completed prior to final reading of the rezoning bylaw.

Road dedications and statutory rights of ways have been historically secured on northerly portions of several properties between 236 Street and 240 Street on the north side of Fraser Highway in order to support future road infrastructure. Accordingly, securing rights of ways of 10 m on the northerly portion of the site as well as 20 m on the central portion of the site are included as development prerequisites.

Voluntary Community Benefit Contribution:

Recognizing that OCP land use amendments result in potential increases in land value, Council adopted amendments to the CAC policy in October 2021. Specifically, Item 5.2(g) of the Policy states:

> *With Section 5.2 (f) as a minimum, where the form of growth is more unique; and for more substantial or complex applications proposing an amendment to the OCP, at the discretion of the Township of Langley or as directed by Council, the Township working in collaboration with the applicant, will determine a more appropriate target CAC to ensure an appropriate level of alignment with the proposed OCP amendment*

In response to the policy, the applicant is proposing a $100,000 community benefit contribution donation to Foundry Langley. Foundry Langley is a resource centre for youth that will offer young people aged 12-24 access to mental health and substance use support, primary care, peer support, and social services. Based on the 4.12 ha (10.19 ac) site, this equates to a contribution of $24,271.84 per ha / $9,813.54 per ac.

According to the applicant,

> *The public amenity provided is employment opportunity and increase tax revenues. The properties are not part of the ALR. The land lift is minimal. $50+ million upgrades to servicing is required for any building or development to occur.*

Official Community Plan Consultation Policy:

Council's Official Community Plan Consultation Policy 07-160 requires Council to consider the OCP amendment in conjunction with the Financial Plan, Housing Needs Report, and any applicable waste management plan. Staff recommend that Council consider the proposed OCP amendment consistent with the Township's financial plans (both operating and capital) and Metro Vancouver's Waste Management Plans.

Zoning Amendment:

Bylaw No. 5794 proposes to rezone the subject properties to Service Industrial Zone M-1B with existing temporary uses on a site specific basis (Attachment B). The Service Industrial Zone M-1B is consistent with other industrial properties along Fraser Highway and permits a range of industrial uses. Staff note that any permitted uses in the proposed zone which require a building will not be permitted until a development permit and servicing have been issued and secured. The proposed development complies with the minimum parcel size provisions of the Service Industrial Zone M-1B.

Public Consultation:

Per Policy No. 07-169, the applicant held a Public Information Meeting on February 23, 2022. In accordance with the Policy, the applicant mailed notices to the surrounding area and posted notification in the local newspaper. The results are compiled and provided as Attachment A.

Servicing:

The subject property is designated Service Level 4 – Rural. Bylaw No. 5803 proposes to amend the Subdivision Development Servicing Bylaw to designate the subject site as Service Level 1 – Urban.

Prior to final reading, the applicant is required to enter into a Servicing Agreement to secure works and services such as construction of a deceleration lane on Fraser Highway, road works, and tree replacement with the Subdivision and Development Servicing Bylaw. Stormwater management, including construction of an onsite stormwater pond, has been addressed in conjunction with a soil permit application (SO002063) issued January 20, 2020 on the subject

properties. Road dedications and widening, and necessary traffic improvements will be required in accordance with the Township's Master Transportation Plan. The applicant will also be required to provide erosion and sediment control measures in accordance with the Erosion and Sediment Control Bylaw, to the acceptance of the General Manager of Engineering and Community Development prior to the issuance of any building permits. Given urban services are not available to the site, registration of a restrictive covenant prohibiting any building on the site until such time as full urban services pursuant to Subdivision and Development Servicing Bylaw Service Level – 1 have been provided is a development prerequisite.

Tree Protection/Replacement:

The tree management plans submitted by the applicant indicate that 10 significant trees exist on the subject site and all 10 are currently proposed for retention. In accordance with the Township's Subdivision and Development Servicing Bylaw (Schedule I – Tree Protection), a total of 276 replacement trees are required. The applicant is proposing 100 replacement trees to be planted on the site with funds for the remaining 176 replacement trees being secured for planting on identified public lands. Post development, approximately 110 trees will be in place with cash in lieu provided for the remaining 176 replacement trees. Final tree retention, protection, and replacement plans are subject to the final acceptance of the Township. This requirement has been included in the list of development prerequisites to be completed prior to final reading of the rezoning bylaw.

Environmental Considerations:

The Township's Sustainability Charter includes environmental objectives to protect and enhance rivers, streams, wildlife habitats and environmentally sensitive areas in the Township. These environmental objectives are supported by policy and guidance outlined in the Township's Environmentally Sensitive Areas Study, Wildlife Habitat Conservation Strategy, Schedule 3 of the OCP, Erosion and Sediment Control Bylaw, and Subdivision and Development Servicing Bylaw (Schedule I – Tree Protection) which promote sound environmental management practices and outline Township environmental performance expectations. The provision of stormwater management and sediment control measures and compliance with the Township's Subdivision and Development Servicing Bylaw (Schedule I – Tree Protection) satisfies the objectives of the Sustainability Charter.

Exterior Lighting Impact Policy:

As the subject site is located within 150 m (498 ft) of land designated for rural residential purposes, compliance with the Township's Exterior Lighting Impact Policy is required. Provision of an exterior lighting impact plan prepared by an electrical engineer to the acceptance of the Township would be required as part of a future development permit and prior to the issuance of a building permit.

Policy Considerations:

The proposed amendments to the OCP, Rural Plan, RGS, Subdivision and Development Servicing Bylaw, and proposed rezoning will enable future industrial development of the subject lands increasing the supply of employment land in the Township. The proposed development is

compatible with the overall objectives of the Township's Official Community Plan and Rural Plan.

Therefore, staff recommend Council consider first and second reading to Bylaws No. 5793 and 5794 subject to 13 development prerequisites; first, second, and third reading to Bylaw No. 5803; and that staff be authorized to schedule the required public hearing should Council give the Bylaws first and second reading.

Respectfully submitted,

Joel Nagtegaal
DEVELOPMENT PLANNER
for
COMMUNITY DEVELOPMENT DIVISION

ATTACHMENT A	Public Information Meeting Summary
ATTACHMENT B	Permitted and Proposed Uses

Giesbrecht & Co.
#353 – PO Box 8000, Abbotsford, BC, V2S 6H1
604.825.2123 | info@giesbrechtandco.com | www.giesbrechtandco.com

June 16, 2022

Township of Langley
20338 65 Ave
Langley, BC V2Y 3J1

10-33-0104

Attention: Joel Nagtegaal

Re: Overview of Public Information Meeting

It was held virtually on February 23, 2022, to view the rezoning proposal and provide comments and feedback prior to Township Council's consideration of this Application for 23699 and 23737 Fraser Highway.

Thirty-seven nearby properties were notified of the Public Information Meeting as provided by the Township of Langley Staff.

List of Attendees

TEAM MEMBER	**COMPANY**
Patrick Giesbrecht	Giesbrecht and Company
Benjamin Neff	Giesbrecht and Company
Sunjeev Bath	Bath Investment Ltd.
Jessica Thiessen	Krahn Engineering
Joel Nagtegaal	Township of Langley
Kim Richter	Township of Langley
Petrina Arnason	Township of Langley
FOIPPA s. 22(1)	General Public
FOIPPA s. 22(1)	General Public

Comments and questions were addressed regarding the entrance size to the property, future building concerns, and water servicing.

Giesbrecht & Co.
#353 – PO Box 8000, Abbotsford, BC, V2S 6H1
604.825.2123 | info@giesbrechtandco.com | www.giesbrechtandco.com

Should you have any further questions, please contact the undersigned 778.926.8412 or benjamin@giesbrechtandco.com

Yours truly,

Benjamin Neff
Manager
Giesbrecht and Company

EXISTING TEMPORARY USE PERMIT USES

1) open storage of building materials;
2) parking of commercial vehicles and / or equipment (excluding transportation and trucking terminals and compounds including public transportation depots); and
3) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats)

M-1B USES NOTING PROPOSED ADDITIONAL USES (BOLD)

1) accessory buildings and uses
2) accessory open storage
3) auction marts
4) bakeries
5) brewery or distillery
6) building supplies, lumber yards
7) commercial recreation, instruction and entertainment uses excluding arcades, pool halls and casino halls
8) dog daycare subject to Township of Langley Noise Control Bylaw 1988 as amended
9) nurseries and garden supply centres
10) offices accessory to permitted industrial uses
11) other service industrial uses compatible with service industrial areas
12) parking of commercial vehicles
13) public works yards, maintenance and storage facilities
14) printing and publishing
15) production studio
16) refund container return centre
17) residential uses accessory to industrial uses and subject to Section 701.4
18) restaurants
19) retail sales accessory to permitted industrial uses
20) service stations, gas bars
21) the light manufacture, assembly, repair, finishing and packaging of products
22) transportation and trucking terminals and compounds including public transportation depots
23) u-brews
24) vehicle body shops
25) vehicle repair shops
26) vehicle sales, rental and leasing
27) vehicle servicing
28) vehicle towing and temporary storage compounds for licensed vehicles excluding the storage of wrecked vehicles and/or discarded material, and excluding a wrecking and salvaging yard
29) veterinary clinics
30) warehousing, wholesaling and storage facilities excluding bulk energy storage facilities and the bulk storage of industrial chemicals, by-products and allied products
31) workshops for the following and similar trade contractors; building, electrical, heating, air conditioning, plumbing, refrigeration, roofing, septic tanks, signs, paving, and landscape contractors including the sale of garden ornaments, swimming pools and outdoor furniture
32) on Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793 Section 701.1 uses subject to and including the following:
    a) open storage of building materials;
    b) parking of commercial vehicles and / or equipment (excluding transportation and trucking terminals and compounds including public transportation depots); and
    c) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats)

THE CORPORATION OF THE TOWNSHIP OF LANGLEY

LANGLEY OFFICIAL COMMUNITY PLAN BYLAW 1979 NO. 1842

AMENDMENT (RURAL PLAN) BYLAW 1993 NO. 3250

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5793

EXPLANATORY NOTE

Bylaw No. 5793 amends the Official Community Plan and Rural Plan by adding provisions to the “Small Farms / Country Estates” designation to accommodate industrial uses on a site specific basis at 23699 and 23737 Fraser Highway and includes the site as a mandatory Development Permit Area.

THE CORPORATION OF THE TOWNSHIP OF LANGLEY

LANGLEY OFFICIAL COMMUNITY PLAN BYLAW 1979 NO. 1842

AMENDMENT (RURAL PLAN) BYLAW 1993 NO. 3250

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5793

A Bylaw to amend the Rural Plan 1993 No. 3250

The Municipal Council of the Corporation of the Township of Langley, in Open Meeting Assembled, ENACTS AS FOLLOWS:

1. This Bylaw may be cited for all purposes as “Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793”.

2. The “Langley Official Community Plan Bylaw 1979 No. 1842” as amended is further amended by amending “Map 1 - Land Use” to change the designation of the lands from “Rural” to “Industrial” and further amending “Map A-1 RGS Land Use” from “Rural” to “Industrial” with respect to the lands described as:

   Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and

   Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

3. The “Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250” as amended is further amended by:

   a) adding the following Section 5.5.7 after Section 5.5.6

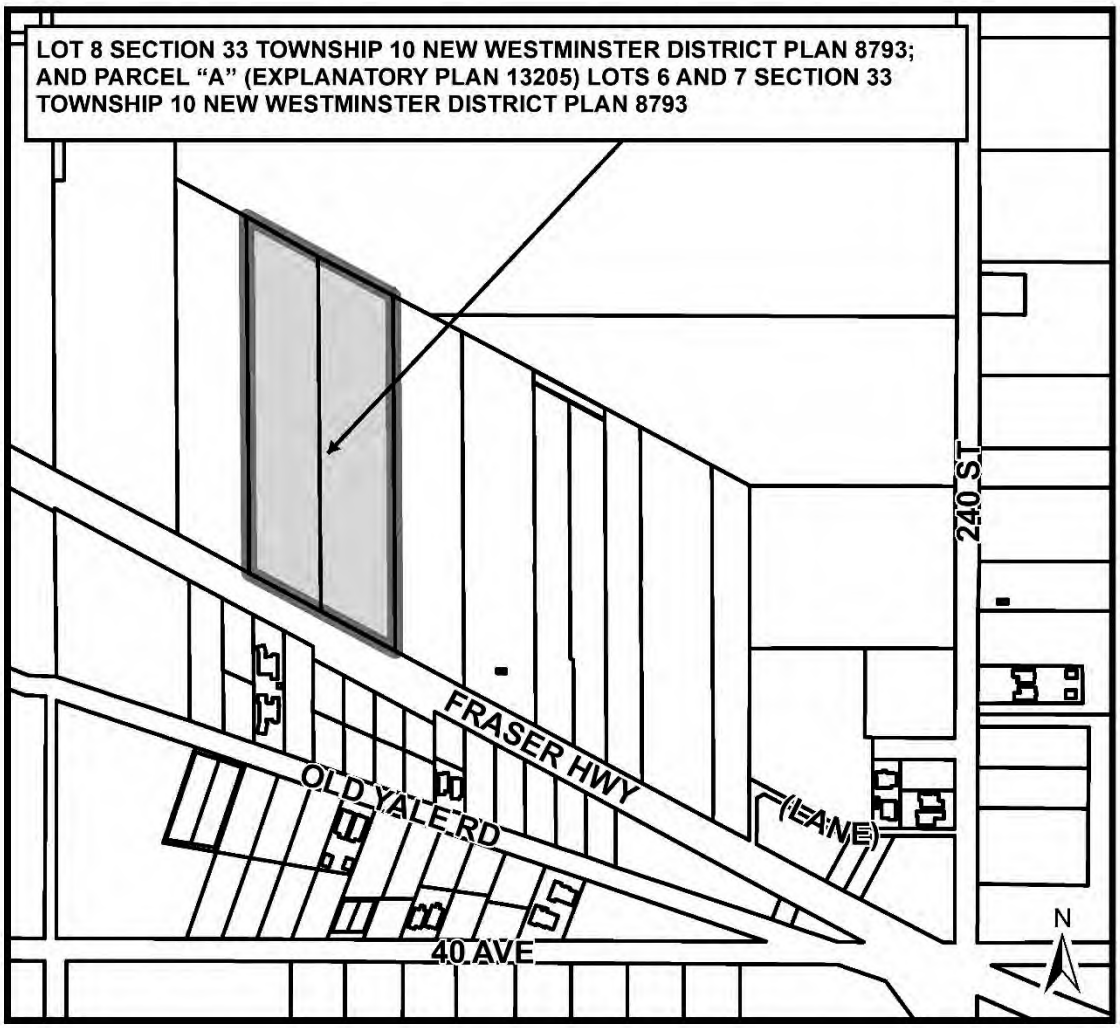
   5.5.7 Industrial uses are permitted on a site specific basis on lands described as Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

   b) by amending “Map 2 Development Permit Area B – Fraser Highway” to include the lands described as Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793 to Development Permit Area “B”

READ A FIRST TIME the	day of	, 2022
READ A SECOND TIME the	day of	, 2022
PUBLIC HEARING HELD the	day of	, 2022
READ A THIRD TIME the	day of	, 2022
ADOPTED the	day of	, 2022

_____ Mayor _____ Township Clerk

SCHEDULE 'A'
BYLAW NO. 5793



THE CORPORATION OF THE TOWNSHIP OF LANGLEY

TOWNSHIP OF LANGLEY ONING BYLAW 1987 NO. 2500
AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5794

EXPLANATORY NOTE

Bylaw No. 5794 rezones 4.12 ha (10.19 ac) of land at 23699 and 23737 Fraser Highway from Rural Zone RU-1 to Service Industrial Zone M-1B.

THE CORPORATION OF THE TOWNSHIP OF LANGLEY

TOWNSHIP OF LANGLEY ONING BYLAW 1987 NO. 2500

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5794

A Bylaw to amend Township of Langley Zoning Bylaw 1987 No. 2500

The Municipal Council of the Corporation of the Township of Langley, in Open Meeting Assembled, ENACTS AS FOLLOWS:

1. This Bylaw may be cited for all purposes as “Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794”.

3. The “Township of Langley Zoning Bylaw 1987 No. 2500” as amended is further amended:

   a) Amending Section 701.1 Uses Permitted in Service Industrial Zone M-1A and M1-B by adding the following:

      “32) on Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793 Section 701.1 uses subject to and including the following:
      a) open storage of building materials;
      b) parking of commercial vehicles and / or equipment (excluding transportation and trucking terminals and compounds including public transportation depots); and
      c) vehicle storage (excluding wrecked vehicles, recreational vehicles, and boats)”

2. The “Township of Langley Zoning Bylaw 1987 No. 2500” as amended is further amended by rezoning the lands described as:

   Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and

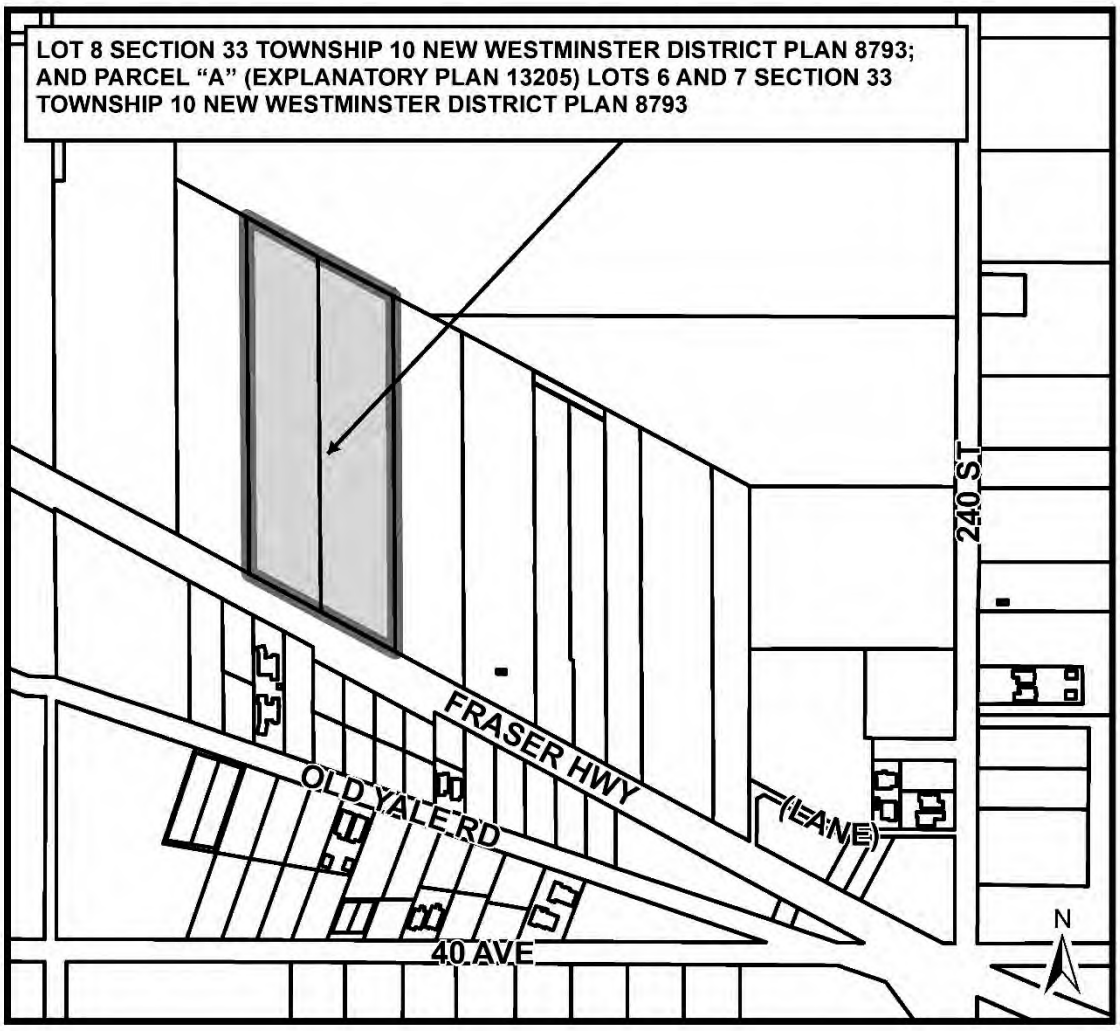
   Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

   As shown delineated on Schedule “A” attached to and forming part of this Bylaw to Service Industrial Zone M-1B.

READ A FIRST TIME the	day of	, 2022.
READ A SECOND TIME the	day of	, 2022.
PUBLIC HEARING HELD the	day of	, 2022.
READ A THIRD TIME the	day of	, 2022.
ADOPTED the	day of	, 2022.

_____ Mayor _____ Township Clerk

SCHEDULE 'A'
BYLAW NO. 5794



THE CORPORATION OF THE TOWNSHIP OF LANGLEY

TOWNSHIP OF LANGLEY SUBDIVISION AND DEVELOPMENT SERVICING BYLAW 2019 NO. 5382

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5803

EXPLANATORY NOTE

Bylaw No. 5803 amends Subdivision and Development Servicing Bylaw 2019 No. 5382 by changing the service level designation from Level 4 – Rural to Level 1 – Urban of the properties located at 23699 and 23737 Fraser Highway to coincide with rezoning from rural to industrial.

THE CORPORATION OF THE TOWNSHIP OF LANGLEY

TOWNSHIP OF LANGLEY SUBDIVISION AND DEVELOPMENT SERVICING BYLAW 2019 NO. 5382

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5803

The Municipal Council of the Corporation of the Township of Langley, in Open Meeting Assembled, ENACTS AS FOLLOWS:

1. This Bylaw may be cited for all purposes as “Subdivision and Development Servicing Bylaw 2019 No. 5808 Amendment (Bath Investments Ltd.) Bylaw No. 5803”.

3. The “Subdivision and Development Servicing Bylaw 2019 No. 5803” as amended is further amended by amending the map “Service Levels” in “Schedule A” to redesignate the lands as “Level 1 – Urban” with respect to lands described as:

   Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and

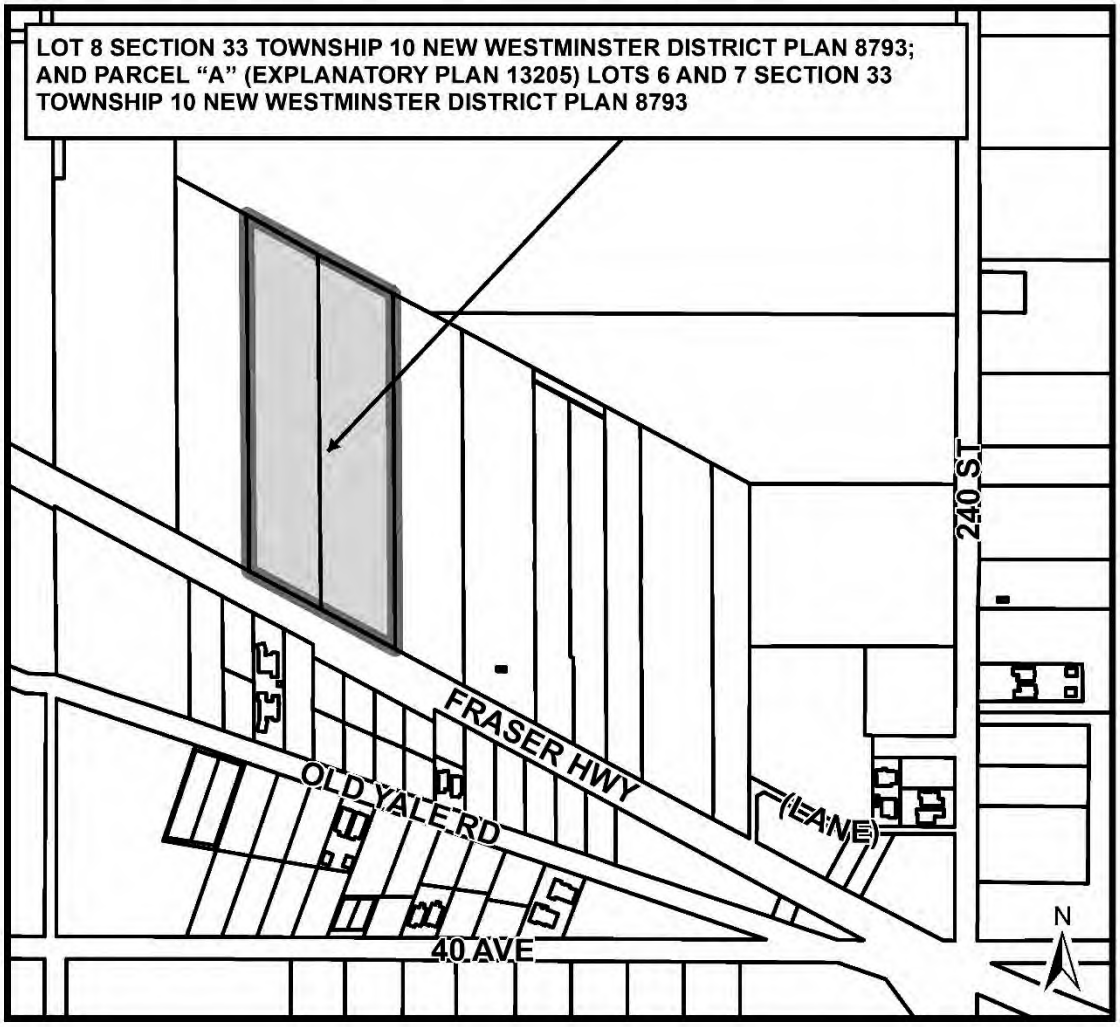
   Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

   As shown delineated on Schedule “A” attached to and forming part of this Bylaw.

READ A FIRST TIME the	day of	, 2022.
READ A SECOND TIME the	day of	, 2022.
READ A THIRD TIME the	day of	, 2022.
ADOPTED the	day of	, 2022.

_____ Mayor _____ Township Clerk

SCHEDULE 'A'
BYLAW NO. 5803



THE CORPORATION OF THE TOWNSHIP OF LANGLEY

LANGLEY OFFICIAL COMMUNITY PLAN BYLAW 1979 NO. 1842

AMENDMENT (RURAL PLAN) BYLAW 1993 NO. 3250

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5793

EXPLANATORY NOTE

Bylaw No. 5793 amends the Official Community Plan and Rural Plan by adding provisions to the “Small Farms / Country Estates” designation to accommodate industrial uses on a site specific basis at 23699 and 23737 Fraser Highway and includes the site as a mandatory Development Permit Area.

THE CORPORATION OF THE TOWNSHIP OF LANGLEY

LANGLEY OFFICIAL COMMUNITY PLAN BYLAW 1979 NO. 1842

AMENDMENT (RURAL PLAN) BYLAW 1993 NO. 3250

AMENDMENT (BATH INVESTMENTS LTD.) BYLAW NO. 5793

A Bylaw to amend the Rural Plan 1993 No. 3250

The Municipal Council of the Corporation of the Township of Langley, in Open Meeting Assembled, ENACTS AS FOLLOWS:

1. This Bylaw may be cited for all purposes as “Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793”.

2. The “Langley Official Community Plan Bylaw 1979 No. 1842” as amended is further amended by amending “Map 1 - Land Use” to change the designation of the lands from “Rural” to “Industrial” and further amending “Map A-1 RGS Land Use” from “Rural” to “Industrial” with respect to the lands described as:

   Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and

   Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

3. The “Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250” as amended is further amended by:

   a) adding the following Section 5.5.7 after Section 5.5.6

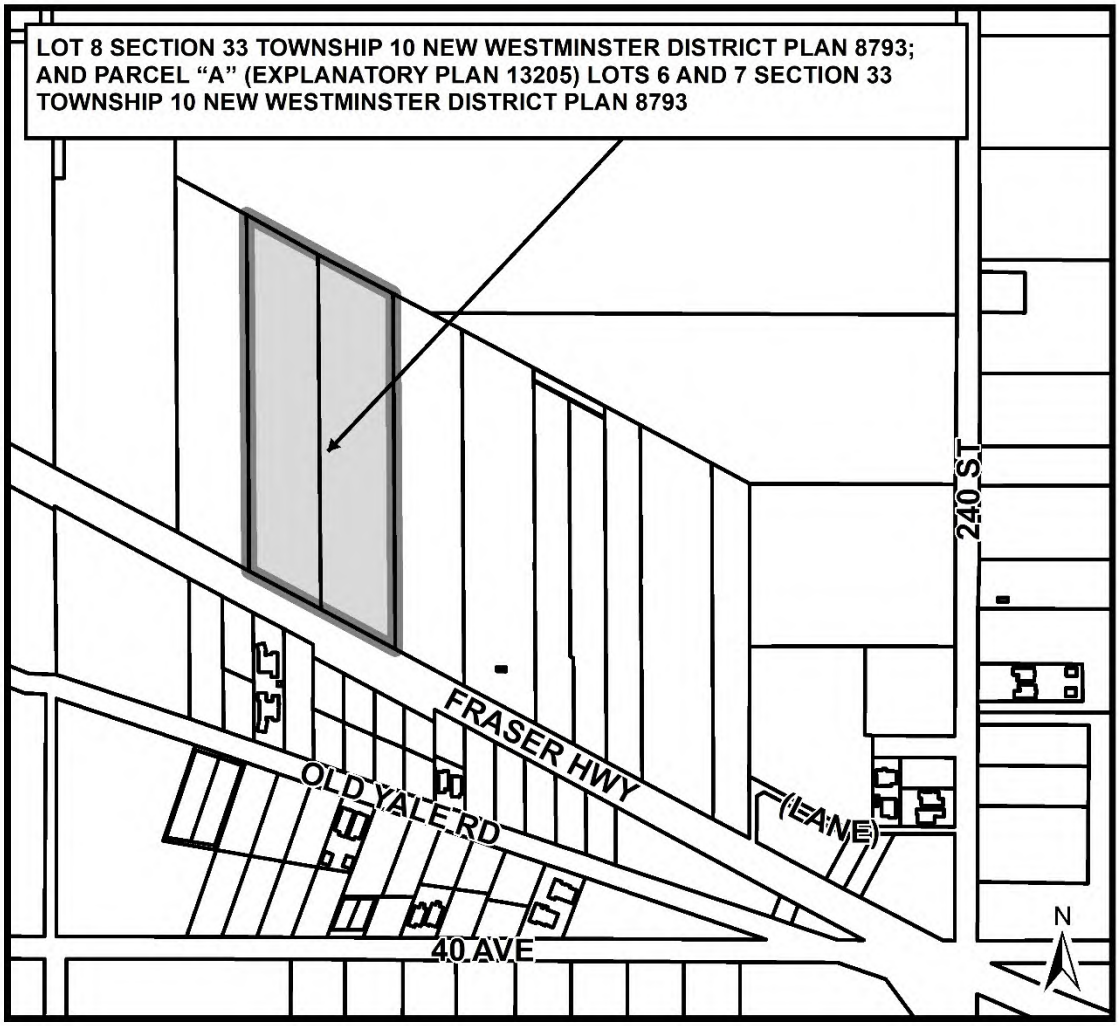
   5.5.7 Industrial uses are permitted on a site specific basis on lands described as Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

   b) by amending “Map 2 Development Permit Area B – Fraser Highway” to include the lands described as Lot 8 Section 33 Township 10 New Westminster District Plan 8793; and Parcel “A” (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793 to Development Permit Area “B”

READ A FIRST TIME the	27	day of	June	, 2022
READ A SECOND TIME the	27	day of	June	, 2022
PUBLIC HEARING HELD the	11	day of	July	, 2022
READ A THIRD TIME the	11	day of	July	, 2022
ADOPTED the		day of		, 2022

_____ Mayor _____ Township Clerk

SCHEDULE 'A'
BYLAW NO. 5793



C. PUBLIC HEARING

3. Official Community Plan Amendment and Rezoning Application No. 100201 (Bath Investments Ltd. / 23699 and 23737 Fraser Highway) Bylaw No. 5793 Bylaw No. 5794 Report 22-70
File CD 10-33-0104

"Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793"; and

"Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794"

Explanation – Bylaw No. 5793

S. Richardson explained that Bylaw No. 5793 amends the Official Community Plan and Rural Plan by adding provisions to the "Small Farms / Country Estates" designation to accommodate industrial uses on a site specific basis at 23699 and 23737 Fraser Highway and includes the site as a mandatory Development Permit Area. 59 Public Notices were mailed out.

Explanation – Bylaw No. 5794

S. Richardson explained that Bylaw No. 5794 rezones 4.12 ha (10.19 ac) of land at 23699 and 23737 Fraser Highway from Rural Zone RU-1 to Service Industrial Zone M-1B.

Submissions from the public:

The following written submission was received from the public:

1. A. Vander eyk, a Langley resident, expressing concerns about size of buffer zones between the properties and the adjacent farmland, and the need for water and storm sewer to be installed down Fraser Highway to control the runoff.

Explanation by the proponent:

P. Giesbrecht, Giesbrecht & Company, was in attendance and commented that the landscaping is in compliance with the industrial provisions.

MOTION
Moved by Councillor Ferguson,
Seconded by Councillor Richter,
That Council consider third reading of "Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793"; and

C. PUBLIC HEARING

"Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794".
CARRIED

Councillor Arnason opposed

MOTION
Moved by Councillor Whitmarsh,
Seconded by Councillor Woodward,
That Council grant third reading of "Langley Official Community Plan Bylaw 1979 No. 1842 Amendment (Rural Plan) Bylaw 1993 No. 3250 Amendment (Bath Investments Ltd.) Bylaw No. 5793"; and

"Township of Langley Zoning Bylaw 1987 No. 2500 Amendment (Bath Investments Ltd.) Bylaw No. 5794".
CARRIED

D. TERMINATE

Moved by Councillor Davis,
Seconded by Councillor Kunst,
That the meeting terminate at 7:21pm.
CARRIED

CERTIFIED CORRECT:

_____
Mayor

_____
Township Clerk

METRO VANCOUVER REGIONAL DISTRICT
BYLAW NO. 1365, 2023
A bylaw to amend "Metro Vancouver Regional District Regional Growth Strategy Bylaw No. 1339, 2022"

WHEREAS:

A. The Metro Vancouver Regional District Board (the "Board") adopted the *Metro Vancouver Regional District Regional Growth Strategy Bylaw No. 1339, 2022* on February 24, 2023;

NOW THEREFORE the Board of the Metro Vancouver Regional District enacts as follows:

Citation

1. The official citation of this bylaw is "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023".

Schedules

2. The following Schedules are attached to and form part of the bylaw:
   - Schedule "A", Subject Properties; and
   - Schedule "B", Official Regional Land Use Designation Maps.

Amendment of Bylaw

3. "Metro Vancouver Regional District Regional Growth Strategy Bylaw No. 1339, 2022" is amended as follows:

   a) re-designating the subject properties, as listed in the table below:

PID	Legal Description
001-900-706	Lot 8 Section 33 Township 10 New Westminster District Plan 8793
002-430-070	Parcel "A" (Explanatory Plan 13205) Lots 6 and 7 Section 33 Township 10 New Westminster District Plan 8793

   from 'Rural' to 'Industrial' as shown in Schedule "A" of this bylaw; and

   b) replacing the official regional land use designation maps numbered 2, 6, 7, and 12 in Schedule "A" of "Metro Vancouver Regional District Regional Growth Strategy Bylaw No. 1339, 2022" with the maps numbered 2, 6, 7, and 12 in Schedule "B" of this bylaw.

Read a first, second and third time this _____ day of _____, _____.

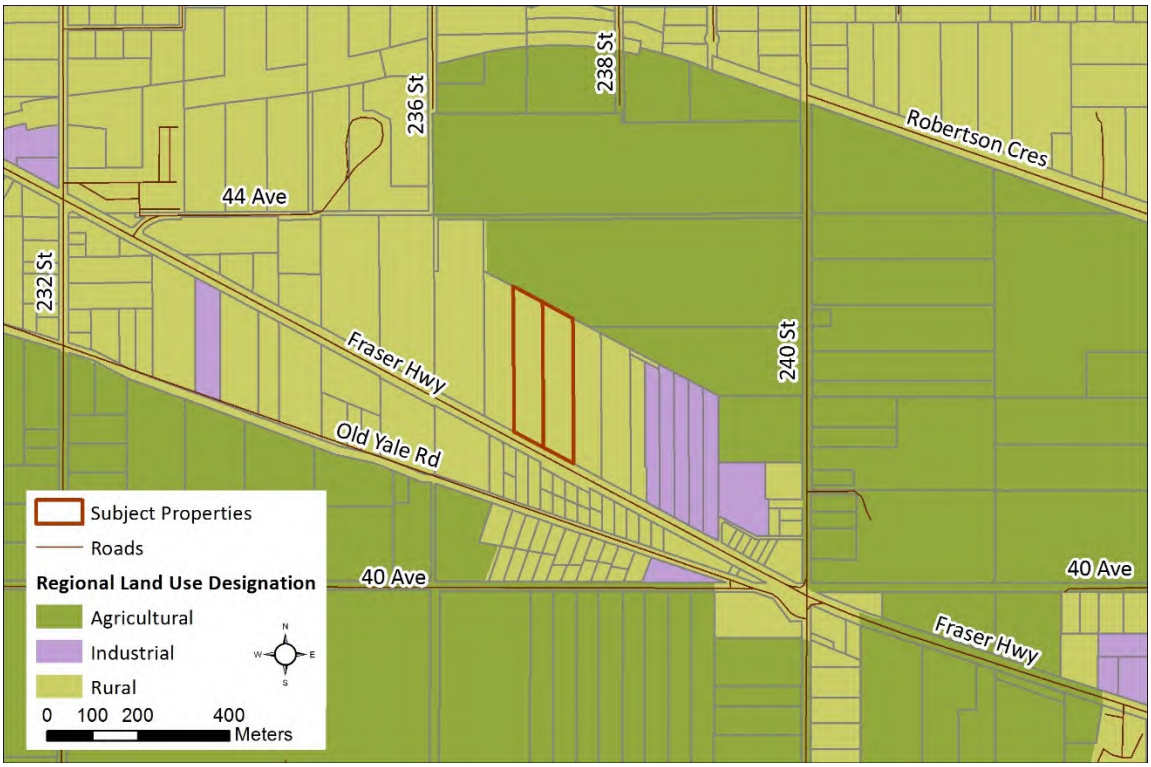
Passed and finally adopted this _____ day of _____, _____.

George V. Harvie, Chair

Dorothy Shermer, Corporate Officer

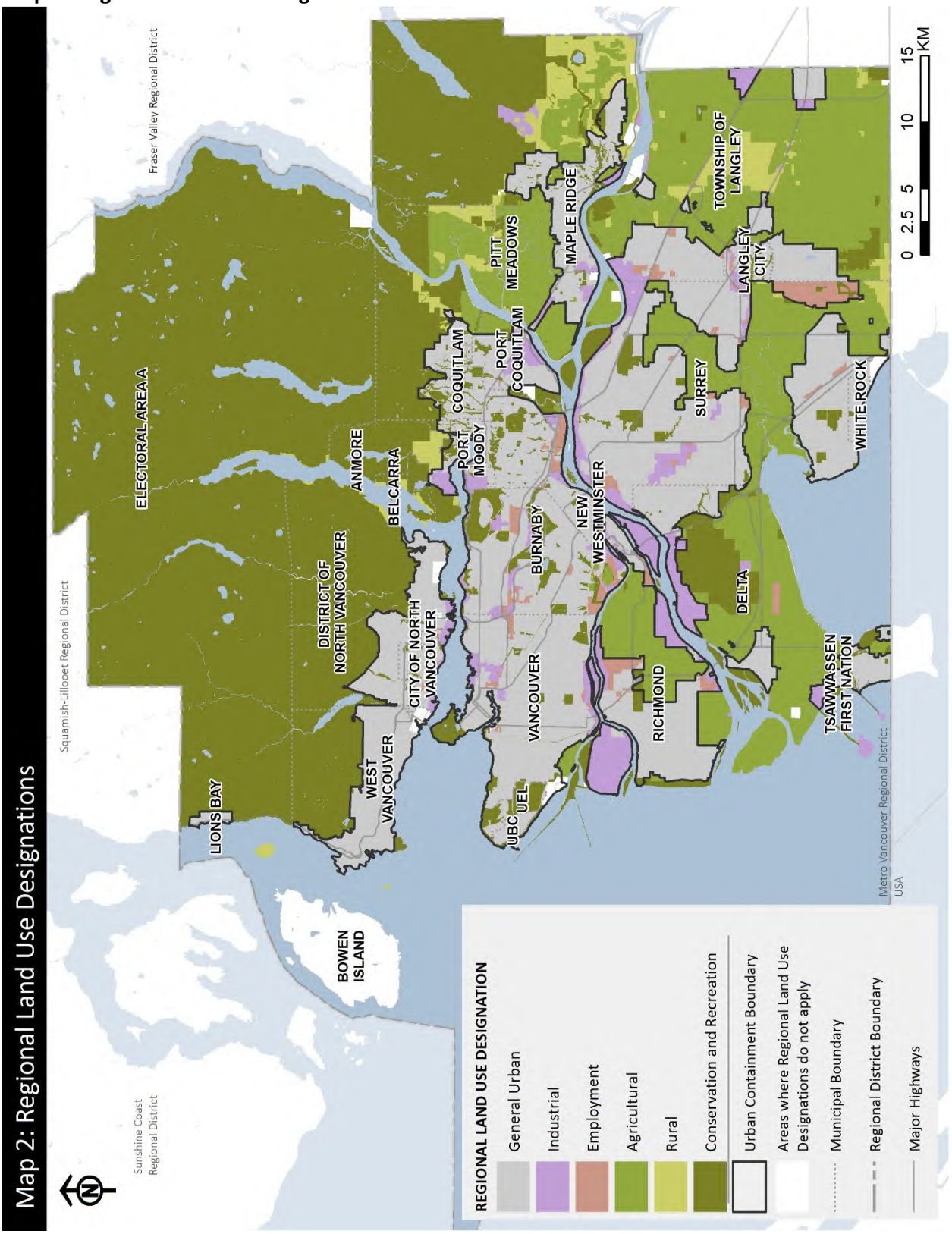
Schedule A
Subject Properties

Prior to Amendment

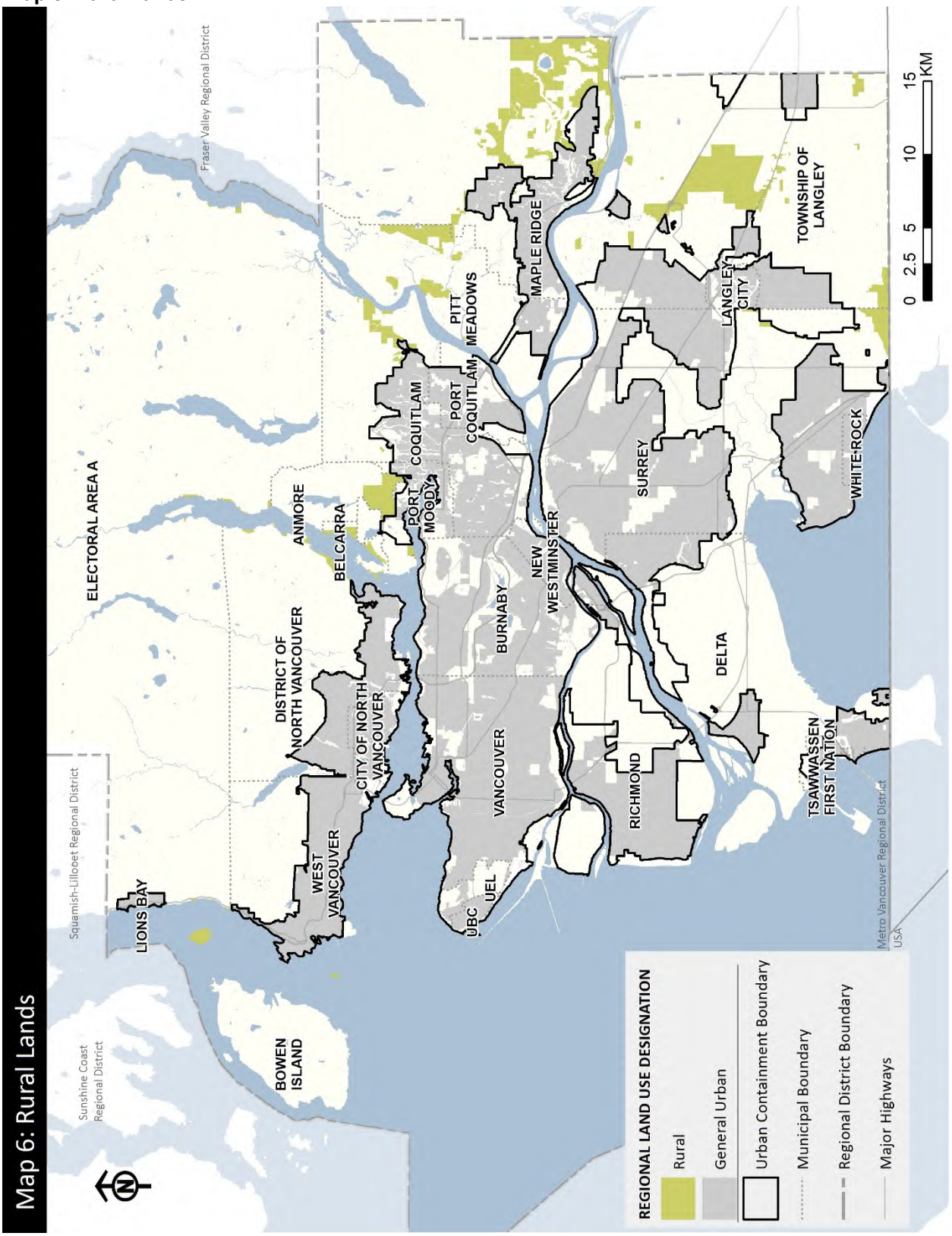


Post Amendment

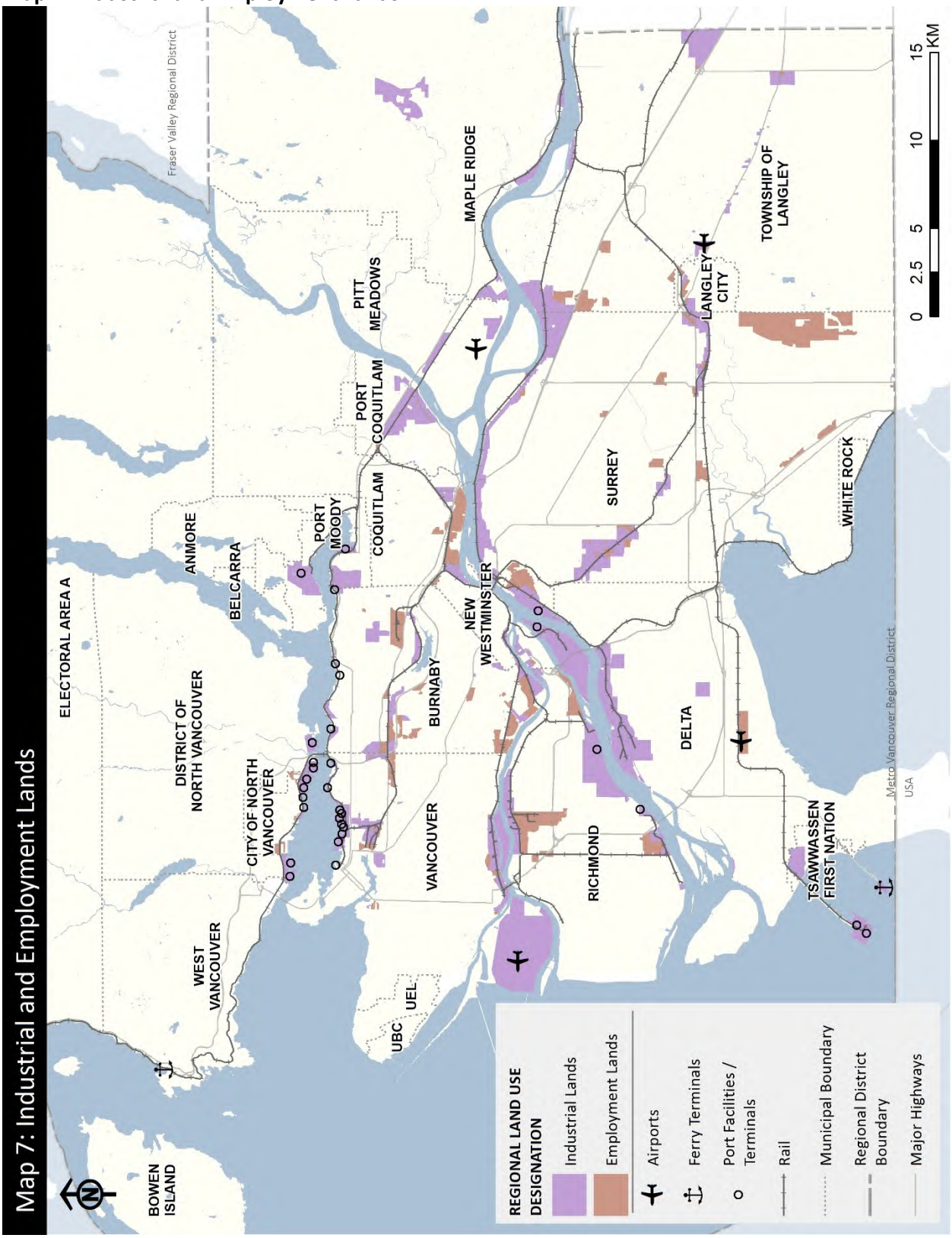
Map 2: Regional Land Use Designations



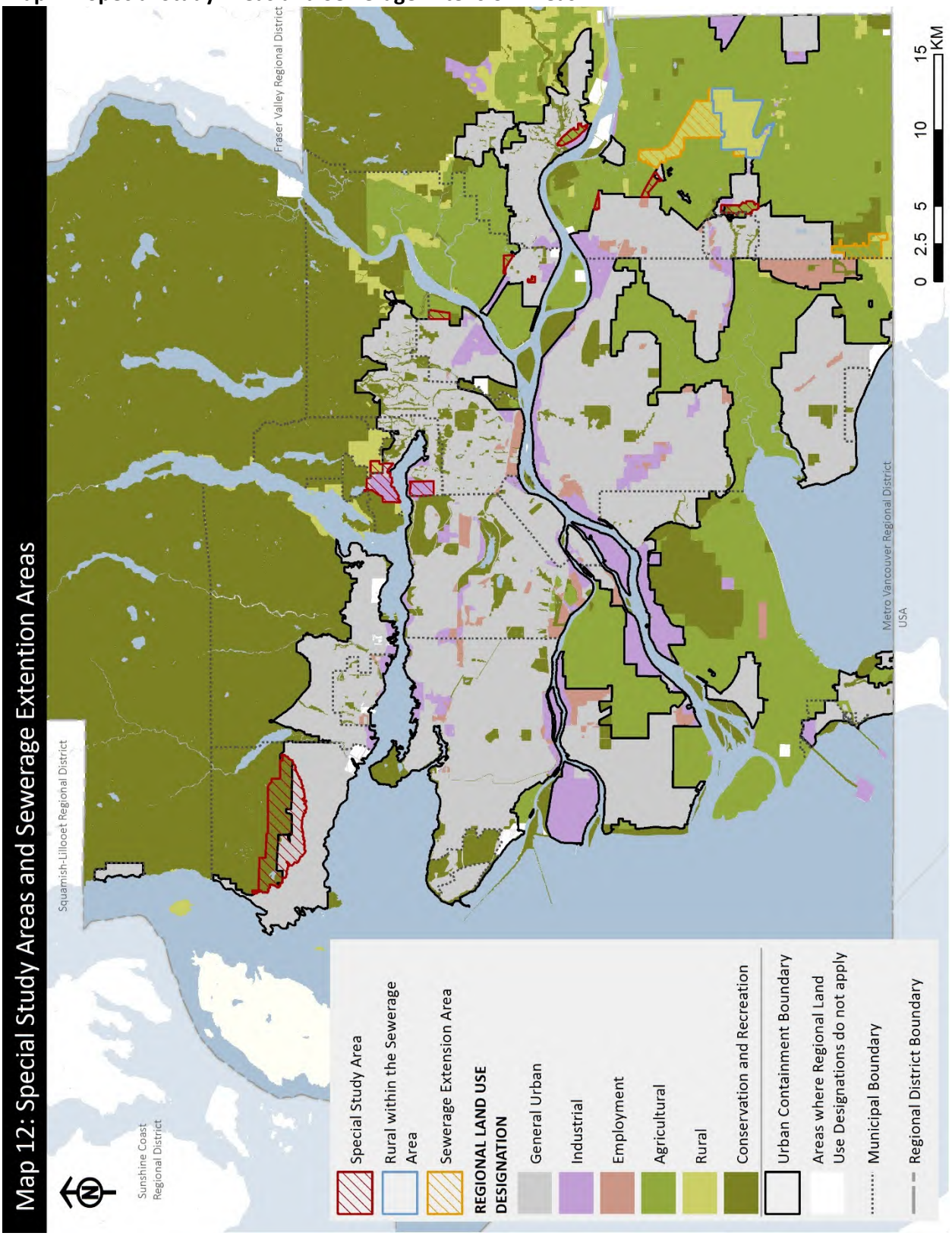
Map 6: Rural Lands



Map 7: Industrial and Employment Lands



Map 12: Special Study Areas and Sewerage Extension Areas



Metro 2050 Amendment Request - Township of Langley

23699 AND 23737 FRASER HIGHWAY

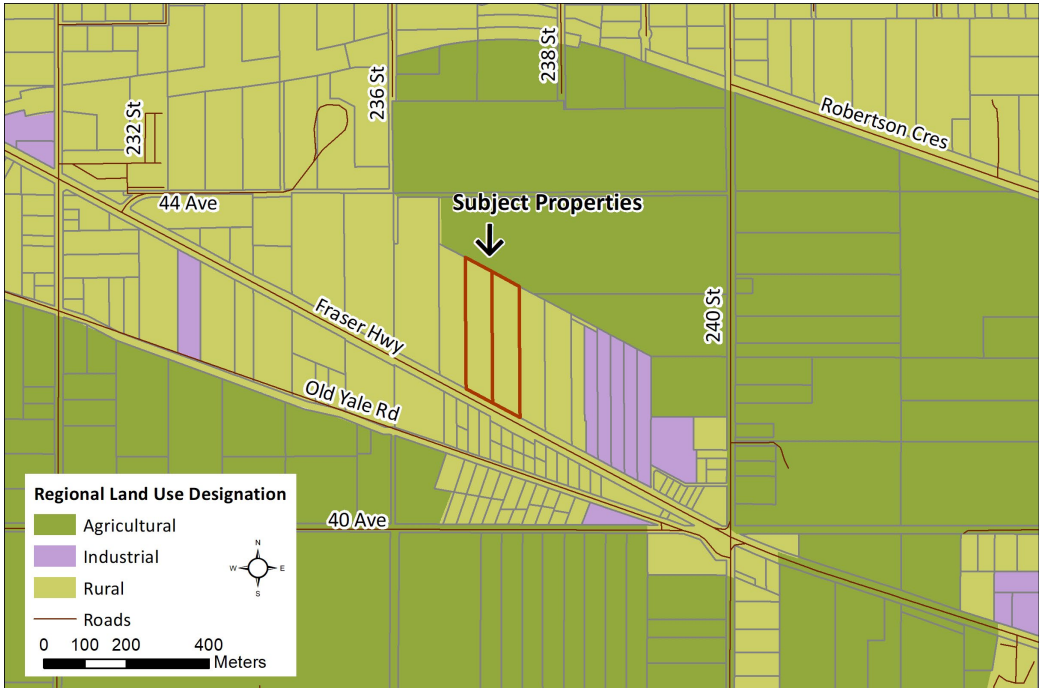
Victor Cheung
Senior Policy and Planning Analyst, Regional Planning and Housing Services

metrovancouver

Regional Planning Committee, May 12, 2023
59510489

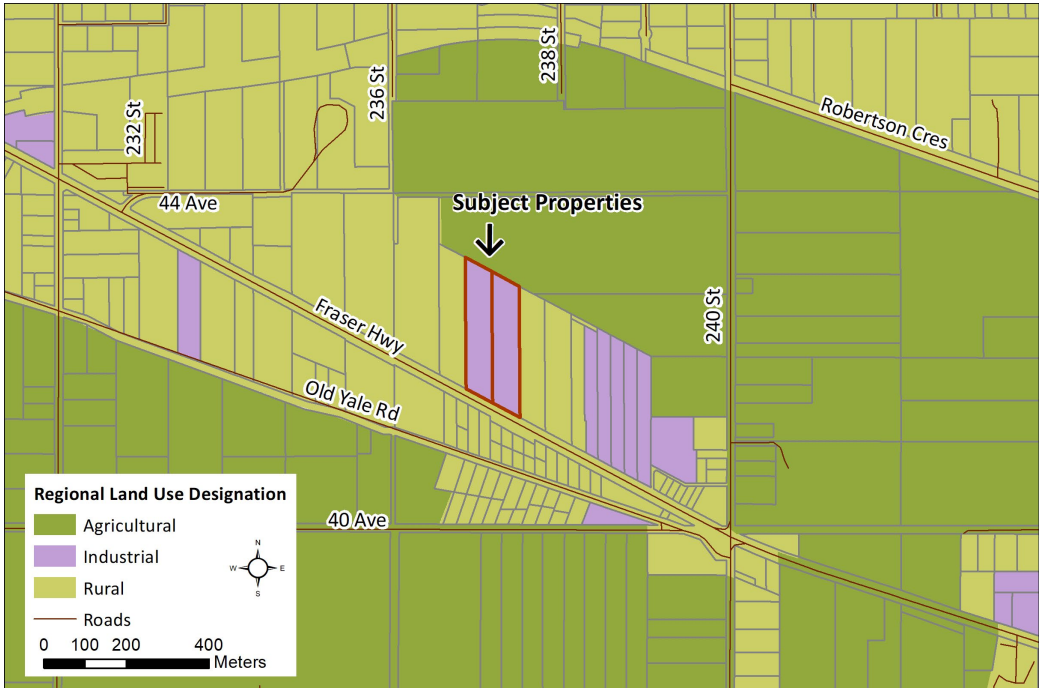
REGIONAL DESIGNATIONS

- *Metro 2050* 'Rural' designation
- Adjacent to other 'Rural' designated lands
- Adjacent to 'Agricultural' lands to the north
- Close proximity to 'Industrial' and 'Agricultural' lands



PROPOSED AMENDMENT

- Amend regional land use from ‘Rural’ to ‘Industrial’
- Type 2 amendment
- Not within the Agricultural Land Reserve (ALR)



SITE IMAGES

Images taken April 2023

METRO 2050 CONSISTENCY ANALYSIS

The analysis demonstrates that on balance, the proposed amendment is supportable and is aligned with *Metro 2050*'s goals and strategies. The proposed amendment:

- allows for existing industrial uses to permanently operate on the subject properties;
- is consistent with the surrounding land use context and is in close proximity to other industrial designated uses along Fraser Highway; and
- provides employment generating uses in close proximity to the Regional Truck Route Network.

RECOMMENDATION

That the MVRD Board:

a) initiate the regional growth strategy amendment process for the Township of Langley's requested regional land use designation amendment from Rural to Industrial for the lands located at 23699 and 23737 Fraser Highway;

b) give first, second, and third readings to "Metro Vancouver Regional District Regional Growth Strategy Amendment Bylaw No. 1365, 2023"; and

c) direct staff to notify affected local governments as per section 6.4.2 of Metro 2050.

NEXT STEPS

Should the amendment application proceed:

a) The MVRD Board will consider first, second, and third reading of the amendment bylaw.

b) Provided the bylaw receives 2/3 weighted vote of the MVRD Board, the amendment application will be referred to affected local governments for comment (45 day comment period).

c) Receive comments from the referral process, and consider final reading and adoption of the amendment bylaw, which requires a 2/3 weighted vote of the MVRD Board.

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To: Regional Planning Committee

From: Eric Aderneck, Senior Planner, Regional Planning and Housing Services

Date: April 6, 2023 Meeting Date: May 12, 2023

Subject: **Office Development in Metro Vancouver - 2022 Inventory and Report**

RECOMMENDATION

That the MVRD Board receive for information the report dated April 6, 2023, titled "Office Development in Metro Vancouver - 2022 Inventory and Report".

EXECUTIVE SUMMARY

Actions to encourage office development in the region's Urban Centres and areas well-served by transit is a key element of *Metro 2050*, the Regional Growth Strategy. In support of the growth management program, Regional Planning has prepared the Office Development in Metro Vancouver - 2022 Inventory and Report.

The report includes an analysis of the office building inventory at the end of 2022, results from a review of relevant publications and in-depth interviews with key industry participants, a profile of factors that influence office development and occupancy decisions, along with actions for Metro Vancouver, member jurisdictions, developers, and other organizations that would encourage office development in Urban Centres. Priority actions include: streamlining the development process; encourage, but do not mandate, office components; allow general rather than overly specific office use types; simplify the permitting process for interior renovations; explore municipal incentives and reduce barriers for office development; and further research.

PURPOSE

To provide the Regional Planning Committee and the MVRD Board with the Office Development in Metro Vancouver - 2022 Inventory and Report for information.

BACKGROUND

The Office Development in Metro Vancouver – 2022 Inventory and Report (Attachment 1: Executive Summary, and Attachment 2: Report) is an update to the previous report completed in 2018 (Reference 1). It documents and analyzes the amount of office space in the region, explores the factors that influence office development and occupancy decisions, identifies key issues and trends affecting office space in general, and identifies challenges and opportunities for office potential in the region's Urban Centres.

METRO VANCOUVER CONTEXT AND URBAN CENTRE POLICY

The Metro Vancouver region is forecasted to grow by approximately one million people and close to five hundred thousand jobs by the year 2050. To protect the region's ability to attract investment and jobs, *Metro 2050* establishes regional land use designations and overlays. Office and

commercial uses are encouraged to locate in Urban Centres and Frequent Transit Development Areas (Reference 2), generally located on lands with a "General Urban" regional land use designation.

The 26 Urban Centres in *Metro 2050* are intended as priority locations for transit-oriented employment and services, higher density forms of housing, commercial, cultural, entertainment, institutional, and mixed-uses. Urban Centres emphasize place-making with an enriched public realm where transit, cycling, and walking are the preferred modes of transportation. The regional policy direction also supports this objective by discouraging office development outside of Urban Centre locations, such as in suburban office parks, which can have negative impacts on land use and transportation patterns for the region and encourage urban sprawl.

Focusing office development in Urban Centres benefits the regional transportation system and livability in a number of ways: by supporting the development of complete, mixed-use, and walkable communities, reducing vehicle commutes and employee transportation costs, protecting lands for other uses, complementing commercial and residential land uses, and increasing the vibrancy and success of the region's Urban Centres.

OFFICE REPORT CONTENT

The 2022 Report documents and analyzes the amount of office space in the region, along with factors, trends, challenges, and opportunities for office potential in Metro Vancouver's Urban Centres, to better inform government plans and policies with respect to office development.

Although the COVID-19 pandemic has had a significant impact and disruption on office occupancy and the office market (Reference 3), the 2022 Report looks beyond the pandemic to longer term implications and considerations.

Methodology and Key Questions

Metro Vancouver first compiled an office building inventory for the region in 2012, and it was subsequently updated in 2015, 2018, and most recently in 2022[1]. The inventory[2] database used in the report is a compilation of a regional office building inventory from multiple sources, including BC Assessment Authority records, municipal records, and commercial brokerage firms.

The report was also informed by a review of relevant publications and 24 in-depth interviews with key industry participants, including investors, developers, brokers, and municipal planning and economic staff. The key research questions explored in the report are:

- What are the regional directions and trends for office development location?
- What are the benefits of locating office space within Urban Centres?
- What are the problems with locating office space outside of Urban Centres?
- How are office market trends evolving?
- What tools do governments have to support office development in Urban Centres?

[1] Note that this report and associated inventory statistics should replace previous reports, as the inventory has been refined with every subsequent edition.

[2] Office Building Inventory includes all buildings in the region with a minimum 10,000 sq ft of office space.

Office Inventory Results and Summary of Key Findings

Based on the comprehensive inventory, at the end of 2022 there was approximately 78 million sq ft of office space in the region located within 1,338 buildings. In summary:

- Approximately half (47% of buildings and 55% of floor space) of the office inventory was located in Vancouver / UBC, with other notable sub-regions being Burnaby / New Westminster (at 16% and 17% respectively), Surrey / White Rock (14% and 12%), and Richmond (7% and 6%).
- Over three-quarters (77%) of the office inventory was located on lands regionally designated "General Urban", which is intended to accommodate a wide variety of land uses. Of the balance, 20% was located on "Employment" lands which can accommodate various commercial uses, and 3% on "Industrial" lands.
- Of the office inventory in Urban Centres, 69% was located in the Metro Core (downtown Vancouver and the Broadway Corridor), 16% in Regional City Centres, 9% in Municipal Town Centres, and 6% in the Surrey Metro Centre. The balance, 22.6 million sq ft, was not located in Urban Centres.
- Relative to the Frequent Transit Network (FTN), 51 million sq ft (65%) of office space was located within 800 metres (10-minute walk) of a rapid transit station, and 18.8 million sq ft (24%) was located within 400 metres (5-minute walk) of FTN bus only. The balance, 8.4 million sq ft (11%) of office space, was located beyond the FTN service area.
- Of the inventory not within Urban Centres (22.6 million sq ft), 21% was within 800 metres of rapid transit service and 46% was within 400 metres of FTN bus only.
- Of the total inventory, 7.6 million sq ft (10%) was neither in an Urban Centre nor near FTN transit (either bus or SkyTrain).

Market Conditions and Developments

- Prior to the COVID-19 pandemic starting in early 2020, the region's office market was very strong with low vacancy rates and increasing lease rates, spurring considerable new major office developments, especially in downtown Vancouver.
- There was significant growth in the tech sector, with large companies occupying large blocks of office space and seeking premium accommodations and amenities found in the Metro Core.
- Although there are a number of large high-profile office projects coming to market, there are also many smaller or mid-sized office buildings. These buildings serve local areas and may be located throughout the region, and not necessarily in Urban Centres or near transit. Demand is limited in smaller Urban Centres with less accessibility and lower levels of transit service.
- More recently, due to the COVID-19 pandemic and associated rapid growth in remote working, the amount of office space needed, its utilization, and design have been greatly impacted. The long-term implications of this on office space demand are not yet known.
- Some market observers expect that with reduced office-type employment activity occurring at the office, the need for additional office space will be reduced. In terms of supply, real estate development has a long lead time, thereby making it difficult for developers to immediately respond to market signals. In terms of demand, the size of the labour force and the proportion that work at the office may change depending on the economy and unemployment rates.

Tenant Preferences

- Office tenants increasingly prioritize accessibility to rapid transit service and urban amenities, and developers are responding accordingly, which is a change from the more suburban development patterns of earlier decades.
- Not all tenants wish to locate in Urban Centres, as some businesses prioritize highway access or other features, including lower costs.
- Some tenants may prefer an architecturally unique and high-profile building; however, these buildings can be less efficient and cost more. Some businesses seek a high prestige central business district office location (i.e. downtown Vancouver) and are able and willing to pay the premium. Proximity to urban amenities is strongly desired by tech tenants.

Trends

- There was significant growth in co-working facilities prior to the pandemic, namely WeWork and Regus / Spaces, that provide spaces and services to a range of tenant types, responding to the increased desire for flexibility by business occupants.
- There has been an apparent increase of strata development projects, rather than conventional lease rental tenure. From a development perspective, strata values can drive up residual land prices to the point where non-strata / lease development is no longer financially viable. That noted, the extent of strata development is limited, and some of that space is ultimately leased.
- There was a trend towards open concept office design to encourage collaboration and achieve space efficiencies. Due to the COVID-19 pandemic being a communicable disease and the increase in remote working and online meetings, desired office space designs are changing.

Office Tenant and Developer Considerations

Office tenants are not all the same and variation is observed in business types, accommodation needs, and local characteristics. Some tenants require locations in downtown Vancouver, some serve their local community, and others prefer a business park environment. Some accommodation criteria include: business objectives, space design, amenities, financial, and access.

There are many factors that can impact the development viability of sites and the potential for an office component, including: rent rates, site availability, land costs, construction costs, municipal approvals, and application process costs. The market is the main driver for office building viability. If demand is weak, there will be limited new office space developed.

Office development and associated investment decisions are complex, capital intensive, and high risk and include consideration of costs, revenues, and municipal approvals. Government policies and economic development initiatives can influence office development decisions, but the participation by all stakeholders is required to achieve success.

Office Development from a Municipal Perspective

Office development provides space for businesses, which helps to advance municipal objectives such as growing the economy and employment, reducing commuting distances, creating complete communities, and complementing local amenities. Municipal governments, through economic

development and planning efforts, can encourage and regulate development in their communities, including directing office development to Urban Centre locations.

Government policies, such as fiscal tools and density bonusing, may have an impact, although minor, on influencing office development decisions in the face of market demand. The regional office market grows incrementally. Downtown Vancouver is a unique sub-market which has seen some notable new projects, while there has also been some new office development in other Urban Centres throughout the region.

ACTIONS TO SUPPORT OFFICE IN URBAN CENTRES

The report identifies a range of considerations for Metro Vancouver, member jurisdictions and the development community to support office development in Urban Centres. The issues most consistently expressed by interviewees and supported by research are set out below.

Actions for Member Jurisdictions

Of the identified actions in the report that guide ongoing efforts that encourage office development in Urban Centres, the following relate to member jurisdictions:

- *Development Approval Process* - Streamline the development review / approval process, reduce the uncertainties and risks, and manage municipal charges / fees.
- *Land Use Planning* - Encourage, but do not mandate, mixed-use projects with office components; rather, allow market demand to inform the supply of office development in specific locations.
- *Zoning Definition* - Allow general office uses, rather than overly specific / limiting types of office business uses. This would improve tenanting flexibility and decrease landlord risk.
- *Tenant Permits* - Shorten and simplify the permitting process for basic interior improvements / renovations needed when new office tenants occupy a premise and operate a business.
- *Municipal Incentives* - Explore financial or regulatory incentives to encourage office development, and reduce policy and regulatory barriers.
- *Research* - Undertake further relevant research and case studies / best practices / innovation profiles into topics such as integrating office space into mixed-use or multi-use projects, and also identify where office components may or may not be warranted.

Actions for Metro Vancouver

Of the identified actions in the report, the ones pertaining specifically to Metro Vancouver include:

- Advance and implement *Metro 2050* and Regional Context Statements with supportive municipal plans and policies that direct investment, jobs, and development to Urban Centres and secondarily to FTDAs.
- Restrict significant office development in out-of-centre locations.
- Work with municipalities, other agencies, and the development community to consider possible refinements to regional policies to best support the goal of attracting and retaining office development in Urban Centres.

- Promote the importance of business and office space in the region as part of a healthy economy supporting prosperity in the form of investment, employment, and taxation.
- Document and share regional economic issues and explore advancing initiatives that support economic and employment growth, including office-based businesses, and promote the region as a destination for investment. This can include encouraging efforts by municipalities and the province to attract and retain businesses to the region and office space to Urban Centres through an environment that is conducive to business investment and growth.
- Collect and promote case studies and best practices about ways municipalities and developers can encourage and support office growth in Urban Centres.
- Work with Invest Vancouver, and stakeholders to explore preparing a regional economic strategy and advancing initiatives that support economic and employment growth in the region, including efforts to retain large businesses and grow smaller businesses, and promote the region as a destination for investment.

Next Steps
This report was presented to the Regional Planning Advisory Committee at its meeting on April 6, 2023. Committee members were very interested in the report content and findings, and requested the office building inventory data be made available to inform their local planning efforts. Once the report is advanced to the MVRD Board, it will be posted on the Metro Vancouver website, shared with interested parties, and the data posted on the Metro Vancouver open data portal.

ALTERNATIVES
This is an information report. No alternatives are presented.

FINANCIAL IMPLICATIONS
There are no financial implications associated with this report. Completion of the Office Development in Metro Vancouver – 2022 Inventory and Report was undertaken in-house by staff and within the Board approved 2022-2023 Regional Planning Budget.

CONCLUSION
The Office Development in Metro Vancouver - 2022 Inventory and Report is an update to the previous report completed in 2018. In support of the growth management program, it documents and analyzes the amount of office space in the region, along with factors, trends, challenges, and opportunities for office potential in the region's Urban Centres, as a means to better inform government plans, policies, and decision making with respect to office development.

Attachments
1. Office Development in Metro Vancouver - 2022 Inventory and Report Executive Summary
2. Office Development in Metro Vancouver - 2022 Inventory and Report, March 2023

References
1. Office Development in Metro Vancouver's Urban Centres (Revised), January 2019
2. Metro Vancouver Urban Centres Webpage
3. Colliers Vancouver Office Market Report Q1 2023

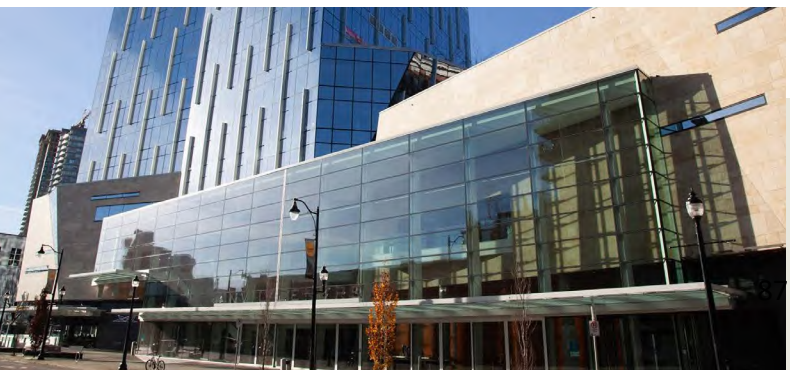
EXECUTIVE SUMMARY

Metro Vancouver 2022 Regional Office Building Inventory

Office Space in Urban Centres

Actions that encourage office development in Urban Centres and areas close to frequent transit are key elements of *Metro 2050*, the Regional Growth Strategy. Well-located office development accommodates growth of businesses and jobs, benefits the regional transportation system, and advances livability in a number of ways, including: supporting complete and walkable communities; reducing vehicle commutes and employee transportation costs; protecting lands for other uses; complementing commercial and residential land uses; and increasing the vibrancy and success of the region's Urban Centres.

COVID-19 significantly impacted the office market and business accommodation decisions, with many employees working from home rather than at the office. The long-term impacts of the pandemic on the demand for office space is yet unknown.



Inventory Scope and Development

The *Office Development in Metro Vancouver 2022 Inventory* explores regional-scale office development and occupancy patterns and decisions, and identifies challenges and opportunities for office growth in Metro Vancouver's Urban Centres.

The Inventory was informed by investigating market and planning factors that influence the location, type, and amount of office space in Metro Vancouver. Information was gathered through an office building inventory, publication review, and in-depth interviews with industry participants, including major office developers, commercial brokers, and municipal planning and economic development staff.

The Inventory includes an analysis of the region's office building stock, key issues relating to office development, and recommendations for Metro Vancouver, member municipalities, developers, and other organizations to encourage office development in Urban Centres.

Regional Office Overview

The office market in Metro Vancouver is diverse, accommodating different tenant types throughout the region: the Vancouver Metro Core, Regional City Centres, Municipal Town Centres, rapid transit stations, and elsewhere.

Compared to other large North American markets, Metro Vancouver has fewer headquarter companies and more smaller-sized office tenants. The large tech tenants that entered the market in the past few years represent a significant shift in Vancouver Metro Core office market dynamics.

Office tenants and employees increasingly prefer transit-accessible locations, particularly rail rapid transit stations. Overall, a greater proportion of new office developments are locating near the region's Frequent Transit Network.

Key Findings from Interviews

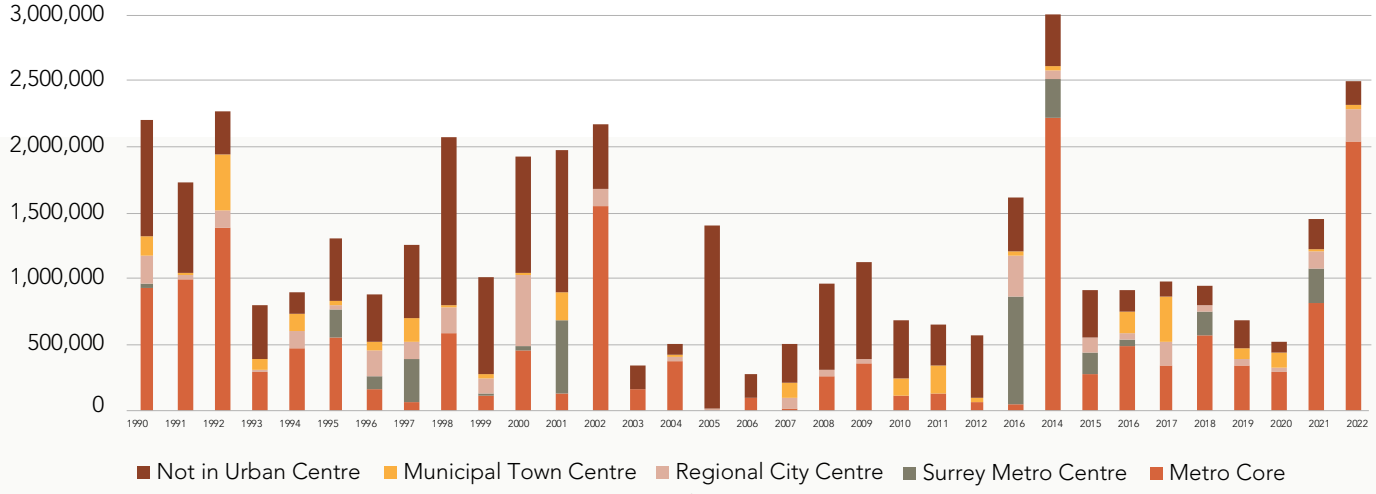
Many office tenants desire locations that are well-served by rapid transit and urban amenities, though some tenants require highway access, in the form of suburban auto-oriented office parks.

There are significant new office development projects in the Vancouver Metro Core. This responds to tenant demand, especially in the tech sector, for urban locations and amenities to attract workers. Office growth in other Urban Centres has been limited.

Smaller Urban Centres continue to see less demand for office space, and less growth. This may change as populations grow and there is increased need for local-serving office space.

The geographic distribution of new office development by location has varied over the past decades. More recently, the ratio of office space in the region's Urban Centres and particularly the Vancouver Metro Core has increased.

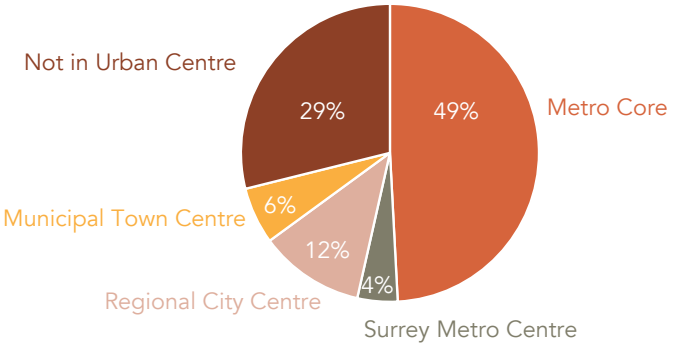
Inventory by Year Built and Urban Centre Type (1990-2022)



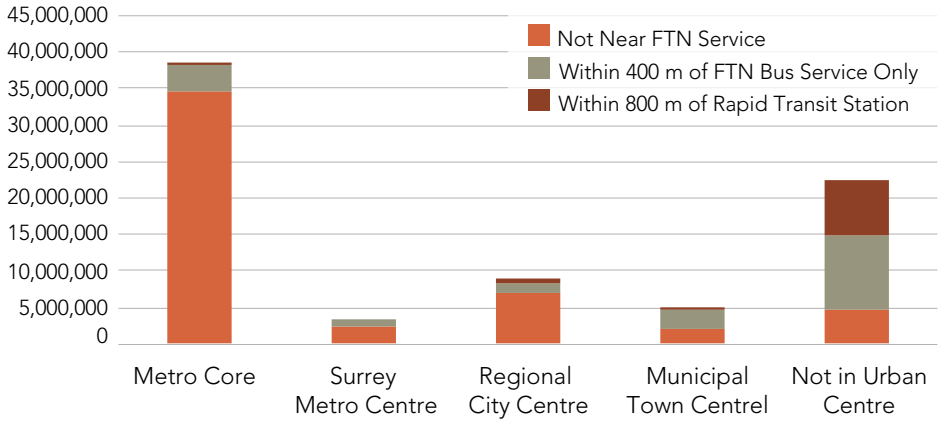
Key Findings from the 2022 Office Building Inventory

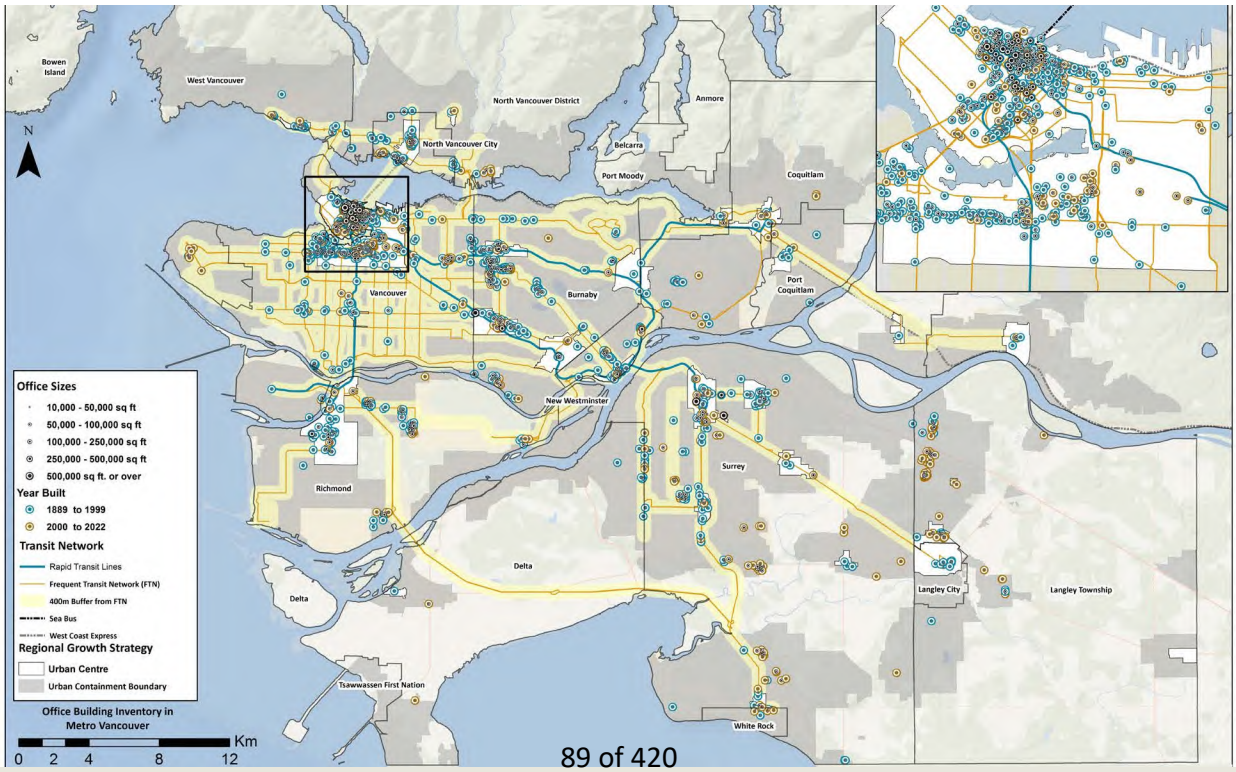
- There was a total of 78 million sq ft of office space; 1,338 buildings include 10,000 sq ft or more of office space.
- The average office building size was 58,000 sq ft, and the median size was 31,000 sq ft.
- Approximately half of the inventory (47% of buildings and 55% of floor space) was located in Vancouver, with most of that in the Metro Core area (downtown and the Broadway Corridor). The other significant sub-markets, such as Burnaby / New Westminster, Surrey, and Richmond, are much smaller
- Of the region's total inventory, 71% or 55 million sq ft was located within Urban Centres.
- For office space within Urban Centres, 69% was located in the Metro Core, 16% in Regional City Centres, 9% in Municipal Town Centres, and 6% in the Surrey Metro Centre.
- Relative to the Frequent Transit Network (FTN), 65% or 51 million sq ft of office space was located within a 10-minute walk (800 m) of a rapid transit station, and 24% or 19 million sq ft was located within a 5-minute walk (400 m) of FTN bus only.
- 90% of the region's office space is located within either an Urban Centre, within 400 m of the FTN bus service, or within 800 m of rail rapid transit stations.

Inventory by Urban Centre Type



Inventory by Urban Centres and Transit Service



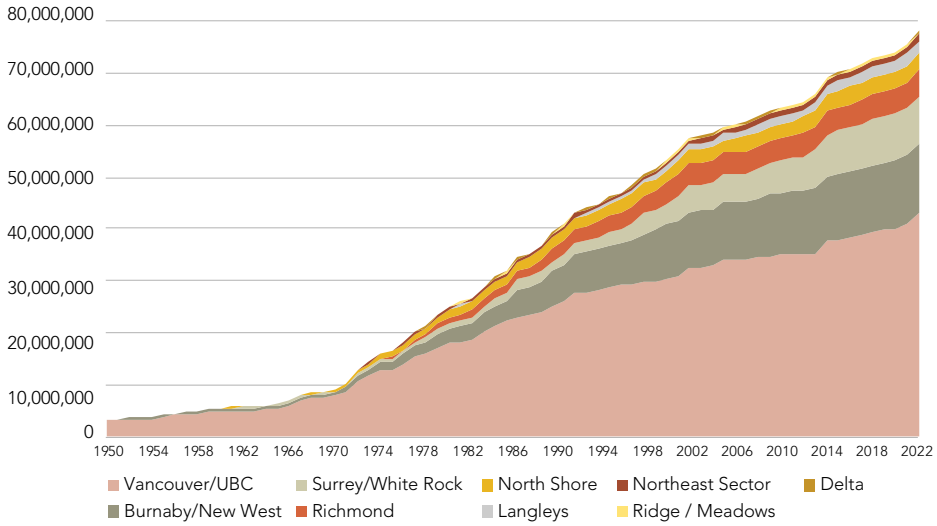


Change Over Time

Historically, office inventory and growth was primarily within the Vancouver Metro Core. More recently, the proportional amount of office space in Vancouver is declining over time, with new growth in other areas such as Burnaby / New Westminster, Surrey, and Richmond.

Developers and tenants want to work with municipalities to build and occupy new projects. Generally, the private sector desires flexibility to build the type of office space that is in demand and to allow for increased development densities to take advantage of 'strong' locations, while avoiding planning policies that require office development in locations with limited demand. In turn, municipalities want new office projects to support local economic goals and the private sector to help create spaces for jobs that advance complete community objectives, while also ensuring that development makes efficient use of infrastructure and amenity investments.

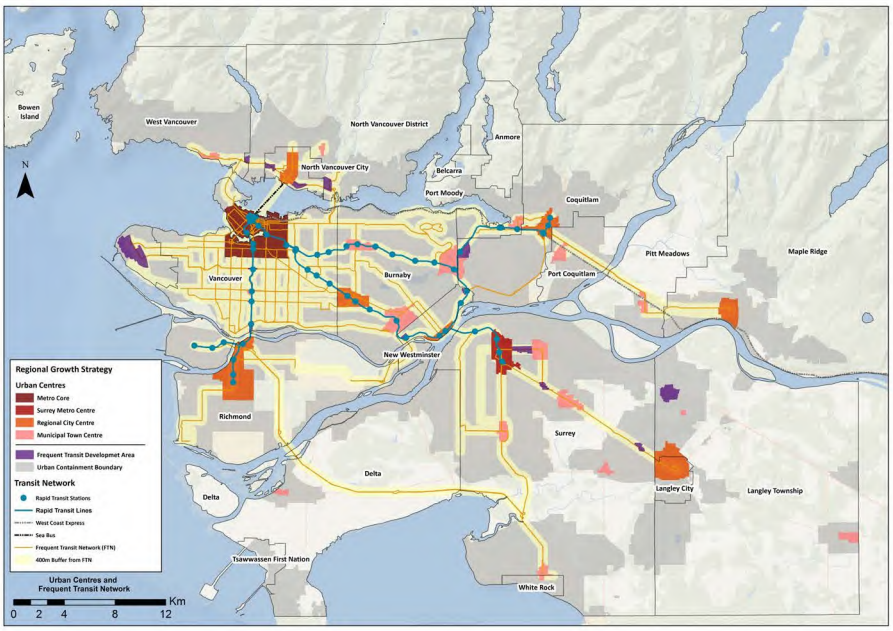
Cumulative Inventory Growth by Sub-Region (1950-2022)



Key Findings and Actions

Responses from interviewees and results from research support continuing to focus office development in the region's Urban Centres. Actions include:

- Development Approval Process - Streamline the development review process, reduce uncertainties and risks, and manage municipal charges / fees.
- Land Use Planning - Encourage, but do not mandate, mixed-use projects with office components in specific locations.
- Zoning Definition - Allow general office uses, rather than overly specific / limiting types of office business uses. This would improve tenanting flexibility and decrease landlord risk.
- Tenant Permits - Shorten and simplify the permitting process for basic interior improvements.
- Municipal Incentives - Explore financial or regulatory incentives to encourage office development, and reduce policy and regulatory barriers.
- Research - Explore case studies / best practices / innovation profiles into topics such as integrating office space into mixed-use or multi-use projects.



FIND OUT MORE

Learn more about *Metro 2050*: **metrovancouver.org/metro2050**

Email us: **regionalplanning@metrovancouver.org**

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Together we make our region strong

Office Development in Metro Vancouver:

2022 Inventory and Technical Report

March 2023

Executive Summary

Metro Vancouver's Office Development Inventory and Technical Report was prepared in late 2022 and early 2023, and is an update of the 2018 edition. The report explores the factors that influence regional-scale office development and occupancy decisions, and identifies challenges and opportunities for office growth in Metro Vancouver's Urban Centres. It identifies key issues and trends affecting office space to better inform government policies. Although the COVID-19 pandemic has had a significant impact and disruption on office occupancy matters, this report looks beyond the pandemic to longer term implications and considerations.

Advancing Regional Planning Goals

Actions to encourage office development in Urban Centres and areas well served by transit are key elements of the Metro Vancouver regional growth strategy. Regional policy directs office development and associated activities to Urban Centres, as promoting significant new office development outside of Urban Centre locations such as in suburban office parks can have negative impacts on land use and transportation patterns for the region.

Office space accommodates growth of businesses and employment within the local community and larger region. These accommodations, in the form of office buildings, are built by developers who respond to market signals such as demand and supply.

Focusing office development in Urban Centres benefits the regional transportation system and livability in a number of ways: by supporting the development of complete and walkable communities, reducing vehicle commutes and employee transportation costs, protecting lands for other uses, complementing commercial and residential land uses, and increasing the vibrancy and success of the region's Urban Centres.

Planning policy and market forces are partially aligned. Office tenants increasingly desire locations that are well-served by rapid transit and urban amenities, while still in some cases highway access and suburban sites are also needed by other tenant types. There have been significant new office development projects in downtown Vancouver, responding to the strong tenant demand, especially by the growing number of tech companies that need to be by urban amenities to attract and retain talented workers. However, office growth in many other Urban Centres has been limited.

The report was informed through an investigation of the market and planning factors that influence the location, type, and amount of office development and occupancy in Metro Vancouver. Information about the office market and office development was gathered through a review of relevant publications, compilation of a comprehensive inventory database of office buildings[1], and in-depth interviews with experienced industry participants[2], including major office developers, and brokers, and municipal planning and economic development staff.

[1] Note that this report and associated inventory statistics should replace previous reports, as the inventory has been further refined with every subsequent edition.

[2] The preparation of the earlier edition of this report was informed by other interviews at that time, including with office tenants. Comments that are still relevant are retained in the updated edition of this report.

Office Inventory Summary

Based on the comprehensive inventory prepared by Metro Vancouver, at the end of 2022, there were 78 million sq ft of office space in the region located within 1,338 buildings with 10,000 sq ft or more of office space. Individual buildings with less than 10,000 sq ft of have been excluded from the inventory, as they are challenging to measure and likely comprise only a small component of the total inventory. Summary findings from the analysis of the office building inventory data:

- Approximately half (47% of buildings and 55% of floor space) of the office inventory was located in Vancouver/UBC, with other notable sub-regions being Burnaby/New Westminster (at 16% and 17% respectively), Surrey/White Rock (14% and 12%), and Richmond (7% and 6%).
- Slightly over three-quarters (77%) of the office inventory was located on lands regionally designated 'General Urban', which are intended to accommodate a wide variety of land uses. Of the balance, 20% was located on 'Mixed Employment' lands which can accommodate various commercial uses, and 3% on 'Industrial' lands.
- Of just the office inventory in Urban Centres, 69% was located in the Metro Core (downtown Vancouver and the Broadway Corridor), 16% in Regional City Centres, 9% in Municipal Town Centres, and 6% in the Surrey Metro Centre. The balance, 22.6 million sq ft, was not located in Urban Centres.
- Most of the office inventory in the Metro Core and the Regional City Centres (90% and 79%, respectively) was within 800 metres of rapid transit stations, whereas 46% of the office space in Municipal Town Centres was near rapid transit.
- Relative to the Frequent Transit Network (FTN), 51 million sq ft (65%) of office space was located within 800 metres (10-minute walk) of a rapid transit station, and 18.8 million sq ft (24%) was located within 400 metres (5-minute walk) of FTN bus only. The balance, 8.4 million sq ft (11%) of office space, was located beyond the FTN service area.
- Of the inventory not within Urban Centres (22.6 million sq ft), 21% was within 800 metres of rapid transit service and 46% was within 400 metres of FTN bus only.
- Of the total inventory, 7.6 million sq ft (10%) was neither in an Urban Centre nor near FTN transit (either bus or SkyTrain).
- The 55 million sq ft of office space located in the 26 Urban Centres was distributed predominately in the Metro Core with a total of 38 million sq ft or 69% of the total office space in Urban Centres in the region. The next largest Urban Centres (at less than one-tenth the size) are Metrotown City Centre and Surrey City Centre at approximately 3 million sq ft each, and Richmond City Centre at 2 million sq ft.
- The average amount of office space in the seven Regional City Centres was 1.3 million sq ft each, while the seventeen Municipal Town Centres contain relatively limited amounts of office space (6% of the region's total), with an average of 280,000 sq ft of office space.
- Most office buildings (86%) are under 100,000 sq ft in size, and 11% in the 100,000 to 250,000 sq ft range. There are very few buildings (43 of 1,338) over 250,000 sq ft; 3% of buildings, representing 21% of the total floor space.

- Of the entire inventory, the average size is 58,000 sq ft and the median size is 31,000 sq ft.
- There is a gradual upward trend in the size of office buildings over recent decades, with some years being skewed by a few very large building completions.

Recent Office Development Growth

Office development is impacted primarily by market demand. The office development process (approvals, design, financing, marketing, permitting, construction, and occupancy) is often complex and lengthy, and cannot always be fully completed within a single economic / market cycle. Analysis of the newer building stock completed between 1990 and 2022, which totalled 41 million sq ft, is summarized as follows:

- Office building completion rates and distribution patterns vary considerably from year-to-year.
- A large proportion of existing and newer office space is located in the Metro Core, centred in downtown Vancouver, and at other locations with rapid transit service. Smaller Urban Centres are generally attracting only limited office development activity.
- There was significant office development between 1990 and 2002. For the 2004-2012 period, development was considerably lower (except for 2009), with another cycle peaking in 2015.
- During the 2003-2012 period, the completion of new office projects was considerably lower. In years with higher levels of completion, a large proportion of that occurred in the City of Vancouver, mostly in the form of large new buildings in the downtown core.
- Non-Urban Centre development peaked in the 1990-2009 period, while from 2014 to 2022 the proportion of office space development in Urban Centres and particularly Metro Core increased.
- 63% of the newer office stock was built within Urban Centres (compared to 71% for the entire stock). The balance of office development was located outside of Urban Centres.
- 60% of the newer stock was located within 800 metres of rapid transit stations, with 41% located within the Metro Core (all with access to FTN transit). Of the newer inventory, 15.3 million sq ft or 37% was located outside of Urban Centres.
- 60% of newer office development was located within 800 metres of rapid transit, and 23% within 400 metres of FTN bus only. The balance, 17%, was located in areas not accessible to the FTN.

Market Trends

A variety of types of office buildings in diverse locations are required for different types of office tenants. The region has relatively few large office tenants (e.g. corporate headquarters) and many smaller ones, which challenges the development of new large-scale office buildings. Although in the last few years there has been significant growth of tech sector tenants. Ultimately, businesses make individual decisions and consider the trade-offs regarding accommodation costs and features.

Market Conditions and Developments

- Prior to the COVID-19 pandemic starting in early 2020, the region's office market was very strong with low vacancy rates and increasing lease rates, spurring considerable new major office developments, especially in downtown Vancouver.
- There was significant growth in the tech sector, with large companies occupying large blocks of office space and seeking premium accommodations and amenities found in the Metro Core.
- Although there are a number of large high-profile office projects coming to market, there are also many smaller or mid-sized office buildings. These buildings serve local areas and may be located throughout the region, and not necessarily in Urban Centres or near transit. Demand is limited in smaller Urban Centres with less accessibility and lower levels of transit service.
- More recently, due to the COVID-19 pandemic and associated rapid growth in remote working, the amount of office space needed, its utilization, and design have been greatly impacted. The long-term implications of this on office space demand are not yet known.

Tenant Preferences

- Office tenants increasingly prioritize accessibility to rapid transit service and urban amenities, and developers are responding accordingly, which is a change from the more suburban development patterns of earlier decades.
- Not all tenants wish to locate in Urban Centres, as some businesses prioritize highway access or other features, including lower costs.
- Some tenants may prefer an architecturally unique and high-profile building; however, these buildings can be less efficient and cost more. Some businesses seek a high prestige central business district office location (i.e. downtown Vancouver) and are able and willing to pay a premium. Proximity to urban amenities is strongly desired by tech tenants, such as Mt. Pleasant in Vancouver.

Trends

- There was significant growth in co-working facilities prior to the pandemic, namely WeWork and Regus / Spaces, that provide spaces and services to a range of tenant types, responding to the desire for flexibility by business occupants.
- There has been an apparent increase of strata development projects, rather than conventional lease rental tenure. From a development perspective, strata values can drive up residual land prices to the point where non-strata / lease development is no longer financially viable. That noted, the extent of strata development is limited, and some of that space is ultimately leased.
- There was a trend towards open concept office design to encourage collaboration and achieve space efficiencies. Due to the COVID-19 pandemic being a communicable disease and the increase in remote working and online meetings, desired office space designs are changing.

Key Considerations for Office Development

Office market characteristics such as demand, rental rates, preferences, scale, design, and development potential vary greatly by sub-market. The strengths of the Metro Vancouver regional economy, particularly relating to the office market, include: a 'Vancouver' brand that is internationally recognized, a boom in the tech sector with large American companies that are locating operations in Vancouver to access an international and educated workforce subject to Canada's immigration policies, the region being a livable and desirable place with many amenities, and a strong education system that fosters talent. Challenges or weaknesses include the high cost of housing and living, as well as high land and construction costs for development, and long and uncertain development approval processes that increase risk for projects.

The main office market of the region, the Metro Core, experienced strong office demand, leading to increasing lease rates and spurring development of additional office space supply in the years leading up to the pandemic. This growth was largely driving by demand from expanding tech companies, such as software and animation, that desired locations in the Metro Core to attract and retain talented employees. With the completion of some buildings that started before COVID-19 and the pandemic's continued influence on the office market, the number of new office development projects in the immediate future is expected to be limited.

As the population, economic activity, and workforce grows in the outer parts of the region it is expected that the demand for office space in those areas will also grow. However, this may take a long time, as small communities still have limited scale in terms of population and economic throughput and thus limited office demand. Building new office space in a sub-market without adequate demand may simply steal or re-locate tenants from one part of that sub-market to another, not actually attracting new tenants (i.e. zero-sum).

The best effort to attract tenants to outer Urban Centres may be as a value proposition (e.g. lower rents, and offering some urban features / amenities, at a location that is closer to a segment of the workforce). However, from a development perspective, construction costs are high in all locations. As such, it is difficult to make projects financially viable in outer Urban Centres that experience low office rents. Consequently, developers are concerned about being 'forced' rather than 'encouraged' by municipalities to build office space in locations with weak demand, which may lead to long-term vacancies.

Future Considerations for Office in Urban Centres

Based on the research and interviewees, the report outlines various actions for consideration by different parties to support office space in Urban Centres. These are organized into two parts in the final section of the report: priority actions that can be acted on immediately, and a list for further exploration.

The issues of concern most consistently expressed by interviewees and supported by research, and which can be undertaken in the shorter term with relatively high potential of effectiveness are:

- **Development Approval Process** - Streamline the development review / approval process, reduce the uncertainties and risks, and manage municipal charges / fees.
- **Land Use Planning** - Encourage, but do not mandate, mixed-use projects with office components; rather, allow market demand to inform the supply of office development in specific locations.
- **Zoning Definition** - Allow general office uses, rather than overly specific / limiting types of office business uses. This would improve tenanting flexibility and decrease landlord risk.
- **Tenant Permits** - Shorten and simplify the permitting process for basic interior improvements / renovations needed when new office tenants occupy a premise and operate a business.
- **Municipal Incentives** - Explore financial or regulatory incentives to encourage office development, and reduce policy and regulatory barriers.
- **Research** - Undertake further relevant research and case studies / best practices / innovation profiles into topics such as integrating office space into mixed-use or multi-use projects, and also identify where office components may or may not be warranted.

Developers and tenants want to work with municipalities to build and occupy new projects. Generally, the private sector desires the flexibly to build the type of office space that is in demand, where warranted, and to allow for increased development densities to take advantage of 'strong' locations. In turn, municipalities want new projects to advance economic goals and the private sector to help create spaces for jobs that advance complete community objectives, while also ensuring that development matches infrastructure and amenity investments.

Municipalities in the region continue to make various efforts to attract office development to their communities. In some cases, these efforts match market forces, such as in the Metro Core and surrounding areas where there is consistent and strong demand, especially for tech tenants that seek to locate in areas rich with rapid transit and urban amenities. In other places, market demand is spurring office development at SkyTrain station locations that are not necessarily in Urban Centres. In some locations, however, municipalities are encouraging mixed-use development with office space components where developers state that there is limited office market demand. Where this occurs, some developers feel that this approach introduces office supply in the hopes of generating demand that may not materialize and the space remains vacant.

Nevertheless, as local populations and associated workforces grow, and smaller-scale Urban Centres develop capacity and scale over time, the opportunity for providing population-serving office space will increase in these locations. Substantially, it is market forces rather than government policies that produce office development; prioritizing growth to target areas requires both market demand and public sector investment.

Ultimately, office development is a large investment decision, with the main factors being land values, construction costs, and lease rates. There is little that local governments can do to significantly impact those factors; other items that municipalities may have influence over tend to be less impactful.

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1.0 INTRODUCTION

1.1. Report Purpose

The purpose of this report[3] is to explore the factors and trends that influence office development and occupancy decisions in the Metro Vancouver region, and identify challenges and opportunities for office potential in Urban Centres. The report is informed through an investigation of the market and policy factors, as well as ongoing trends, which influence the location, type, and amount of office development and occupancy in Metro Vancouver. This research includes detailed analysis of office building development patterns in the region over the past century, and particularly the last few decades, supplemented with key informant interviews and literature review.

The report was prepared in late 2022 and early 2023. Although the COVID-19 pandemic has had a significant impact of office occupancy matters, this report looks beyond the pandemic to longer term implications and outcomes.

Actions that encourage office development in Urban Centres and areas well-served by transit are key elements of the regional growth strategy. While residential development in Urban Centres has been robust in recent years, office development has been limited primarily to certain locations. This report identifies areas for further exploration and opportunities for Metro Vancouver, member municipalities, developers, and other organizations to work together to advance office development in Urban Centres.

1.2. Research Questions

Three main methods were used in preparing this report: 1) information about the office market and the office development process was gathered through a review of relevant publications; 2) compilation of a comprehensive inventory database of office buildings in the region; and 3) in-depth interviews with key industry participants, including major office investors, developers, brokers, and municipal staff.

The following section addresses the state of the office market in Metro Vancouver, policy considerations, office development and tenancy issues and trends, as well as possible actions by the public and private sectors. These research questions are explored and answered in the balance of the report.

1.2.1. What are the regional directions and trends for office development location?

Metro 2040, the regional growth strategy, adopted in 2011 (and updated as *Metro 2050*), directs office development to Urban Centres, continuing the direction established in past

[3] This report is an update of the earlier edition completed in 2018.

regional plans. Focusing office development in the region's Urban Centres benefits the regional transportation system and livability in a number of ways, by: encouraging transit usage and reducing vehicle commutes, employee transportation, costs and associated greenhouse gas emissions; complementing commercial and residential land uses; increasing the vibrancy, livability, and success of Urban Centres; and protecting lands for other uses such as industrial. Some population-based, local serving office tenants located outside of Urban Centres are also considered appropriate to serve the needs of area residents.

Planning policy and market forces are partially and increasingly aligned. The market tends to respond to locations that are well served by rapid transit and urban amenities, while still some tenants need highway access with ample vehicle parking. In the past, access to highways was a priority for many office tenants, and office developers built accordingly. However, increasingly office tenants recognize the benefits to their businesses and employees of being located near transit (particularly rapid transit stations) and amenities in the region's Urban Centres. Specifically, ongoing market trends include:

- The Metro Core (downtown Vancouver and Broadway Corridor) experienced significant growth in new supply of large office buildings, with strong demand especially from tech sector tenants;
- In other Urban Centres, the supply of new office space is limited or varies;
- Some rapid transit station locations outside of Urban Centres are attracting office development and tenants, as they can offer the transit accessibility of an Urban Centre, but at lower costs;
- Reflecting market demand, there are few new office parks in the region outside of Urban Centres in locations that have poor transit service and limited amenities; and
- Evolving growth of new forms of office tenure, specifically strata and co-working.

While rapid transit station accessibility is increasingly desirable, the value of transit is not universal. Adjacency to a rapid transit station (i.e. SkyTrain) is beneficial, but those rapid transit station locations alone do not always provide a mix of supporting land uses and the presence of urban amenities. Furthermore, the connectivity of transportation systems is better within a network, than at the ends or edges of the network. Urban Centres can offer the full range of functions and amenities that stand-alone transit station locations may not provide.

1.2.2. What are the benefits of locating office space within Urban Centres?

As stated in the regional growth strategy, Urban Centres are intended to be the region's focal points for concentrated growth and transit service, and priority locations for employment, higher density housing, commercial, cultural, entertainment, institutional, and mixed-uses. The regional growth strategy identifies 26 Urban Centres of varying scale, distributed throughout the region.

By locating office space and associated employment in Urban Centres, a number of benefits can be achieved, including:

- Improve access and use of public transit;

- Reduce reliance of vehicle use for commuting and thus less congestion and greenhouse gas emissions;
- Reduce transportation costs for workers;
- Complement surrounding retail, residential, and institutional uses;
- Improve access to various amenities for office workers, such as area shops and services;
- Support workforce attraction and retention;
- Contribute to surrounding businesses by locating additional employees in the immediate area;
- Contribute to the general vibrancy, livability, and success of Urban Centres; and
- Support the development of complete communities.

1.2.3. What are the problems with locating office space outside of Urban Centres?

Despite longstanding regional policy to direct office growth to Urban Centres, the market pattern during the 1990s was defined by significant new office development in suburban office parks outside of Urban Centres. Although that trend has since changed, that pattern and those older buildings remain.

Typically, these office parks are located in areas far from transit services, and have a much higher proportion of employees who drive to work. This dispersed pattern is challenging from a regional perspective for several reasons, particularly to provide an efficient transportation system. Secondly, more driving means more traffic congestion and makes it difficult to meet the region's climate actions and greenhouse gas emission reduction targets. Thirdly, the creation of office parks came at the expense of the region's limited land supply, often built on land that was once used or designated for industrial purposes. Finally, locating jobs and activities in office parks can hamper the growth of the region's Urban Centres. Urban Centres need all types of activities to thrive, with employment contributing to their vibrancy and success. For employees, being in an Urban Centre is also preferable to working in an office park, in terms of both the amenities and transportation options. Office tenants are increasingly selecting desirable urban locations in order to attract and retain a talented workforce, especially notable for the tech sector.

How are office market trends evolving?

The Metro Vancouver office market is diverse, segmented and represents a variety of regional locations and different tenant needs. Office development occurs at different types of locations, ranging from the Metro Core to other Regional City Centres, Municipal Town Centres, rapid transit stations, and elsewhere.

Office tenants and employees increasingly prefer transit-accessible locations, namely rapid transit stations (i.e. SkyTrain); that demand is demonstrated through consistently lower vacancies and higher rents at those locations. Responding to the strong office demand before the COVID-19 pandemic, a number of major office developments were recently completed and are underway in downtown Vancouver, and in some other growing centres.

Downtown Vancouver, other Urban Centres, SkyTrain stations, and auto-oriented office parks, all continue to serve different types of business needs and office markets. However, there is an overall and growing trend towards new developments locating near the region's SkyTrain stations, which fills an important need in the office market.

Despite development activity indicating that transit-accessible locations are increasingly in demand, there exists office parks outside of Urban Centres that are poorly connected to the transit system. Although there has been limited office park development in the past decade, these locations can offer larger sites, which allow for low rise buildings with larger floorplates, better access to the highway network with ample parking, and other features desired by certain types of tenants.

Past office designs striving for increased efficiencies in terms of reduced space per worker and shared work spaces are being reconsidered due to infection spreading concerns associated with the pandemic. These changes in utilization rates will have transportation impacts in terms of the amount of required parking, transit demand, and building design, as well as on the amount and type of onsite amenities.

1.2.4. What tools do governments have to support office development in Urban Centres?

The regional growth strategy requires municipalities to prepare Regional Context Statements identifying how local plans will direct office development to Urban Centres and support the regional employment targets. Through Official Community Plans (or equivalents), local area plans, zoning bylaws and other policies, and as the local approving authority, municipalities can advance and support this important objective. Supplementing market trends, municipal policies can encourage office development proposals within and discourage projects in locations outside of Urban Centres. Additionally, to support office development in desired locations, municipalities can explore reducing barriers and incent investment through tools such as: pre-zoning land for office use and density; expediting the development application and permitting process; introducing regulatory and financial incentives; and other possible means, financial and otherwise, appropriate for local circumstances.

Beyond land use plans and tools, governments at all levels can provide signals to the market about appropriate locations for office investment. Providing transportation and other infrastructure at the right locations to support Urban Centre development is important to the health and vibrancy of the regional economy and communities. Businesses want accommodations that best meet their needs in terms of location, accessibility, facilities, design, amenities, costs, and other features. By improving the transit service, urban amenities, and infrastructure offerings in Urban Centres, these locations can become more attractive to office developers and office tenants as locations for investment. Yet those lands can also be very expensive, which is a major aspect of project viability. Decisions by public agencies, including the location of educational, medical institutions, and other government office facilities in Urban Centres can also spur further market and development interest.

1.3. Regional Growth Strategy Context

The Metro Vancouver region is forecast to grow by approximately one million residents and 500,000 jobs between 2021 and 2051. To protect the region's ability to attract investment and jobs, the regional growth strategy establishes regional land use designations and overlays that the member municipalities must consider and advance through local planning. The Urban Containment Boundary limits encroachment into lands regionally designated as 'Agricultural', 'Rural', and 'Conservation & Recreation'. The 'Industrial' and 'Employment' designations protect lands for industrial and employment uses. Office and commercial uses are encouraged to locate in Urban Centres and Frequent Transit Development Areas (FTDA), generally located on lands regionally designated 'General Urban', which allows for a variety of uses.

Reflecting continuing population, employment, and economic growth on Metro Vancouver's limited land base, focusing and densifying development in Urban Centres is an important element of the regional growth strategy. To build vibrant and livable communities, the regional growth strategy's Strategy 1.2 includes specific policies about office space, including guidelines for the land use and transportation characteristics of Urban Centres and FTDAs. There are identified three different types of Urban Centres: Metro Core, Regional City Centres, and Municipal Town Centres.

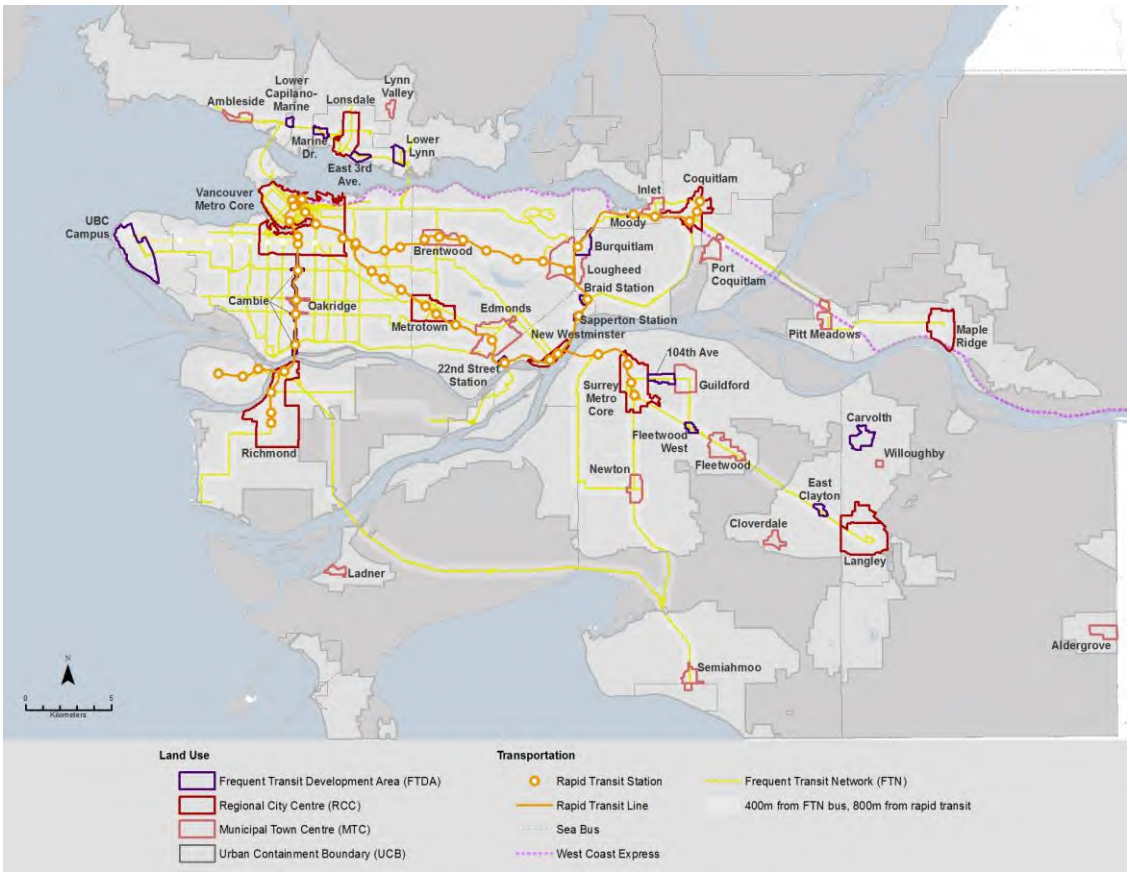
The 26 Urban Centres identified in the regional growth strategy are intended as priority locations for transit-oriented employment and services, higher density housing, commercial, cultural, entertainment, institutional, and mixed-uses. Urban Centres are intended to emphasize place-making, with enriched public realm, where transit, cycling, and walking are the preferred modes of transportation. Orienting growth and development in this way helps to:

- Support an efficient land use pattern and transportation network;
- Protect natural areas, agricultural and industrial lands by focusing growth in urban areas;
- Provide jobs closer to where people live;
- Create complete communities that are accessible, promote transit, walking and cycling, provide access to a range of housing options, employment, social and cultural opportunities, parks, greenways and recreational opportunities, and promote healthy living; and
- Expand the opportunities for transit, multiple-occupancy vehicles, cycling and walking, reduce expenditure on transportation, energy use, and greenhouse gas emissions, and improve air quality.

For reference, Map 1.1 shows the locations of Urban Centres as well as the Frequent Transit Network (rail and bus) (FTN) in the region.

As an important part of the regional growth strategy, 50% of all employment growth (forecasted to be 500,000 jobs between 2021 and 2051) is to be directed to Urban Centres, with different Urban Centres anticipated to grow at different rates, plus 27% of growth located in FTDAs.

Map 1.1: Regional Growth Strategy Urban Centres and Frequent Transit Network



1.4. Stakeholder Perspectives

There are a number of different public and private sector stakeholders that influence office development patterns in the region. These groups have different interests and priorities. Government agencies and municipal plans can guide the market and reinforce the benefits of locating office development and employment in Urban Centres, with policies reinforcing positive market trends.

Metro Vancouver, as the regional government, implements the regional growth strategy so that the long-term projected growth is managed, lands are used efficiently, and employment opportunities are distributed appropriately throughout the region, reflecting investments in transportation networks, infrastructure, and key centres. This goal also means encouraging office development in locations that support transit usage, coordinating with other agencies and initiatives, with complementary land uses, amenities and facilities, where infrastructure can best support high job density. This development pattern also helps support a prosperous and growing economy with office-based employment as an integral part of the functioning of the larger overall economy. Metro Vancouver has other complementary strategies, such as protecting and intensifying industrial lands, increasing affordable housing, supporting sustainable transportation choices, and attracting and growing economic and employment activity.

TransLink provides regional transportation services, including transit service, bike lanes and pedestrian facilities, and in conjunction with municipalities is responsible for the Major Road Network. Transit service supports commuting workers, while the Major Road Network is needed for regional people and goods movement. TransLink's investment and regional transportation strategies also support office development in Urban Centres because these areas provide higher concentrations of riders and can be more effectively served by transit and more readily accessed by walking and cycling, as compared to other locations.

Municipalities wish to attract high-quality development to their communities and are the approving authority for office development projects. From a municipal perspective, office development offers employment opportunities for the resident workforce and property taxation revenues, and supports the community's commercial vibrancy, especially in Urban Centres.

Provincial and Federal Governments advance gateway objectives through the region's transportation system supporting provincial and national economic and trade interests, and invest in major infrastructure, including rapid transit lines. These senior levels of government also encourage and benefit from economic growth through tax revenue and employment levels. Additionally, government departments and agencies are major employers and tenants.

Office tenants need space that is functional and affordable, in terms of size and shape, location, access, and other attributes. Office tenants balance their location preferences and building needs, along with workforce retention and recruitment issues, operational needs, and financial considerations.

Office developers want to build projects that are successful, profitable, have manageable risks, are desirable by office tenants, and readily absorbed by the market. Viable investments necessitate balancing the development costs and revenues of the project, including land and construction costs, with land uses, building designs, market demand, and rent levels. Developers want to optimize the potential of a site, such as leasable space, while achieving a reasonable project schedule, approval requirements, and expectations of office tenants.

1.5. Interview Participants

Major office developers, commercial brokers, and municipal planning and economic development staff were interviewed to learn about Metro Vancouver's office market (see Appendix A for a list of interviewees). The objective was to gain insights about the changing nature of the Metro Vancouver office market and sub-markets, location preferences, and the criteria and decision-making process for selecting office locations and developing office space. 24 interviews, involving 48 interviewees, were conducted between mid-September and mid November 2022[4]. Discussion questions were sent to the interviewees in advance of the meetings (see Appendix B for a list of the questions).

[4] Note: The preparation of the earlier edition of this report was informed by other interviews at that time, including with office tenants. Comments that are still relevant are retained in the updated edition of this report.

The developers and brokers interviewed had significant experience building or leasing large-scale office projects in the region, while municipal staff provided additional perspectives. There were three different groups of interviewees:

- **Office developers / landlords** - experience both in downtown Vancouver and markets in other parts of Metro Vancouver, as well as in other North American cities.
- **Office brokers** - extensive knowledge of the office market with specialized knowledge of Metro Vancouver's multiple sub-markets. The brokers provided a unique perspective, being knowledgeable about the needs of both the developer and tenant, as well as changes over time.
- **Municipal staff** - provided the local government perspective (both planning and economic), outlining their role in the process of attracting investment and development to their communities and the trends being seen from local businesses and developers. They also provided insight on the experience of policies and tools to encourage and retain office tenancy, and the development approvals process.

2.0 METRO VANCOUVER OFFICE CHARACTERISTICS

Compared to other large North American markets, Metro Vancouver has fewer headquarter companies and has many smaller-sized office tenants. The Metro Vancouver market has a range of different business sectors, which is healthy and beneficial should one sector experience a decline. In the past, the resource sector (e.g. forestry, mining, energy) drove much of the office growth in the Vancouver office market and supporting services such as accounting, finance, and legal firms. More recently, there has been significant growth in the tech sector as a major office tenant type. However, trends seen in the office market, labour force, and general economy have been significantly disrupted by the COVID-19 pandemic.

2.1. COVID-19 Impacts and Return to Office

The COVID-19 pandemic upended the office market and business accommodation decisions. Starting in early 2020 and lasting for a varied period, many office-based employees were working from home rather than at the office. While some stakeholders and employers never believed 'the office is dead' headlines when the pandemic started, many employees continue to want flexibility and the ability to work at home, at least part time.

The opinions and facts about the impacts and implications, depth and durability, of the pandemic experience range widely, from those who believe work can be effectively completed remotely, saving employees a daily commute and reducing greenhouse gas emissions, to others who believe it has reconfirmed the need for in-person interactions and team collaboration at the office. Some recognize the nuance of the matter, noting that different types of employees have different roles and complete different tasks, thus the optimum work space design and location should vary by function. There is widespread agreement that some level of increased flexibility with working at home and at the office will be a long-term result from the pandemic's forced and sudden experiment of remote working.

COVID-19 accelerated many pre-existing trends such as use of remote technology and flexible working arrangement, some of which have long been discussed but not materialized, like tele-working and paperless offices. With the proper technology and high speed internet, remote work can be easily accommodated. As the impacts of the pandemic carry on, the full-scale return to the office has been much delayed.

To attract employees back to the office, many employers commenced with gentle encouragements before applying firmer requirements for in-person work. Such incentives are described as a way to 'earn the commute' of employees – i.e. the office work space and associated building amenities and locational attributes must be adequately desirable and appealing to induce employees from their home to the office. The belief is that employees will increasingly want to come to the office when they feel it is needed and valued.

This has spurred many landlords to upgrade on-site amenities of existing buildings, and incorporate such design features and amenities such as rooftop patios, bike parking and end of trip facilities, dog 'barking lots' for employees with pets, and programing special events into new buildings. This has resulted in redesigns of some office spaces, varying by situation,

including adapting open space layouts to provide more collaboration areas, and converting some workstations to enclosed offices. Additionally, more common areas and meeting rooms are being provided, including lounges and lunch rooms. Reflecting the need for small in-person meetings and larger on-line conference-type meetings, this can entail replacing large boardrooms with smaller team meeting rooms, along with 'quiet' rooms for individuals to take calls.

As one interviewee noted, it has taken two to three years to adjust and react to the COVID-19 pandemic, and it may take just as long to 'unwind', thus it may yet be many years to fully understand and appreciate the long-term implications and responses. This is in part because real estate and accommodation investments take a long time to decide and implement. How much office space per worker will ultimately be needed is the outstanding question. It will take time to discern these impacts on businesses accommodations and office development.

While some employees believe they could work from anywhere thanks to online technology, some employers note that such remote flexibility could allow them to hire anyone, including workers in lower wage jurisdictions in other parts of the world. Such pressures and tensions for employers wanting employees back at the office versus employees wanting continued flexibility, may adjust depending on the economic and labour market conditions, as well as the needs of the employer, role of the employee, push for accountability, cost management, home office working arrangements, and employee commute times, which may all impact the propensity to return to the office.

With employees continuing to be part time at the office, the question arises of how efficient office space could be. Truly optimized space allocation would entail employees having unassigned workstations, and only using shared desks / offices when they are in the office (i.e. 'hoteling', or 'hot desking'). If a significant percentage of employees are not at the office on any given day, then the number of workstations and amount of office space required could be significantly reduced. However, that would require desk sharing (or hot-desking or hoteling). In some cases, to meet a balance of incentives and space allocation, employees are provided dedicated workstations desks if they are in the office at least a certain number of days per week (often three), while employees who do not come in as frequently are only provided with shared hot-desks as needed (with an office locker to store for their belongings).

It should also be recognized that not everyone may have at home a suitable office arrangement or setup for professional meetings. Some businesses believe in-person work is best for collaborative and creative activities, along with mentoring, training, and leadership experiences and corporate culture, while other businesses recognize that for some standard, routine tasks working at home may be just as effective and reduce corporate accommodation costs. The solution varies by sector, business, and worker.

Although there are different work tasks and different ways to define and measure productivity (especially creativity), the benefits of physical proximity for businesses and employees to creativity and collaboration, through urban economies and agglomeration, have been in place many years, have grown over time, and are not expected to disappear.

Professional services and tech sectors were amongst the strongest employment sectors during COVID-19, and given the availability of home and portable (laptop) computers, high speed internet, and online meeting technology, is also driving the trend to remote work.

2.2. Space Utilization

It is recognized that during and since the beginning of the COVID-19 pandemic office space has been typically significantly underutilized. Although the vacancy rates indicate how much space is leased, the measures of occupancy or utilization are limited or vary. Simple observations and the volume of space on the sub-lease market indicate that the amount of underutilized or unused office space is considerable.

There are some ways to measure actual utilization levels. For example, landlords may have various building measures, from parking stalls, evaluator lifts, door openings, security passes, etc. In many cases those monitors / sensors were added during the pandemic, thus the baseline data needed to compare current utilization rates with pre-COVID-19 rates does not exist.

During the initial, turbulent period of the pandemic, many business tenants deferred accommodation decisions. Many later discovered that by delaying decisions, the easiest option was to renew existing leases, rather than trying to relocate or downsize with limited time available. In existing buildings, most leases continued to be renewed even if the space is underutilized, although tenants are tending to take more time to review and consider space needs, rather than automatically renewing. Tenants during such times of uncertainty generally seek flexibility and space that does not require onerous lease commitments.

However, as the impacts of the pandemic continue, and the ability for some staff to work remotely increases, some businesses may be looking more closely at their office space needs and accommodation costs. Yet even if working from home is an option, a hybrid work arrangement and a business workforce requires some office space for in-person activities.

Market Trends

Prior to the COVID-19 pandemic, the Metro Vancouver office market was strong, with very low vacancy rates in the order of 2%. This included both the Vancouver Central Business District (CBD) and surrounding areas, as well as the suburban markets that experienced considerable declines in vacancy rates over the preceding years. For the City of Vancouver market, the vacancy rate stayed low despite significant new office supply added. With the impacts of COVID-19 starting in early 2020, along with new office buildings coming to market, the vacancy rate increased to about 6-7% by the end of 2022 (although notably the vacancy rate was higher in the Vancouver core and lower in the suburban markets).

Most market participants view a vacancy rate in the order of 8% as being balanced and healthy, providing reasonable options and flexibility for both landlords and tenants. Furthermore, much of the new office space being built is already leased, through agreements that were arranged pre-pandemic, although not all necessarily occupied.

While all parties are aware of the divergent trends, such as greater working from home yet also increased space per person at the office, and the different sectors facing different issues and trends, the views about actual office utilization rates (as opposed to lease rates) are less bound by data. Rather, utilization rates are estimated based on observations or limited available data measures, and the future rates are a combination of best guesses and estimates.

For the most part, it appears that major tenants continue to lease their space, often bound by long-term lease agreements, but are increasingly exploring sub-lease options to vacate unused space. This includes some brand-new office buildings, with space that has never been occupied. In other sectors, businesses maintain their space with the expectation that it will be needed in the medium-term future as more employees return to the office and their workforce grows.

While current market changes may mean some reductions in office space needs, there are optimistic expectations that with an eventual return to a version of pre-pandemic conditions and long-term growth in the workforce, including the recognized need to collaborate in-person, the outlook for office space demand is still positive.

Overall, as one participant said, “there’s no sea change”, as the fundamentals are still substantially the same. No companies appear to be headed to zero office presence, as they still need space to operate. Many are simply continuing what they’ve long done, as they try to minimize the impacts of disruptions on their operations. Rather, COVID-19 may only effect decisions at the margin. As always: “Landlords and tenants need to work together to make buildings and spaces work, especially in a changing market”.

Rents and Sub-Leases

It is expected by some interviewees that the evident tech market slowdown in late 2022 will result in a (at least a slight) downward pressure on office market rents. Noting that the face rent rates may still be about the same, but larger inducements and better terms for tenants reduce actual / effective rents. There has also been general inflation over the past few years, yet rents are relatively flat, thus the real cost has declined. Aside from base rent, operating costs comprising building maintenance and property taxes are rising, paid by the tenant. (Interestingly, the covenants by tenants and landlords vary and are changing – now in some cases the tenants are stronger businesses than the landlords).

In terms of sub-leasing of space, the process is unique, building specific and not straightforward. Often, if the remaining lease duration is less than two years, the head tenant will not bother with a sub-lease process. Or the tenant may negotiate an early termination with the landlord, with a penalty paid. Often, for space that is sub-leased for a short duration there is also an agreement with the landlord for the new tenant to remain in place when the initial head-lease expires; defaulting on lease payments is very rare. The types of tenants that take short-term sub-lease space are those that are more flexible or seeking a lower cost option, such as start-up companies, and tenants needing swing / temporary space.

Also an important consideration and limitation is that it is difficult to fully optimize space, because of considerations like floorplates, access, common areas, layouts, etc., which impede

the efficient demising of areas. This is proportionally more of a challenge for smaller spaces than larger ones.

Office Supply

Many new office buildings and much office space is coming to market, although most (estimated by some interviewees at 80%) is pre-leased or pre-sold before construction completion. This new supply is associated with the tail-end of the current building cycle. However, in some cases, these new tenants are attempting to sub-lease their space even before it is occupied. This includes some big tech firms, which are giving back space and putting pause on new space. Also, much 'grey space' exists; space that is unused and available, but not actively marketed, which is hard to quantify.

For businesses that are occupying underutilized space, they may eventually give some back over the next few years, as their leases expire. This will lead to an increase in supply, requiring a longer period for the space to be (re)absorbed by the market. The result is that new buildings may take longer to be fully occupied and utilized, as compared to typical markets and building completions.

Furthermore, developers that are contemplating new office buildings will likely push back construction schedules by a few years to better align with forecasted future market conditions. The question this raises is, if in the coming years (i.e. 2025 / 2026), there will be a shortage of space if most development projects are put on hold now. Based on reported vacancy rates, according to some optimistic participants (more so brokers than developers), market fundamentals warrant more supply, however that does not consider utilization rates or other risks. In downtown Vancouver, for example, the projects already underway are proceeding; developers are not stopping, although maybe slowing on future ones.

Office Demand

Good office space is still in demand, in modern buildings, with nice amenities, functional units, attractive designs, and at central locations. For hybrid work arrangements, employers need to offer a good or great location and space to attract employees to commute to work, and often combine it with other activities on the same day (e.g. lunch out, shopping, dinner, events, a concert, or sports game).

Most leaders want their staff back in the office, but not all of their employees want to return. As has been said: 'Great companies use great space to attract great employees'. Thus, leading companies are providing employees incentives and inducements to come back to the office, including attractive working spaces.

2.3. Regional Office Market Statistics

According to Colliers market reports as of the end of 2022, the total inventory of market office space in the Metro Vancouver region was 76 million sq ft.[5] Note that the market inventory as tracked by brokerage firms excludes some smaller buildings and non-market buildings such as

[5] Colliers, Vancouver Office Market Report, 2022 Q4.

government / institutional offices, which were included in the Metro Vancouver inventory, as explained in subsequent sections.

As of late 2022, Vancouver was still experiencing an office construction boom, having completed 1.4 million sq ft of new space in 2022, with further 6.1 million sq ft actively under construction across the region.[6] Note that much of this construction activity commenced before the pandemic. Meanwhile, the tech sector which had driven demand for large blocks of office space in and around downtown Vancouver slowed in terms of employment levels and leasing activity.

Table 2.1 shows the number of office buildings and amount of office floor space tracked by Colliers for the Metro Vancouver region as of the end of 2022.[7] This data shows that the Vancouver downtown (including Gastown, Railtown, and Yaletown) is the dominant office centre of the region, with about 31% to the total number of office buildings and 44% of total amount of office space. These numbers reflect the fact that office buildings in the central business district (CBD) are notably larger than in other parts of the region. Adding the other Vancouver sub-areas (Broadway Corridor, Periphery), the City of Vancouver in total has 46 million sq ft of market office space, or about 60% of the regional total.[8]

The next largest market is Burnaby, with approximately 11.4 million sq ft or 15% of the regional total, followed by Surrey at 6.5 million sq ft (9%), and Richmond at 4.3 million sq ft (6%). The other sub-markets in the region are relatively small. Over time this may change, reflecting evolving development and employment patterns in the region.

Table 2.1: Metro Vancouver Office Market Inventory by Sub-Region (2022 Q4)

Geography	# of Buildings	Office Space Sq Ft	Buildings - % of Regional Total	Sq Ft - % of Regional Total	Avg Building Size Sq Ft
Vancouver Downtown Core	194	28,956,943	21.5%	37.9%	149,263
Vancouver Gastown / Railtown	50	2,723,951	5.5%	3.6%	54,479
Vancouver Yaletown	36	1,739,320	4.0%	2.3%	48,314
Vancouver Broadway Corridor	128	8,520,305	14.2%	11.2%	66,565
Vancouver Periphery	60	4,301,301	6.6%	5.6%	71,688
Vancouver Sub-Total	***468***	***46,241,820***	***51.8%***	***60.6%***	***98,807***
Burnaby	124	11,453,012	13.7%	15.0%	92,363
Surrey	99	6,543,345	11.0%	8.6%	66,094
Richmond	65	4,321,278	7.2%	5.7%	66,481
North Van	60	2,769,556	6.6%	3.6%	46,159
New West	34	2,227,165	3.8%	2.9%	65,505
Langley	40	2,098,385	4.4%	2.7%	52,460
Tri-Cities	13	680,069	1.4%	0.9%	52,313
Other Areas Sub-Total	***435***	***30,092,810***	***48.2%***	***39.4%***	***69,179***
Regional Total	**903**	**76,334,630**	**100.0%**	**100.0%**	**84,534**

Source: Colliers, Market Report Metro Vancouver, 2022 Q4.

[6] Colliers, Vancouver Office Market Report, 2022 Q4.
[7] Colliers, Vancouver Office Market Report, 2022 Q4.
[8] Colliers, Vancouver Office Market Report, 2022 Q4.

According to Colliers, the overall average vacancy rate for the region at the end of Q4 2022 was 5.9%. Downtown Vancouver had a higher vacancy rate (8.4%), while other parts of the region had lower vacancy rates (average 4.3%), reflecting some declines in office demand by the tech sector in Vancouver and growth in demand by other sectors in the suburban markets. The building vacancy rate as well as space utilization rates have been greatly impacted by the pandemic, work-from-home trends, and tech employment levels.

Office rental rates are highest in downtown Vancouver, with an average asking rent rate of about $40 per sq ft, and over $50 for Class AAA space. Rent rates in other markets are considerably lower, in the range of $20-30 per sq ft. Typically, building operations, maintenance, and property taxes represent an extra 50-60% of accommodation costs for tenants in addition to net rents.

As for the class of office buildings (a function of the quality and location of the accommodations) in the region, approximately 78% are Class A and B (average quality). Only 8% of buildings are Class AAA (top quality), 15 of 22 of which are located in downtown Vancouver.[9] Rents for different classes and locations of office space vary accordingly. See Table 2.2 for a summary of the region's office inventory by building class.

[9] Colliers, Vancouver Office Market Report, 2022 Q4.

Table 2.2: Metro Vancouver Office Market Inventory by Building Class (2022 Q4)

Geography	Class	# of Buildings	Space Sq Ft	Avg Building Size	Total # Building / Sq Ft
Vancouver	AAA	15	4,609,156	307,277	
	A	118	16,811,728	142,472	
	B	188	17,600,027	93,617	**468**
	C	147	7,220,909	49,122	**46,241,820**
Burnaby	AAA	0			
	A	57	7,385,118	129,563	
	B	53	3,524,313	66,496	**124**
	C	14	543,581	38,827	**11,453,012**
Tri-Cities	AAA	0			
	A	6	362,184	60,364	
	B	3	121,024	40,341	**13**
	C	4	196,861	49,215	**680,069**
Langley	AAA	-			
	A	19	1,204,632	63,402	
	B	16	712,565	44,535	**40**
	C	5	181,188	36,238	**2,098,385**
New West	AAA	0			
	A	9	954,408	106,045	
	B	13	795,659	61,205	**34**
	C	12	477,098	39,758	**2,227,165**
North Van	AAA	0			
	A	27	1,304,636	48,320	
	B	25	1,252,063	50,083	**60**
	C	8	212,857	26,607	**2,769,556**
Richmond	AAA	0			
	A	28	2,312,327	82,583	
	B	28	1,564,500	55,875	**65**
	C	9	444,451	49,383	**4,321,278**
Surrey	AAA	7	1,698,980	242,711	
	A	32	2,072,913	64,779	
	B	38	1,713,903	45,103	**99**
	C	22	1,057,549	48,070	**6,543,345**
Regional Total	**AAA**	**22**	**6,308,136**	**286,733**	**8.3%**
	A	**296**	**32,407,946**	**109,486**	**42.5%**
	B	**364**	**27,284,054**	**74,956**	**35.7%**
	C	**221**	**10,334,494**	**46,762**	**13.5%**
	Total	**903**	**76,334,630**	**84,534**	**100.0%**

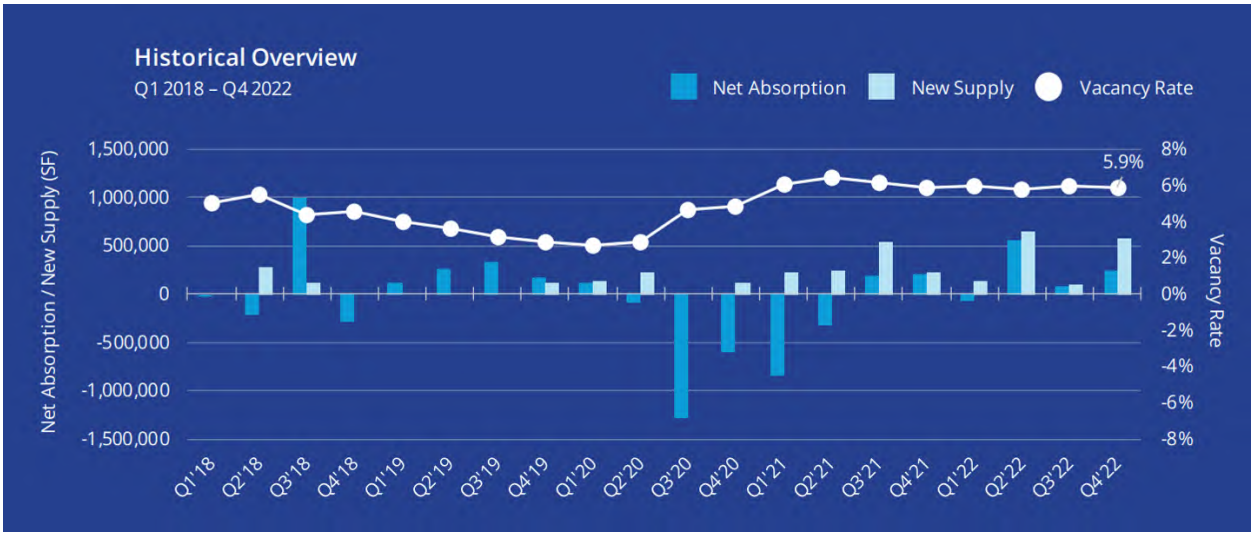
Source: Colliers, Market Report Metro Vancouver, 2022 Q4.

Office vacancy rates in Metro Vancouver declined over the 2015 to 2019 period due to market demand growth and spurred new building supply, however vacancy rates increased starting in 2020 due in part to the pandemic, as seen in Chart 2.1. In 2020 and 2021 there was significant negative absorption levels.

As the downtown market vacancy rate continues to increase and more sub-lease space comes to market, rents are not expected to rise, and this provides additional choices for tenants who may want to move or expand in the downtown Vancouver core. Meanwhile, the vacancy rates

in other sub-markets, which are much smaller, are declining, providing relatively few options for tenants seeking space in those locations.

Chart 2.1: Metro Vancouver Office Market Absorption and Vacancy Rates (2018 - 2022)



Source: Colliers, Market Report Metro Vancouver, 2022 Q4.

Prior to the COVID-19 pandemic, the healthy demand for office space throughout Metro Vancouver has highlighted shortfalls of new supply in multiple markets.[10] While the development pipeline in Metro Vancouver had typically maintained steady new supply, a gap in product delivery and availability formed in key markets such as downtown Vancouver, Burnaby, Richmond and, to a lesser extent, Surrey and Vancouver-Broadway.[11]

However, with the impacts of COVID-19, conditions have changed. More recently[12]:

> *"… the office sector in Metro Vancouver is facing significant headwinds due to a combination of pandemic-related remote work trends, coupled with deteriorating equity markets and expectations of an impending recession. Rising occupancy rates in office buildings, along with an increase in sublease space on the market, have created conditions not seen in many years."*

Despite the attention surrounding the tech sector, which has had a major influence on demand levels and vacancy rate, it is expected that the overall evolution of the Metro Vancouver market will continue to grow at a steady pace, although there are unknowns associated with the extent of remote work levels into the future.

[10] Avison Young, Metro Vancouver Office Market Report, Mid-Year 2018.
[11] NAIOP Vancouver, Office Cost of Business Survey, 2018.
[12] NAIOP Vancouver, Office Cost of Business Survey, 2022.

3.0 SUB-REGIONAL PROFILES

Within the Metro Vancouver region, each of the office sub-markets have different characteristics.

3.1. Locational Distribution

Relatively few office tenants move between geographic markets or asset classes. Those that want to be in downtown Vancouver are already there and not likely to move, for example.

Most employee-focused businesses want to offer their workforce an office with good accessibility, close to amenities, and at a central location. Along with amenities on-site or in the immediate area, successful office nodes need to have good transit service, in the form of a SkyTrain according to most interviewees – ideally within the regional transit network, and not 'at the end of a line'. In terms of geographic location, that usually means downtown Vancouver, and also parts of Burnaby and Surrey City Centre.

For sub-markets, such as Coquitlam and Surrey, over time as the population and economy of these areas grow, local office businesses will also grow. This includes both local population-serving businesses (such as medical / dental offices), as well as some new branch offices.

Even pre-pandemic there were some trends towards sub-regional branch offices for firms like banking and financial services, namely to Surrey and Langley, serving those areas. Those tenants are tracking the business opportunities in those markets associated with a growing economy and workforce.

Although much discussed, many interviewees do not expect significant growth in the form of major sub-regional or distributed corporate offices. The view is that if people can effectively work from home, why go to a local office to work there, with extra rent costs, that executives / leadership are not likely to often visit. The supposed hub-and-spoke or satellite model may not be widespread. According to some observers, rather than sub-regional corporate offices, they are seeing ones expanding into regions outside of Metro Vancouver, like Kelowna, Nanaimo, and Victoria, where employees have moved to during the pandemic.

As the office inventory increases in an area / sub-region and the market is proven, market participants and municipal staff believe that developers will become more confident to build additional office space in these locations. As a start, mixed-use buildings allow for some office as well as retail and residential – the residential part makes the office part financially viable. This office space serves the local population in the form of small to medium size business tenants. Over time, development may shift from mixed-use buildings to standalone office buildings. Success may require a minimum amount of office space in order to eventually create a critical mass for a commercial centre. An adequately sized ecosystem of economic activity is important to business and talent attraction.

Some businesses may realize that not only is their workforce now 'elsewhere', but their customers are also no longer primarily in downtown. In those unique cases, to be closer to

employees and clients, and to reduce rent costs, they may come to prefer a regionally accessible location like Burnaby. In other unique cases, some local businesses grow and stay within their original community, close to features such as major destinations (YVR airport), natural features (Arcteryx active lifestyle clothing), or cultural like Richmond.

In terms of business headquarters, of the relatively few major headquarters in the region, most are in downtown Vancouver. Virtually all tech companies are in the Vancouver core (including Mt. Pleasant), in order to attract and retain talented employees. As of late 2022, the downtown Vancouver market was experiencing a rising vacancy rate, up significantly from extreme lows immediately before the pandemic. This increase in vacancy rate reflects both new office building supply and some curtailing of demand by some sectors. The new supply and associated tenant moves may lead to greater vacancies in some older buildings.

Existing suburban business parks in some cases are doing relatively well during the pandemic. Some of these business tenants desire suburban office space, as it is convenient by car, especially while there were concerns about physical distancing and contracting COVID-19 on public transit. Suburban buildings can include office space with quasi-industrial attributes, needed by some operators. Notably, the tenant profile of the suburbs is different than the urban core.

3.2. Profile of Specific Sub-Regions / Urban Centres

This section provides commentary on the sub-markets and urban centres in the region.

Vancouver

- Vancouver has long been the region's major historic business hub. Vancouver, and specifically the Central Business District in downtown and the surrounding 'core' (including the CBD, Yaletown, Gastown, Mt. Pleasant, and the Broadway Corridor), is the business centre for the region and the province, with over half of the region's office inventory. The Metro Core has a much higher percentage of jobs in professional and commercial services, in comparison to the rest of the region. This distribution illustrates how very different the Metro Core is from the other sub-markets in the region.
- Most people generally want to be where the action is, which usually means 'downtown'. Particularly, the tech sector needs ready access to talent, most of whom work or want to work in or around downtown Vancouver. Thus, the bulk of new office space is being built in this part of the region.
- The Broadway corridor will also grow the area's office market, as a location where many businesses are or want to be, and close to workforce as well as amenities. The Vancouver Broadway Plan will have a significant amount of office space and employment associated with the extension of the SkyTrain line. Broadway ('Mid Town') is central and a major office draw, second only to Vancouver downtown / CBD. Some interviewees see Broadway as an alternative to downtown corporate towers, yet also different than Mt. Pleasant's light industrial character.

- In Mt. Pleasant some businesses want to expand in place but cannot find space in the area – instead, they open a second (possibly more of an industrial type function) facility in another location, and maintain a front facing space in Mt. Pleasant.
- Outside of downtown but still within the City of Vancouver, there is Broadway Tech to the east. The campus meets the needs of tenants that want to be accessible to downtown Vancouver and the region; it has both good rapid transit service and is accessible to Highway 1. Broadway Tech is also attractive to tenants that need larger floorplates.

Burnaby

- Burnaby is the next largest office market in the region, with a considerable amount of office space located in the Metrotown area, which includes a cluster of office towers around the Metrotown shopping centre. Metrotown is viewed as a good office location due to its centrality in the region and its high level of transit service.
- Brentwood is seen as a desirable area due to its good transit and road access, with many major developments, both residential and commercial.
- Burnaby also includes a significant amount of office park development located in various parts of the city outside of Burnaby's four Urban Centres (i.e. Metrotown, Brentwood, Lougheed, and Edmonds), such as Canada Way and Willingdon Avenue.
- More office park development located far from SkyTrain stations is not predicted in Burnaby, because office tenants want the amenities and transit service found in Urban Centre and at SkyTrain locations.
- Most demand is from existing expanding businesses. Metrotown and Brentwood are seen as being the major office nodes for Burnaby. More office is coming along in phased projects by SkyTrain stations (both mixed-use and multi-use buildings).
- Yet some interviewees believe that Burnaby does not have the mass or draw of Vancouver's CBD.

New Westminster

- New Westminster has a concentration of office space at the Sapperton SkyTrain station ('The Brewery District') and in the downtown (including the Anvil Centre Office Tower). Although New Westminster's downtown has historically been a centre for office uses, there is also a supply of office space in the 'Uptown' neighbourhood, which offers space for both local and some regional serving tenants.
- Generally, downtown New Westminster offers different types of office development potential (or upgrade of historic buildings) compared to other locations (i.e. Braid, Sapperton) which can offer large sites that can accommodate comprehensive development plans.

Surrey

- Surrey has a variety of office building types distributed throughout the city. The Surrey City Centre area contains an increasing number of modern office buildings, with the relocation of the City Hall and establishment of the Simon Fraser University Surrey Campus to this area spurring additional development interest. Surrey Centre is expected to strengthen as a good

location for office in the future, however, it will take some time to fully develop and mature.

- Developers and brokers felt that the Surrey City Centre office market will grow over time. The City of Surrey has long-term strategies for the area to build it out over the coming decades, and sees Surrey City Centre is a step above other city centres in the region, such as Coquitlam, Metrotown, and Richmond, and is a 'game changer' in terms of long-term growth potential.
- The extension of SkyTrain from Surrey east to Langley improves the relative location of the Surrey City Centre, putting it closer to the centre rather than the end of the SkyTrain network.
- The current supply of available office space in the city is small, providing limited immediate options to interested tenants. Growth is expected to come from engineering, law, and accounting firms, and perhaps some government agencies. A positive feature for this market is that the City of Surrey is perceived as being proactive and supportive of the Surrey City Centre, with a lot of land available for development.
- There are expanding businesses in Surrey looking for office space, increasingly in the Surrey City Centre. The decline in office vacancy rates in Surrey over the past years reflects the business activity going there.
- 'If you built it they will come', has been true so far for much of the office space built in Surrey. The question is if it will be true for more and larger office buildings. There are some concerns that if too many new office buildings come to market at once, it could create more supply than can be readily absorbed.

Richmond

- Richmond has a large proportion of its office stock located outside of its downtown centre running along No 3 Road. This suburban office stock includes Crestwood office park and other areas to the east of the Richmond Centre. Many of these office parks were built in the 1990s, and in the past decade experienced high vacancy rates because of difficulties in attracting office tenants to areas with few amenities and limited transit.
- Richmond is considered a 'gateway to the region' by some participants, given its proximity to the YVR airport, and has some good tenants located in its office parks. However, for employees who live in the eastern parts of the region such as Coquitlam, Surrey and Langley, Richmond is difficult to conveniently access by both car and transit.
- Noted considerations to locating in downtown Richmond (namely the No 3 Road corridor) include few accommodation options for office tenants, although that will increase, and some office space coming in mixed-use projects, although some as strata tenure.
- There has not been much new office development for many years in Richmond. The past high vacancy was naturally absorbed leading up to the pandemic. Suburban complexes like Crestwood and Airport Executive Park now have much lower vacancy rates than in the past. Along No 3 Road in the City Centre, there is increased interest in office development.

North Shore

- The North Shore is a very small office market, with a fragmented supply located in many different buildings, some of which are smaller and older. It has few major office tenants other than some government agencies (such as ICBC, which has announced it is planning to relocate).
- There is limited demand for office space in the North Shore, as major office businesses tend to locate in other cities that are more accessible to the regional workforce. Highway traffic congestion to / from the North Shore from the rest of the region is a notable constraint to attracting employees to this sub-region.
- The City of North Vancouver, and especially Lonsdale Regional City Centre with its enhanced urban amenities, is located very close to Vancouver's CBD via the SeaBus, which improves its accessibility.

Coquitlam

- Even with the completion of the Evergreen Rapid Transit Line in 2016, some market participants view Coquitlam as being located on the edge of the region. It is expected that it will take time before significant standalone office developments occur, which will be supported by the ongoing growth in population and employment in the area.
- Coquitlam is a relatively young city centre, only 30-40 years old. It was originally built as a shopping mall, and then added apartment residential. The limited office that exists is predominantly local serving. As the community grows and matures, the city hopes to attract more business activities and office tenants.
- The Coquitlam Centre has strong transportation / transit combination – SkyTrain, bus exchange, West Coast Express, along with micro mobility and park amenities.
- As the population of the sub-region increases, business and employment space opportunities will also increase. The City has policies requiring office component on some of the city centre lands, but no policies preventing strata office tenure.

Rest of the Region

- Other areas, such as Port Moody, Langley, Delta, Maple Ridge, and Pitt Meadows, have very small office markets with few major office buildings.
- The Langley market, while still small, is experiencing strong demand. Businesses there looking for space have very few options. Supply may increase over time, particularly for Langley with the extension of the SkyTrain line to be completed by 2028.
- Most of the office tenants serve the local population, which will grow as the area population and economy grows. Other opportunities may entail attracting some government and institutional offices.

3.3. Additional Considerations

In the secondary markets, the possibility to attract a government agency as a major new tenant with many employees is seen as a possible catalyst for greater activity. Institutional / public sector tenants, like hospitals and universities, are major drivers for associated private sector office demand and investment. The directing of these types of investments to Urban Centres is supportive of policies in the regional growth strategy.

Pre-leasing is difficult in suburban markets. Prospective tenants want to see the building completed (or at least construction started) before making a lease commitment decision. Yet many of these suburban locations have very limited office supply. Demand is now spurring some development. But the 'chicken and egg' conundrum has been often noted, of there not being adequate (proven) demand to build new space, yet not enough new space to satisfy (current) demand.

Some cities require developers to build office space within a mixed-use complex, even if the office market demand is not yet there. If this is a small amounts of office, it can be reasonably absorbed by the local market; but larger blocks of space are much more difficult, and represent an increased development risk. Furthermore, excessive new office space may saturate a small market, depressing rental prices, making it difficult for other market office space to compete.

For some projects, the office space in mixed-use buildings can be poorly designed, with too many columns, inefficient floorplans, awkward access, etc., which does not allow for functional design including open areas and collaboration space.

Shuttle bus service is a benefit for existing suburban business parks that are beyond walking distance from a SkyTrain station. However, it was noted that with more flexibility for working times, it also means people coming into the office at different hours, which may favour car instead of transit commute and thus needed parking.

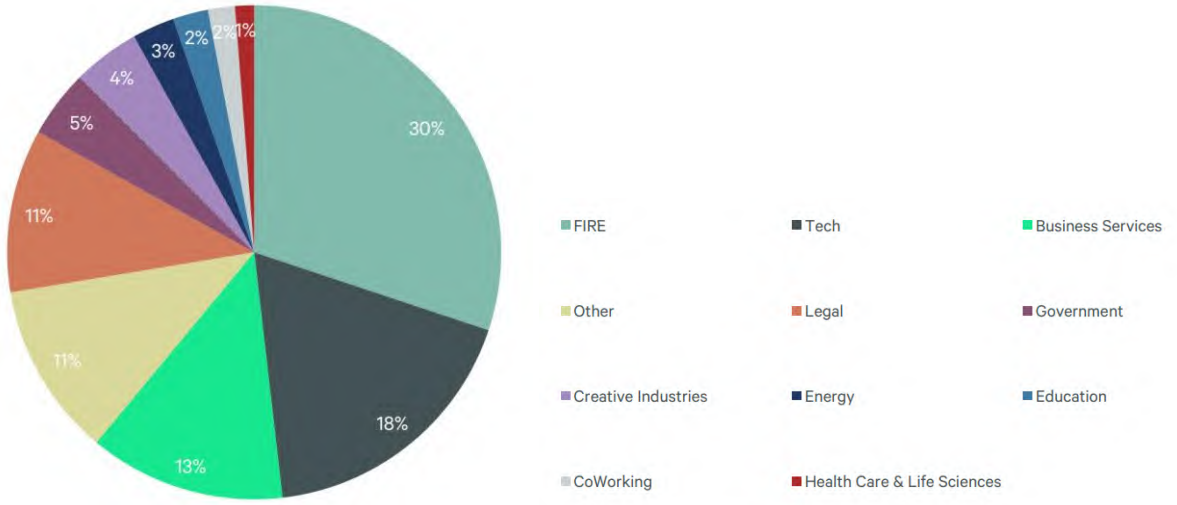
4.0 OFFICE TENANT TYPES

The type of tenants requiring accommodations influences the demand for office space.

4.1. Tenant Profile

Chart 4.1 illustrates the distribution of office tenant composition in downtown Vancouver as of late 2022. This shows that 30% was FIRE (Finance, Insurance, Real Estate) sector, 18% Tech, and 13% Business Services, followed by other smaller groups.[13] This changes over time and would be different in other sub-areas given the varied economic profiles of different parts of the region.

Chart 4.1: Vancouver Downtown Tenant Make Up



Source: CBRE Research, 2022.

This ratio of tenant types is notably different than it was four years prior. In Q2 2018, technology tenants accounted for 33.5% of office space demand, followed by Education at 12.7%, and Professional Services at 8.9%.[14]

Tech Business Sectors

In the past, building landlords often did not prefer tech tenants, as they were prone to quickly grow or fail, either way likely vacating the space – not ideal stable, long-term occupants. Now, many tech tenants are large, growing, and mature, and thus attractive for landlords.

The 'tech centre' of Vancouver has shifted from Yaletown to Gastown to Mt. Pleasant, and now the Broadway Corridor with the extension of SkyTrain rapid transit line. Notably, the boundaries of 'downtown Vancouver' have expanded from the historic core (CBD), to include these areas and the POST complex on the eastern edge of the core. Additionally, growth of bio-tech / life sciences / medical facilities close to the new St Paul Hospital campus and Great Northern Way will include significant new office / lab space and education facilities. The Mt.

[13] CBRE Office Market Overview extraction Oct 2022 for Metro Vancouver.
[14] Colliers, Metro Vancouver Office Market Report, Q2 2018.

Pleasant area is very popular with notable newer buildings containing light industrial, technology, labs, and innovative spaces.

Tech tenants often pay a premium for prime office space, which is a key component to attracting workers, and noting that office accommodations are a relatively small percentage of total business costs.

The tech sector slowed in 2022, led by stock market declines, with a lag to business operations thereafter, causing more caution and defense about business and employment decisions. Some tech businesses are now looking at employee layoffs and space savings efforts to reduce costs. This may mean putting office space on the sub-lease market and consolidating operations for efficiencies. In cases of office moves, even if the rent per sq ft is higher in the new space, less space may be required as it can be used more efficiently, thus the total accommodation costs may be lower.

The longer-term outlook for tech sector businesses and tenants is seen as positive, despite cyclical dips in hiring. Amazon and Microsoft are very large corporations and with major operations in Vancouver. They provide stability to the city and regional economy, whereas some smaller start-up businesses that are dependent on venture capital funding may be less stable or durable.

These tenant trends are reiterated through the results of the interviews:

- The large tech tenants that have entered the market in the past few years represent a significant shift in the dynamics of the downtown Vancouver office market. While Vancouver has relatively few major corporate headquarters, these new tech companies have been taking up large blocks of space, often preferring large floorplates for efficiencies and a new building for modern features, and need a central Vancouver location to attract and retain young urban talent.
- Large corporate and global professional services firms often want to be located in trophy buildings, however this is less a factor for tech tenants, who may prefer the feel of Mt. Pleasant.
- At the same time, but not receiving the same amount of profile, are the many small office tenants in the market, taking up 3,000-8,000 sq ft of space each.
- Large tech companies are increasingly comfortable with locating in Vancouver, given that it is a known location, an international city, west coast time zone, has many amenities, and access to an international workforce. The presence of large tech companies (such as Amazon) are attracting more tech companies, both big and small. Talented workforce wants to live in the region, and although housing prices are high, some workers are satisfied with renting as they may not have expectations about home ownership or intent to live in the region permanently.

Average Office Tenant Size

Compared to other major North American markets, Metro Vancouver has relatively few large corporate head offices and is composed of many small and mid-size tenants. Specifically, for

downtown Vancouver, which contains much of the office businesses in the region (although the mix is different from the rest of the region), the average office tenant size was 7,750 sq ft in 2022, based on tenancy occupancies of approximately 21.3 million sq ft and 2,750 units.[15] This is up slightly from past years recorded as 7,200 sq ft in 2014 and 7,400 sq ft in 2012.

Of this inventory in late 2022, 59% of the office space was occupied by tenants under 20,000 sq ft in size (2,582 units), comprising 94% of all units. At the other end of the spectrum, tenants over 75,000 sq ft in size comprise only 1% of all units (25 units), yet represent 15% of the total office space. This documents the wide range of unit / tenant sizes, with a significant cluster of them being smaller, and a limited number of much larger outliners. This distribution is shown in Table 4.1.

Table 4.1: Distribution of Office Tenant Sizes in Downtown Vancouver (2022)

Unit Size Range	Total Sq Ft	# of Units	Avg Unit Size	% of Total Sq Ft	% of Total Units
0 - 1,999	956,799	719	1,331	4.5%	26.1%
2,000 - 4,999	3,249,963	1,011	3,215	15.2%	36.8%
5,000 - 9,999	3,298,151	477	6,914	15.5%	17.3%
10,000 - 19,999	5,070,538	375	13,521	23.8%	13.6%
20,000 - 29,999	1,408,617	59	23,875	6.6%	2.1%
30,000 - 49,999	1,872,274	50	37,445	8.8%	1.8%
50,000 - 74,999	2,208,677	35	63,105	10.4%	1.3%
75,000 - 99,999	580,072	7	82,867	2.7%	0.3%
100,000 - 199,999	1,924,210	15	128,281	9.0%	0.5%
200,000 +	743,125	3	247,708	3.5%	0.1%
Total	**21,312,426**	**2,751**	**7,747**	**100%**	**100%**

Source: CBRE Research, 2022.

Other Tenant Sectors

Although the tech sector may be slowing, other sectors such as professional services are still growing. During the pandemic, some businesses grew and increased their workforce while others have stayed constant and retracted, thus space needs vary for those reasons as well.

In some of those sectors, companies are leasing more space, especially the larger, confident, well-financed ones. By sector, lawyers and bankers have higher rates of return to office occupancy as compared to tech companies. For such sectors, despite or because of COVID-19, business is still good, and accommodation decisions are not driven by cost constraints.

With a possible slowdown in the economy and an increase in unemployment rates, more employees may want to work at the office to maintain and advance their careers. As noted by some employers, the past war for talent where employers had to offer many benefits to attract employees is now over. For some businesses, this may be associated with a corporate 'culture reset', where the new policy may spur some employees to leave, and the ones that remain will be supportive of increasing in-office requirements.

[15] Source: CBRE Research, 2022. Note that some businesses may occupy multiple office spaces in multiple buildings; for this analysis each space / unit is treated separately. Furthermore, this analysis does not include vacant space.)

4.2. Co-Working Space

The growth of co-working office space in the Metro Vancouver market was significant prior to the COVID-19 pandemic. This was particularly reflected in the rapid rise of WeWork, and the more established Regus with its multiple brands including 'Spaces'. Co-working firms rapidly become some of the largest tenant types in the Vancouver core. These companies were responsible for an inordinate amount of leasing activity between 2017 and 2019 and in part accelerated the demand for additional office development.[16]

Co-working is accommodating the evolving nature of work, and makes a very illiquid asset (real estate) liquid and flexible. Co-working operators offer a flexible space and service to a range of tenant types, including: i) small businesses that want a professional location and services and socialization offered in a workplace environment, and ii) much larger businesses that take up multiple floors at a time and may require the space for short-term needs, such as a swing site or a specific project.

Co-working offers tenants, or 'members', ready-to-go full-service office accommodations, taking care of all details such as furniture, wi-fi, space planning, support services, reception, etc., that would otherwise have to be organized and managed by the business. The co-working space eliminates the need for companies to invest in real estate, as professional space providers are quicker and nimbler than businesses that are not real estate experts. The tenant pays a premium for these services but with no required long-term commitment, the tenant also has the flexibility to grow, contract, or move as their business evolves.

4.3. Strata Office Tenure

In 2017 and 2018 there were a number of notable strata office projects, partly in response to the low vacancy and strong demand, as well as low interest rates. Purchasing office space can be an investment opportunity for owner-occupiers who are struggling to find and control space in a tight leasing market. The option to own rather than rent is particularly attractive for companies whose space requirements will remain stable for the foreseeable future.[17]

In terms of pricing and demand, one broker states that developers of future downtown Vancouver office strata buildings should not expect to capture the same prices as the high-profile Bosa Waterfront Centre project did in 2017; the unique project achieved high prices because everything lined up, in terms of the site, the project, and the demand.[18]

There are differing views about the implication and extent of strata office:

- Strata office space has not yet had a significant impact on the downtown Vancouver office market as almost all new construction continuing to target lease tenants, despite the early successes of the Bosa Waterfront Centre and Burrard Place.[19]

[16] Avison Young, Metro Vancouver Office Market Report, Mid-Year 2018.
[17] Colliers, Metro Vancouver Office Market Report, Q3 2018.
[18] Vancouver Sun - Evan Duggan, Waterfront Centre's strata units represent price pinnacle: analysts, December 12 2018.
[19] Avison Young, Metro Vancouver Office Market Report, Mid-Year 2018.

- This is a clear sign that the definition of an office investor in Metro Vancouver has shifted.[20]
- Most of the strata office that is being built and sold downtown would likely end up on the leasing market anyway.[21]

Most office space in the region continues to be lease tenure. For development projects, if no rezoning is required as part of the approvals, the city has no interest in the tenure of the space. However, in the case of the City of Vancouver if the project involves a rezoning, the Community Amenity Contribution may be higher if it is strata rather than lease tenure. This reflects the fact that strata values can be higher per sq ft than rental.

In the City of Richmond, there are concerns about strata tenure units built for investors rather than occupants, being underutilized or poorly managed. Furthermore, subdivision of space into small units makes it very difficult for a large tenant to ever occupy it. Richmond has a policy that strata units cannot be smaller than a building floor plate.

In terms of market forces, strata tenure may work in some limited places or in small markets where investors are active, or businesses want to own their accommodations. In some suburban markets (often as part of mixed-use buildings) there may be proportionally more strata office sales than the Vancouver core.

The stratification of commercial space, including office, retail, and industrial, is a relatively new phenomenon in the Metro Vancouver market. Some of the drivers for this trend include a desire for users to be able to own and control their space, which is also an interest of investors. However, there was a question by some interviewees about the depth of demand for this market. With the increase in interest and mortgage rates, it is expected that strata development and sales will diminish.

From a development perspective, high strata values can drive up residual land values to the point where non-strata (lease) development is no longer financially viable. Some critics note that the flexibility to change unit sizes as businesses expand and contract is greatly diminished by stratification as compared to lease tenure of the premise. Strata projects can be dominated by investors who may be less concerned about the management of the property. Furthermore, many businesses do not want to own their space due to the long-term commitment of capital, liability, building maintenance, and other issues.

[20] BOMA BC Leasing Guide: Commercial Real Estate Office Space - Frank O'Brien, Shape-Shifting Office Sector Defines Intelligent Design, 2018.
[21] Vancouver Sun - Evan Duggan, Waterfront Centre's strata units represent price pinnacle: analysts, December 12 2018.

5.0 OFFICE BUILDING INVENTORY

Metro Vancouver first compiled an office building inventory database for the region in 2012, which has been updated in 2015, 2018, and 2022, based on multiple sources, including proprietary databases from brokerage firms, BC Assessment Authority, and member municipalities. Records were consolidated as best as possible given the multiple data sources to provide a comprehensive inventory of the office buildings, although some data gaps, inconsistencies, and limitations may exist. In late 2022, the database was further updated and enhanced[22]. Note that this report and associated inventory statistics should replace previous reports, as the inventory has been further refined with every subsequent edition.

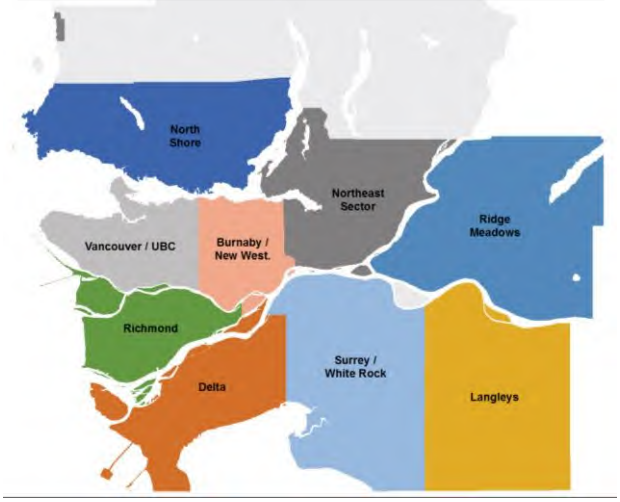
5.1. Background on the 2022 Office Inventory

The database includes all buildings in the Metro Vancouver region with at least 10,000 sq ft of office space. This includes some mixed-use buildings with office components over this size threshold. In total, the inventory is larger than the published brokerage firm reports because it includes some smaller buildings that are not included in market summaries, and also buildings from other sources that are not typically considered 'market' office (such as owner-occupied, government, and institutional buildings).

For analysis purposes, Urban Centre locations are those identified in the regional growth strategy; their boundaries are defined by the respective member municipalities. To provide for consistency, all numbers in this report have been generated using the most recent Urban Centre boundaries.

The Frequent Transit Network (FTN), maintained by TransLink, was used for establishing transit service levels as of late 2022. The FTN comprises bus and rapid transit corridors that provide reliable service at least every 15 minutes throughout the day and over the entire week. The FTN provides a network of transit routes around which municipalities can focus population and job growth. Transit service can be in the form of FTN bus or rapid transit stations (SkyTrain). The defined distance (straight line) for access to FTN is 800 metres (a 10-minute walk) for rapid transit and 400 metres (a 5-minute walk) for bus, which are considered acceptable walking distances / times to access these forms of transit.

Map 5.1: Inventory by Sub-Region



The FTN service changes over time; the earlier office building inventories analyzed transit service based on previous versions of the FTN. Thus, in some cases the changes in tabulated office space that is near FTN bus service may be

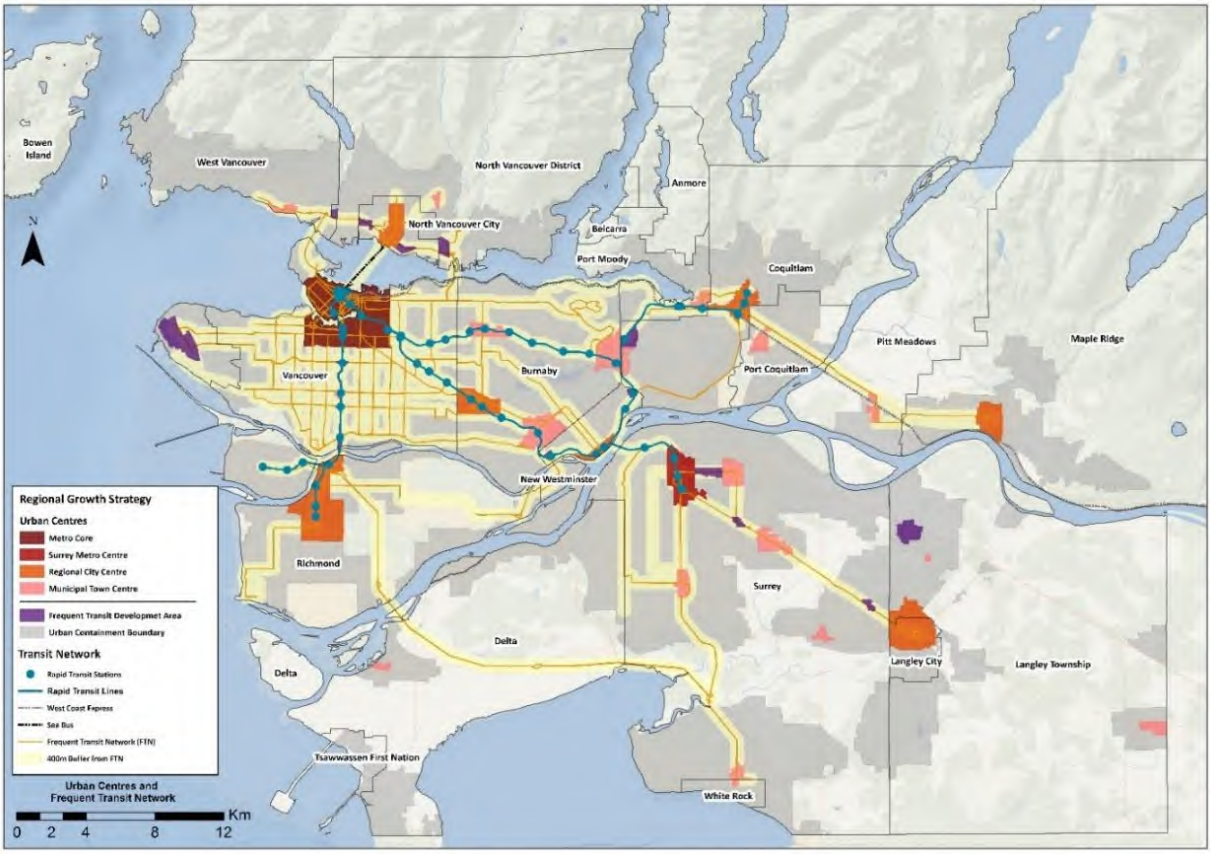
[22] Metro Vancouver would like to thank the following brokerage firms which contributed to the office building inventory update: Colliers International, CBRE, Cushman & Wakefield.

due to changes in transit service after the buildings were constructed. The amount of office space located near West Coast Express Stations, but not by rapid transit stations or within Urban Centres, was negligible and not analyzed for this report.

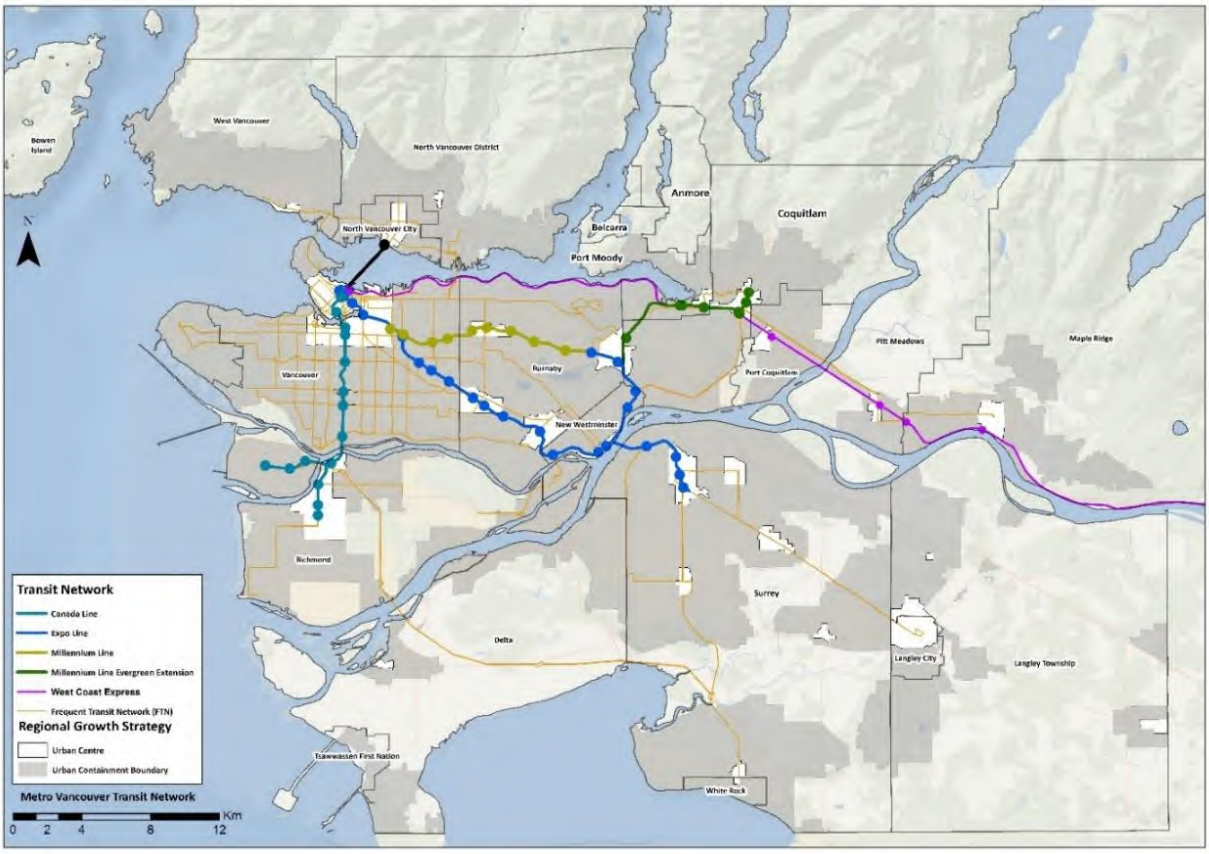
Based on the comprehensive inventory prepared by Metro Vancouver, at the end of 2022 there was approximately 78 million sq ft of office space in the region located within 1,338 buildings. The numbers in the report have been rounded for reporting purposes. (See Appendix F for supplemental tables.)

Map 5.1 shows the sub-regions, Map 5.2 shows the Urban Centres in the Metro Vancouver by type, and Map 5.3 shows the rapid transit (SkyTrain) network.

Map 5.2: Metro Vancouver Urban Centres and Frequent Transit Network

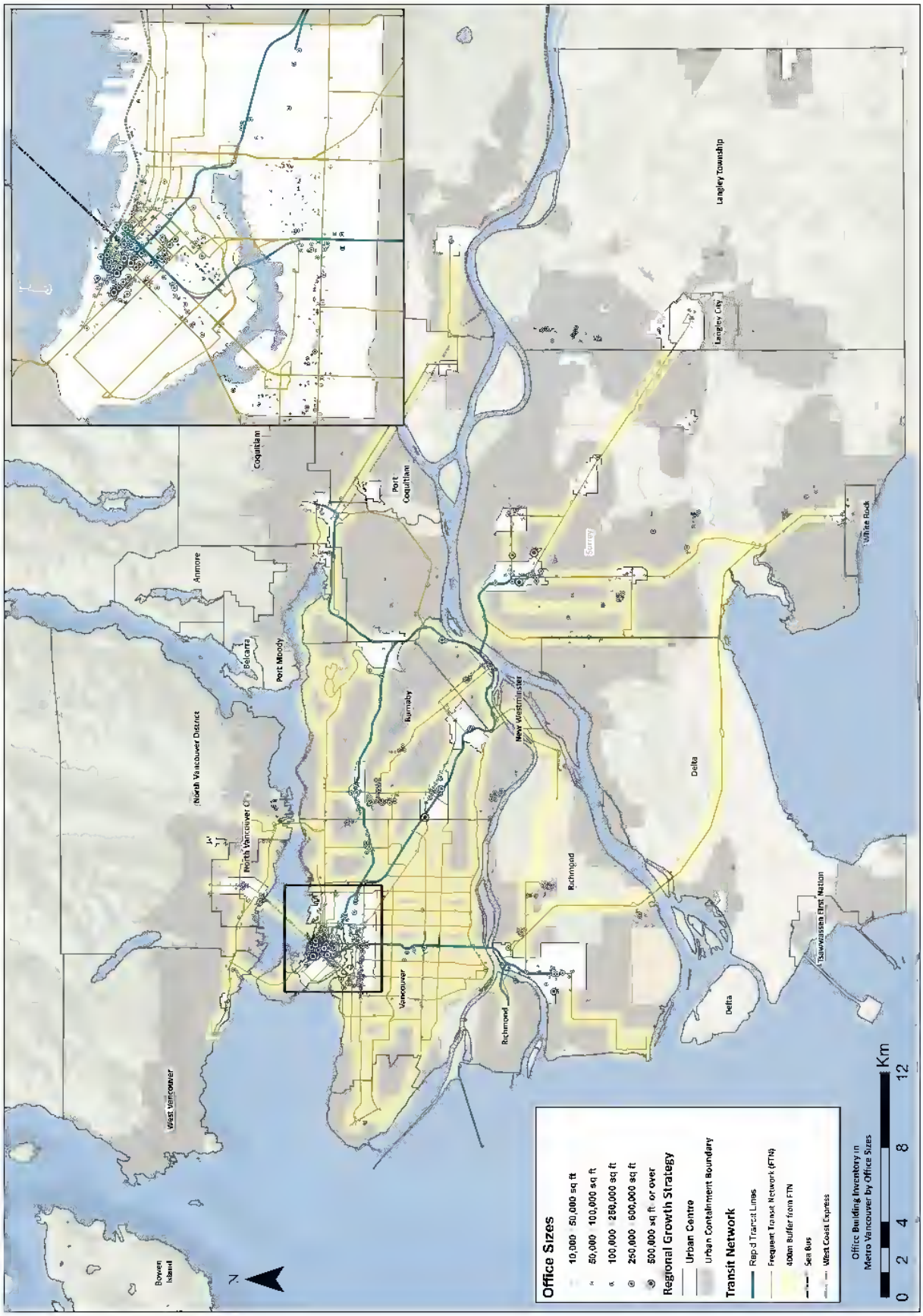


Map 5.3: Metro Vancouver Rapid Transit Network



Map 5.4 shows the distribution of office buildings throughout the Metro Vancouver region. The larger the symbol and the greater the number of symbols indicate large office building clusters. Larger buildings are concentrated in downtown Vancouver.

Map 5.4: Office Building Inventory in Metro Vancouver



5.2. Office Inventory by Sub-Region and Regional Land Use Designation

Table 5.1 shows the number of buildings and amount of office space within each sub-region, as well as the distribution within the region as of the end of 2022. Approximately half (47% of buildings and 55% of floor space) of the office inventory was located in Vancouver/UBC, with other notable sub-regions being Burnaby/New Westminster (at 16% and 17% respectively), Surrey/White Rock (14% and 12%), and Richmond (7% and 6%).

Table 5.1: Office Distribution by Sub-Region

Geography	Number of Buildings	*Distribution*	Floor Space Sq Ft	*Distribution*	Avg Building Size Sq Ft
Vancouver/UBC	624	*47%*	43,000,000	*55%*	68,900
Burnaby/New West	214	*16%*	13,500,000	*17%*	63,100
Surrey/White Rock	183	*14%*	9,200,000	*12%*	50,300
Richmond	96	*7%*	4,800,000	*6%*	50,000
North Shore	96	*7%*	3,300,000	*4%*	34,400
Langleys	66	*5%*	2,400,000	*3%*	36,400
Northeast Sector	42	*3%*	1,300,000	*2%*	31,000
Ridge/Meadows	7	*1%*	300,000	*0%*	42,900
Delta	10	*1%*	200,000	*0%*	20,000
Total	**1338**	***100%***	**78,000,000**	***100%***	**58,300**

The regional growth strategy establishes regional land use designations, including 'General Urban', 'Mixed Employment', and 'Industrial'. As shown in Table 5.2, slightly over three-quarters (77%) of the office space inventory was located on lands regionally designated 'General Urban', which are intended to accommodate a wide variety of land uses. Of the balance, 20% was located on 'Mixed Employment' lands which can accommodate various commercial uses. A relatively small amount (3%) of the office inventory was located on 'Industrial' lands, which are intended primarily for industrial related activities.

Table 5.2: Office Distribution by Regional Land Use Designation

Designation	Office Sq Ft	# Buildings
General Urban	59,830,000	994
Mixed Employment	15,500,000	252
Industrial	2,690,000	92
Total	**78,020,000**	**1,338**

5.3. Office Building Size

Table 5.3 show the distribution of buildings by office size. As can be seen, most office buildings (86%) are under 100,000 sq ft in size, and 11% in the 100,000 to 250,000 sq ft range. There are very few buildings (43 of 1,338) over 250,000 sq ft; 3% of buildings, representing 21% of the total floor space. Of the entire inventory, the average size is 58,000 sq ft and the median size is 31,000 sq ft.

Table 5.3: Distribution of Office Buildings by Size - Entire Inventory

Building Size	Count	%		Sq Ft	%	Avg Size
500,000+	7	1%		4,300,000	6%	615,000
250,000-499,999	36	3%		12,100,000	15%	337,000
100,000-249,999	146	11%		22,300,000	29%	152,000
50,000-99,999	258	19%		18,000,000	23%	70,000
10,000-49,999	891	67%		21,400,000	27%	24,000
Total	**1338**	**100%**		**78,100,000**	**100%**	**58,000**

Specifically over the more recent period of 2000-2022, 364 office buildings were completed with 26.5 million sq ft of office floor space as shown in Table 5.4. Approximately half (54%) of these buildings were under 50,000 sq ft, and another quarter (27%) were between 50,000 sq ft and 100,000 sq ft. However, smaller buildings under 50,000 sq ft represented only 20% of the total new office space. The 18 buildings over 250,000 sq ft are fewer (5% of the total) but are much larger, and thus comprise 26% of the total new office space for the 2000-2022 period. Of this inventory, the average size is 73,000 sq ft and the median size is 45,000 sq ft, both of which are higher than the older stock.

Table 5.4: Distribution of Office Buildings by Size - Built 2000-2022

Building Size	Count	%		Sq Ft	%	Avg Size
500,000+	4	1%		2,500,000	9%	624,000
250,000-499,999	14	4%		4,400,000	17%	315,000
100,000-249,999	54	15%		7,900,000	30%	147,000
50,000-99,999	97	27%		6,500,000	25%	67,000
10,000-49,999	195	54%		5,200,000	20%	27,000
Total	**364**	**100%**		**26,500,000**	**100%**	**73,000**

As can be seen in Chart 5.1, in terms of distribution since 1950, there was a pattern of larger buildings (over 250,000 sq ft) completed during the 1970s and 1980s, and then resuming again after 2010.

Chart 5.1: Building Year Built by Office Size (1950-2022)

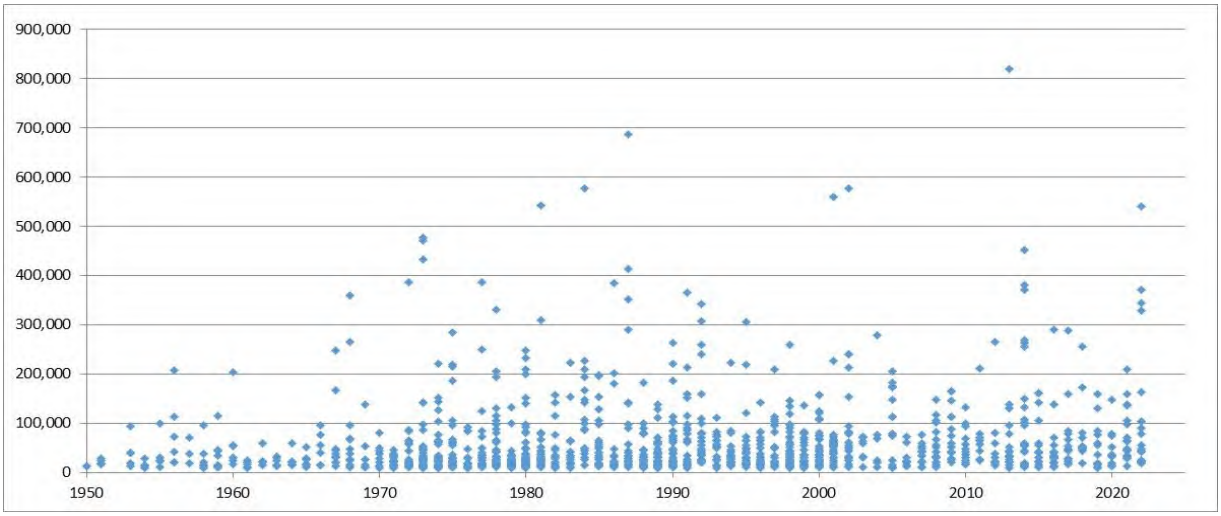
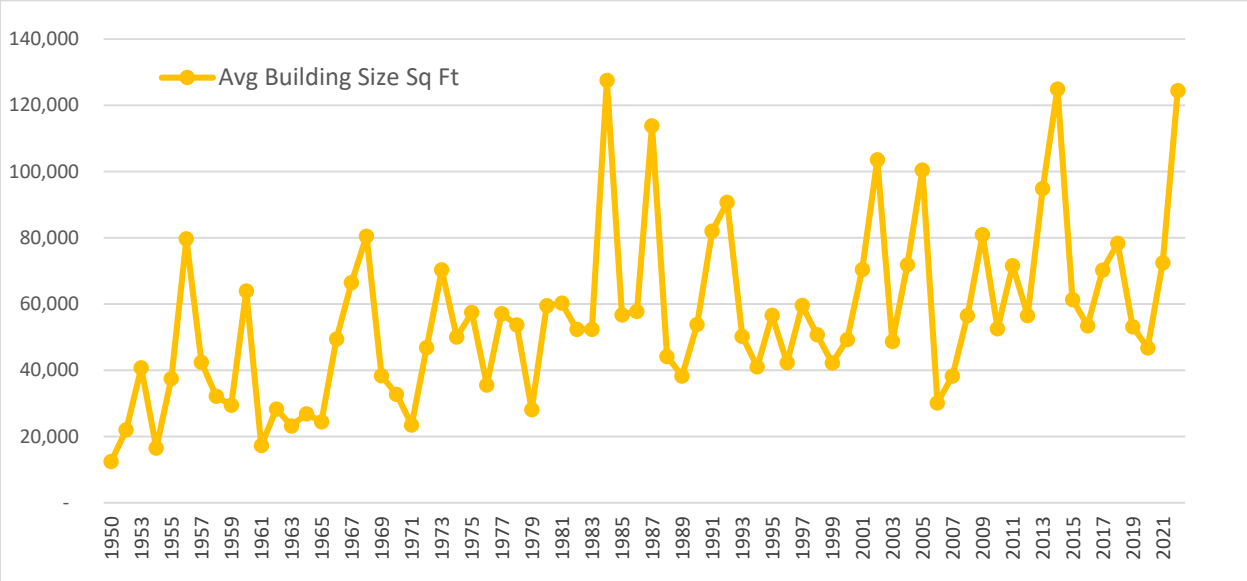


Chart 5.2 shows the average size of office buildings completed between 1950 and 2022. As can be seen, there is a gradual upward trend in the size of office buildings over recent decades, with some years being skewed by a few very large building completions.

Chart 5.2: Average Size of Office Building by Year Completed (1950-2022)



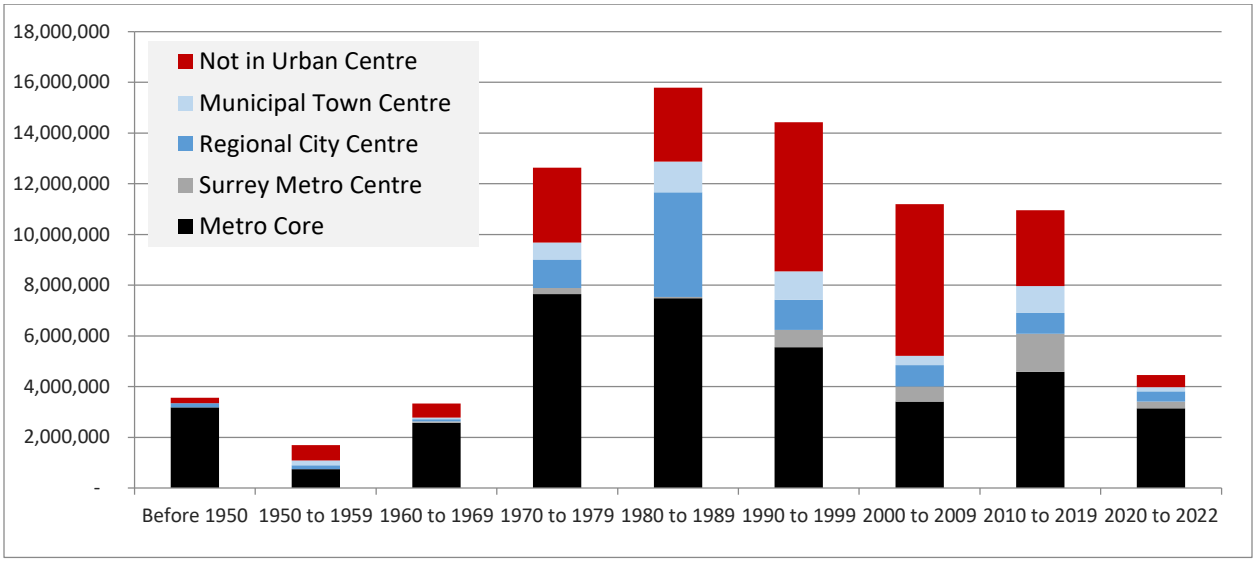
Generally, newer office buildings are becoming larger. Based on the entire inventory, for the buildings over 500,000 sq ft the average completion year was 1998, while for buildings under 50,000 sq ft the average completion year was 1981.

5.4. Office Building Inventory Year Built

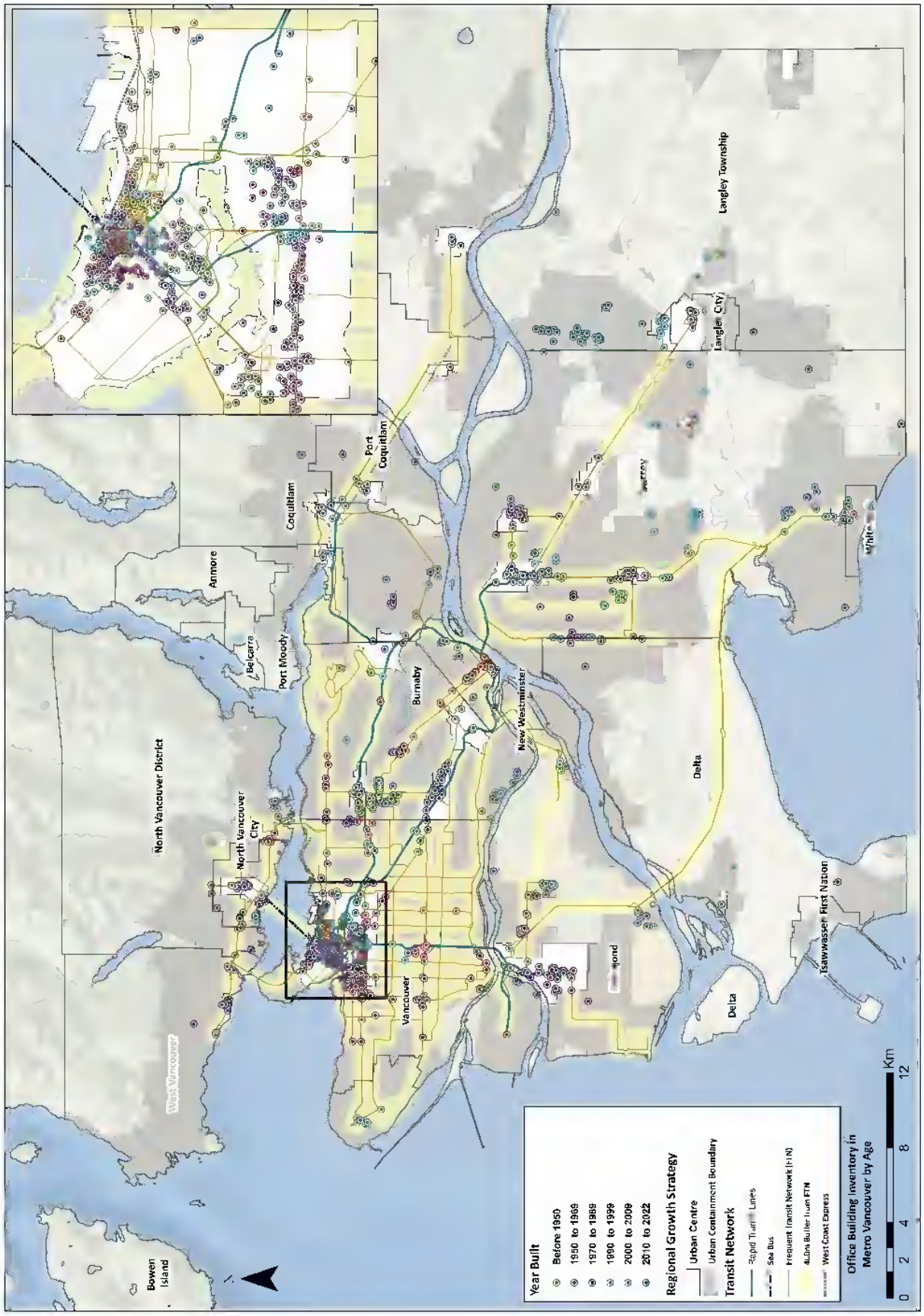
Based on the available records, the building year built (in the form of completions) was compiled. Note that in some cases older buildings have been substantially renovated; where building data is available for substantial renovations, the year renovated has replaced the initial year built. The completion of individual large projects can have a significant impact on the results during periods of relatively lower activity and in small markets. Map 5.5 shows the building inventory by year built.

As seen in Chart 5.3, a substantial portion of the current stock of office space was built in the decades between 1970 and 2019. Particularly, during the 1990 to 2009 period a large proportion of completed buildings were located outside of Urban Centres, whereas that ratio is much lower more recently.

Chart 5.3: Inventory by Period Built by Urban Centre Type



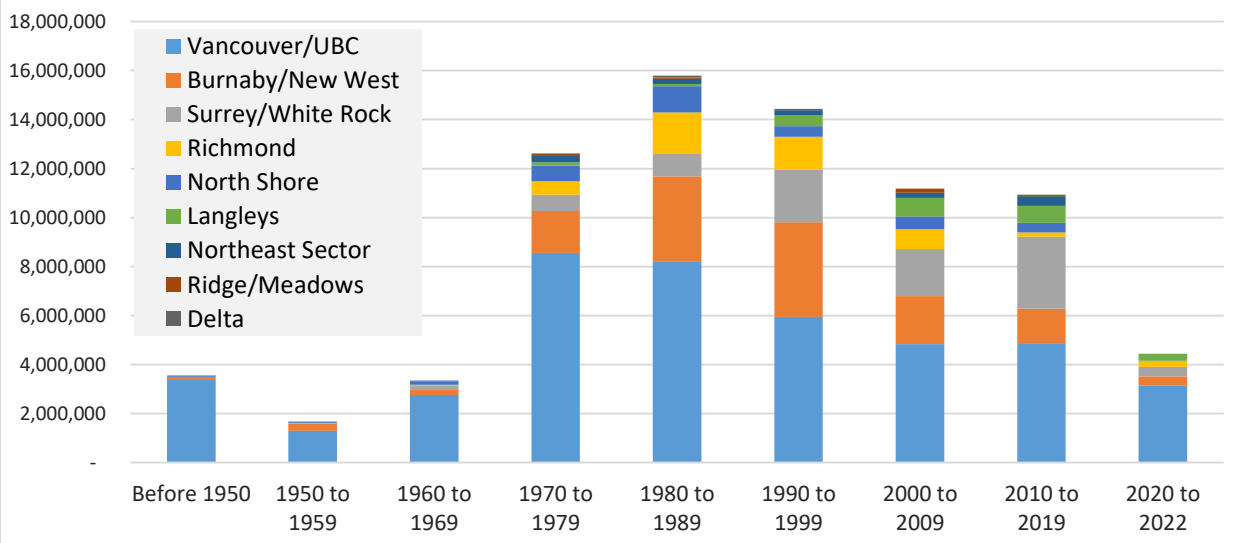
Map 5.5: Inventory by Building Year Built



5.5. Office Building Inventory Year Built by Location

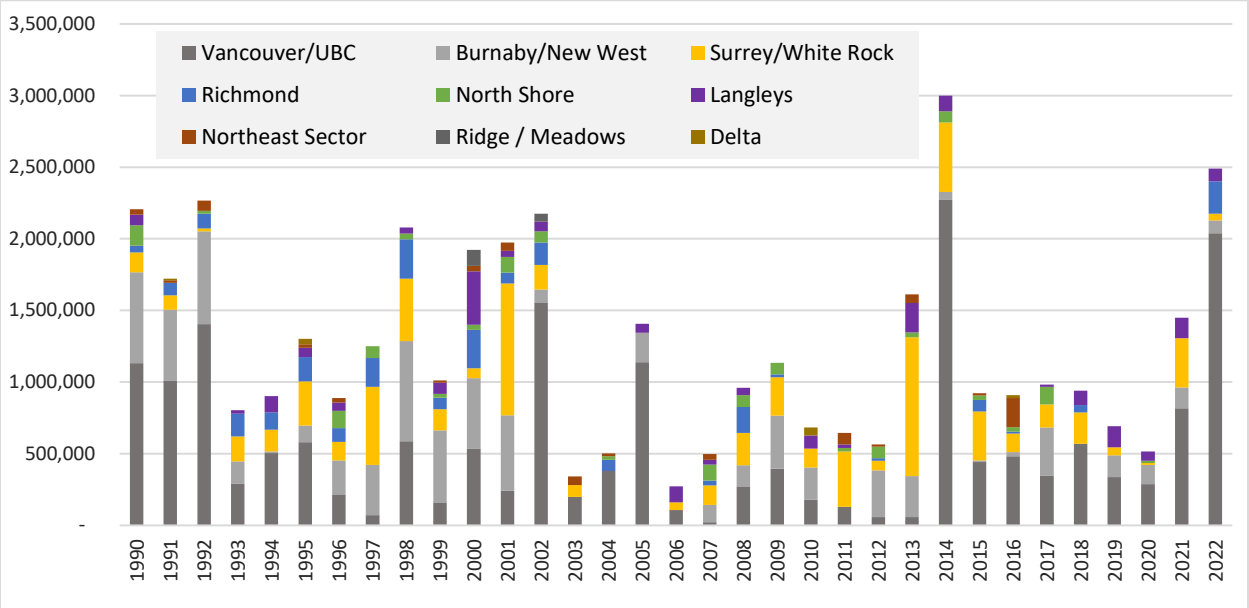
Chart 5.4 show the distribution of office space growth by sub-region and by period built. Much of the development was within the City of Vancouver, and to a lesser extent Burnaby / New Westminster during the 1980 to 2009 period. More recently, between 2010 and 2019 a greater proportion of development was in Surrey. There was a total of 41 million sq ft of office space developed during the 1990-2022 period, which provides for an average of approximately 1.7 million sq ft per year.

Chart 5.4: New Inventory by Sub-Region by Period Built



Completion rates vary considerably from year to year. Chart 5.5 shows the building year built distribution, with significant office development from 1990 to 2002, while during the 2003-2012 period, the completions were considerably lower. In years with higher levels of completion, a large proportion of that occurred in the City of Vancouver, mostly in the form of large new buildings in the downtown core.

Chart 5.5: New Inventory by Sub-Region (1990-2022)



5.6. Office Inventory Relative to Urban Centres and Transit Service

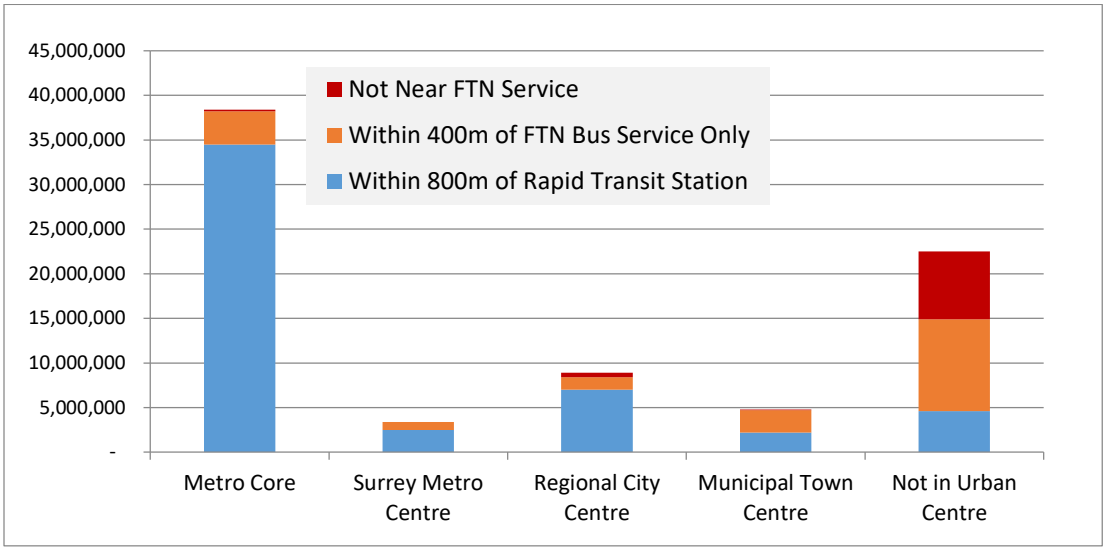
Table 5.5 shows the distribution of the office space relative to both Urban Centres and the FTN. Most office space is located within either an Urban Centre (71%) or within 400 metres of FTN bus / 800 metres of rapid transit service (88%), or within at least one of these geographies (90%). Most of the inventory in the Metro Core and the Regional City Centres (90% and 79%, respectively) is within 800 metres of rapid transit stations (SkyTrain), whereas 46% of the office space in Municipal Town Centres is near rapid transit.

Table 5.5: Inventory by Urban Centres and Transit Service

Centre Type / Transit Level	800m of Rapid Transit Station	400m of FTN Bus Service Only	Not Near FTN Service	Total Sq Ft	*% of Total*
Metro Core	34,473,000	3,693,000	160,000	**38,326,000**	*49%*
Surrey Metro Centre	2,515,000	877,000	-	**3,392,000**	*4%*
Regional City Centre	6,985,000	1,397,000	505,000	**8,887,000**	*11%*
Municipal Town	2,201,000	2,496,000	137,000	**4,834,000**	*6%*
Not in Urban Centre	4,630,000	10,340,000	7,613,000	**22,583,000**	*29%*
Total Sq Ft	**50,804,000**	**18,803,000**	**8,415,000**	**78,022,000**	*100%*
% of Total	*65%*	*24%*	*11%*	*100%*	

Chart 5.6 shows the inventory cross referenced by Urban Centre type and transit service level. Of the inventory not within Urban Centres (22.6 million sq ft), 20% was within 800 metres of rapid transit service and 46% was within 400 metres of FTN bus only. Approximately 7.6 million sq ft (10%) of the total 78 million sq ft inventory was neither in an Urban Centre nor near FTN transit (either bus or SkyTrain).

Chart 5.6: Inventory by Urban Centres and Transit Service

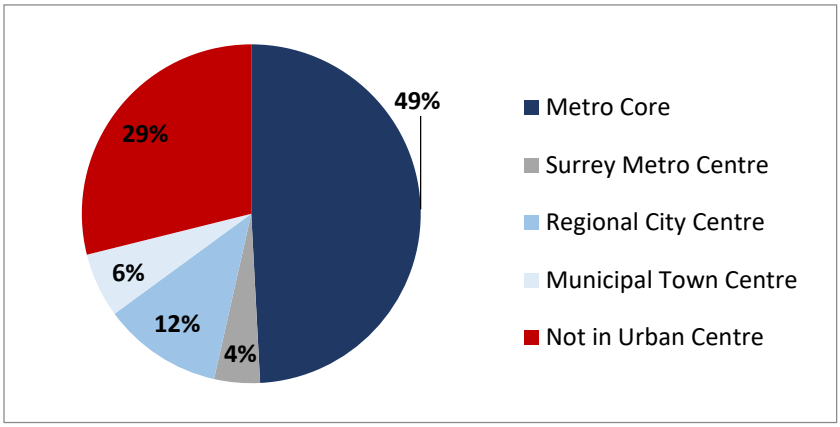


5.7. Office Inventory Relative to Urban Centres

Chart 5.7 shows the distribution of office space by sub-region relative to Urban Centre types. Of the total inventory in the region (78 million sq ft), 71% or 55 million sq ft was located within Urban Centres. The balance, 22.6 million sq ft, was not located in Urban Centres.

Specifically, of just the amount of office space within Urban Centres, 69% was located in the Metro Core (downtown Vancouver and the Broadway Corridor), 16% in Regional City Centres, 9% in Municipal Town Centres, and 6% in the Surrey Metro Centre.

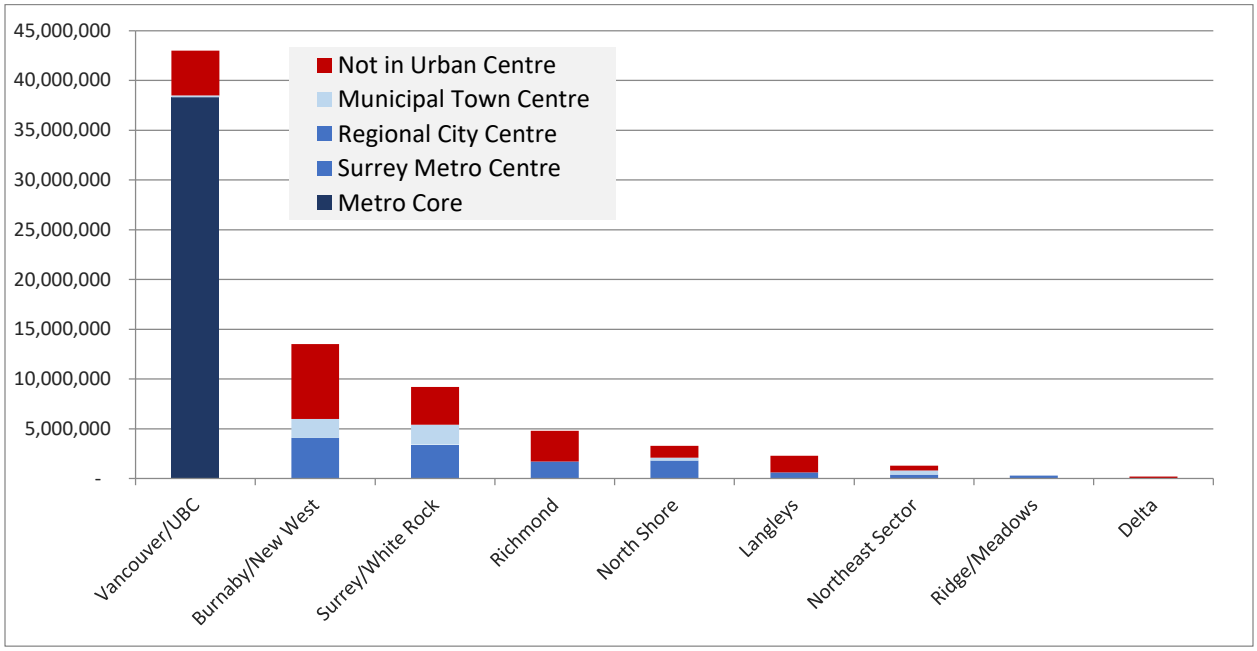
Chart 5.7: Inventory by Urban Centre Type



As shown on Chart 5.8, the 55 million sq ft of office space located in the 9 sub-regions and 26 Urban Centres was distributed as follows: Metro Core (downtown Vancouver and the Broadway Corridor) dominates with a total of 38 million sq ft or 69% of the total office space in Urban Centres in the region. The next largest Urban Centres (at less than one-tenth the size) are Metrotown City Centre and Surrey City Centre at approximately 3 million sq ft each, and Richmond City Centre at 2 million sq ft. The average size of the seven Regional City Centres was

1.3 million sq ft, while the seventeen Municipal Town Centres contain relatively limited amounts of office space (6% of the regional total), with an average of 280,000 sq ft of office space each.

Chart 5.8: Inventory by Sub-Region and by Urban Centre Type



Map 5.6 and Chart 5.9 show the inventory relative to Urban Centres. For Vancouver, the majority of space is within Urban Centres (i.e. Metro Core), whereas for Burnaby / New Westminster, North Shore, Richmond, and Surrey, a significant proportion of office space is not located in Urban Centres.

Map 5.6: Inventory by Urban Centre

5.8. Office Inventory Relative to Transit Service

Relative to the FTN, some 51 million sq ft (65%) of office space was located within 800 metres (10-minute walk) of a rapid transit station, and 18.8 million sq ft (24%) within 400 metres (5-minute walk) of FTN bus only. The balance, 8.4 million sq ft (11%) of office space, was located beyond the FTN service area.

Chart 5.9: Inventory by Transit Service

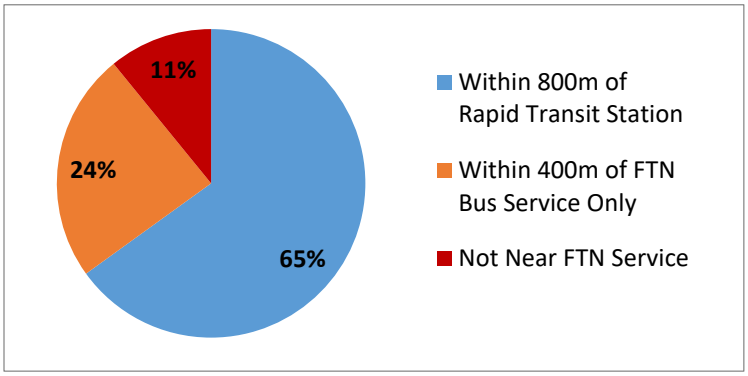
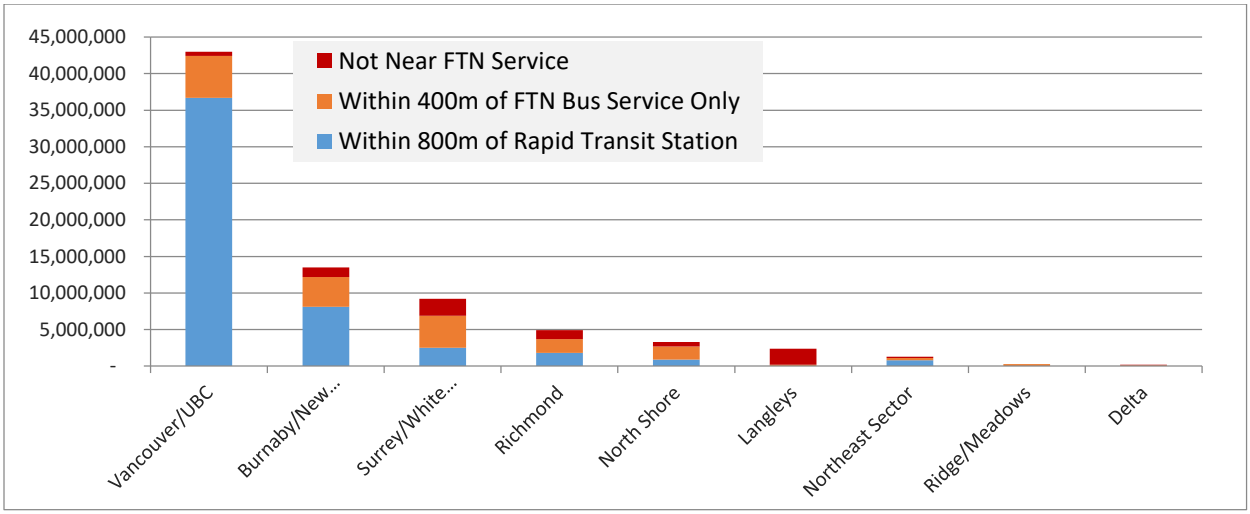


Chart 5.10 shows the distribution of office space by sub-region relative to transit service. Most of the office space in the City of Vancouver is near rapid transit (i.e. SkyTrain in the Metro Core), and the balance is served by FTN bus. For other sub-regions, the proportion of office space by rapid transit is lower, and the amount served by FTN bus is higher, as well as the amount of inventory not near FTN service.

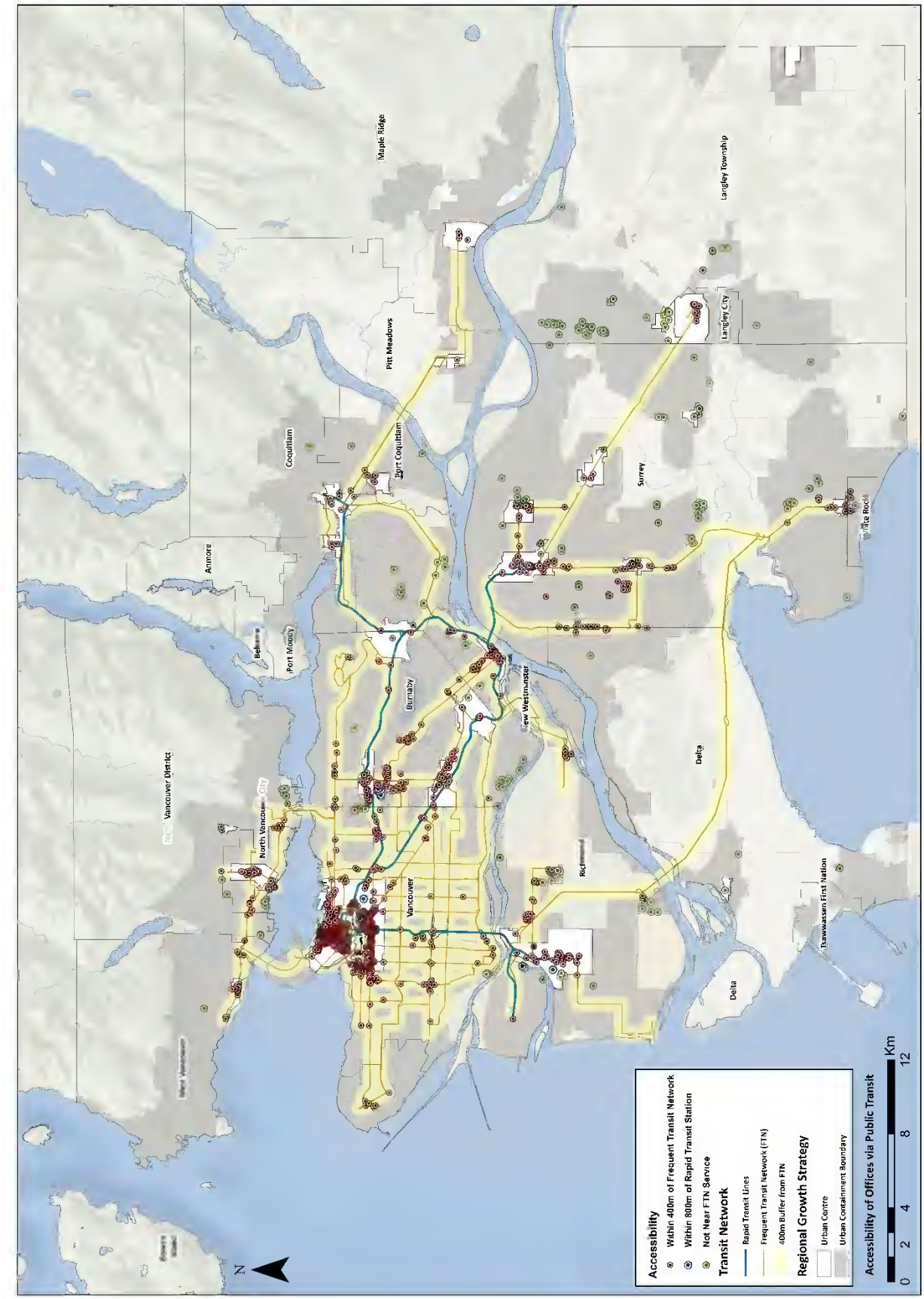
Chart 5.10: Inventory by Sub-Region and Transit Service



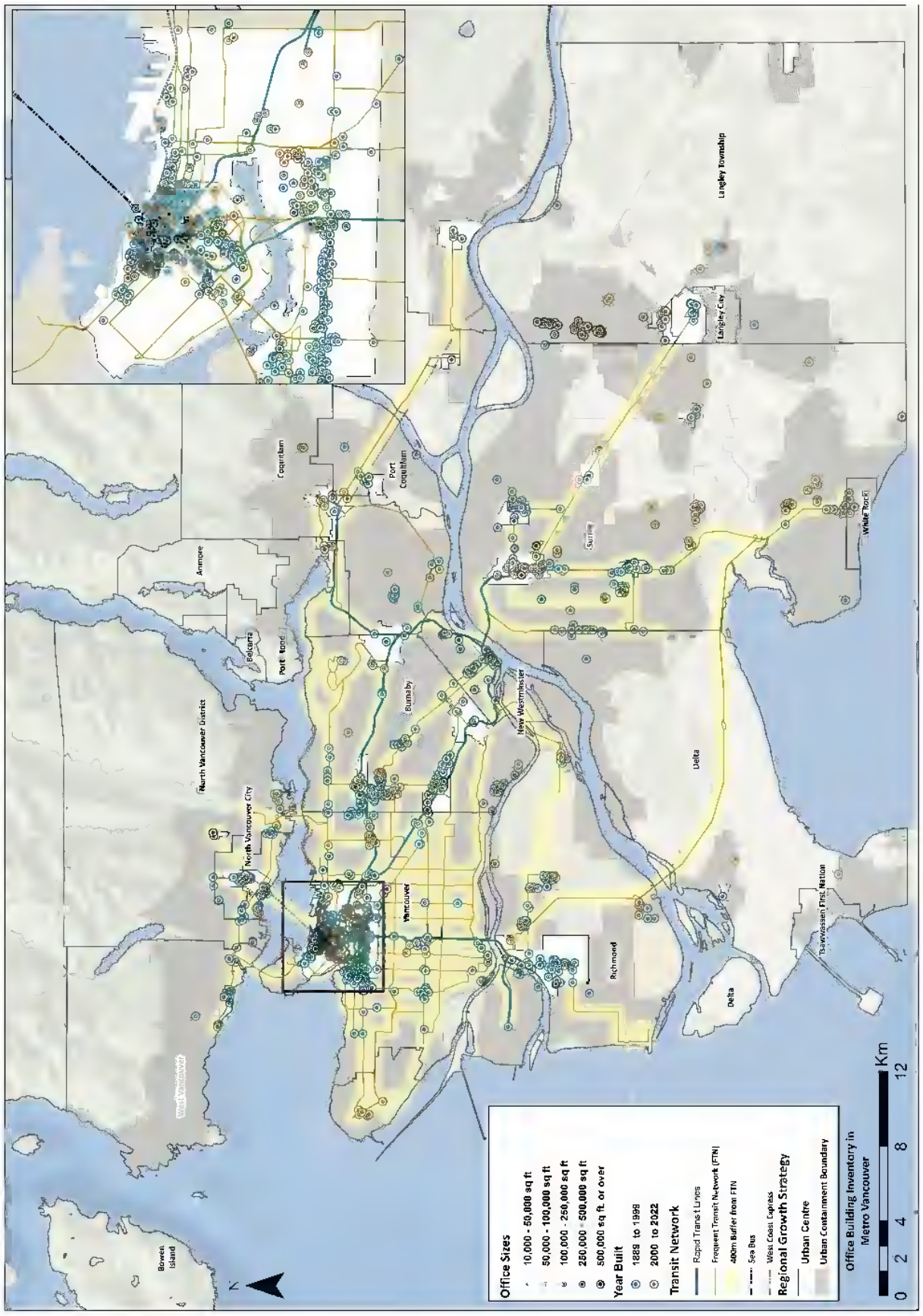
Map 5.7 show the inventory relative to transit service. For Vancouver, the majority of office space is within 800 metres of rapid transit stations, whereas for many outer parts of the region, a higher proportion of the inventory has FTN bus service only.

Map 5.8 illustrates the office inventory by location and size, with a large concentration of buildings in the Metro Core as well as some other clusters.

Map 5.7: Inventory by Transit Service Type



Map 5.8: Inventory by Building Size and Year Built



5.9. Newer Office Inventory Relative to Urban Centres and Transit Service

Charts 5.11 and 5.12 show the growth in office space between 1990-2022, totalling 41 million sq ft, relative to both Urban Centres and the Frequent Transit Network. More than half (60%) of the newer inventory was located within 800 metres of rapid transit stations, and 41% was within the Metro Core (all of which with access to FTN transit).

Urban Centres

Of the growth for the 1990-2022 period, 63% was within Urban Centres (compared to 71% for the entire stock). The balance, 15.3 million sq ft or 37%, was located outside of Urban Centres.

Chart 5.11: Growth by Urban Centre (1990-2022)

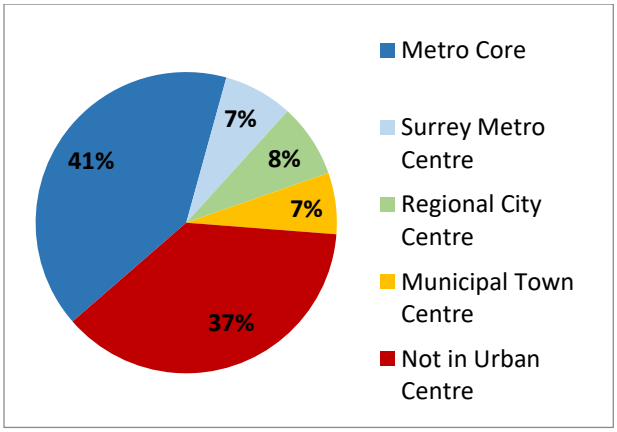
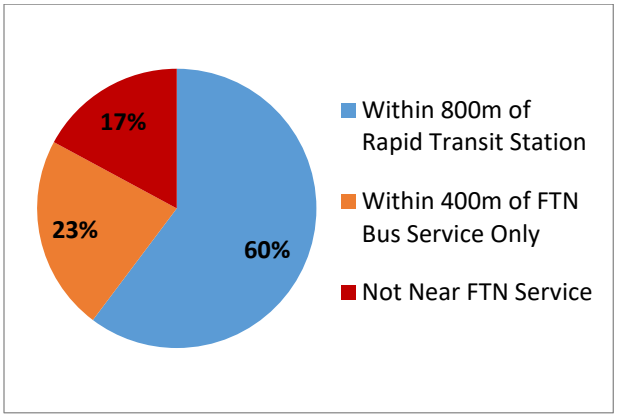


Chart 5.12: Growth by Transit Service (1990-2022)



The distribution of office development by Urban Centre type has varied from year to year over the past decades, as shown in Chart 5.13. Despite some years with a higher proportion of development in Urban Centre locations, non-Urban Centre development peaked in the 1990-2009 period, while from 2014 to 2022 the ratio of office space development in Urban Centres and particularly the Metro Core increased.

Chart 5.13: Inventory by Year Built and Urban Centre Type (1990-2022)

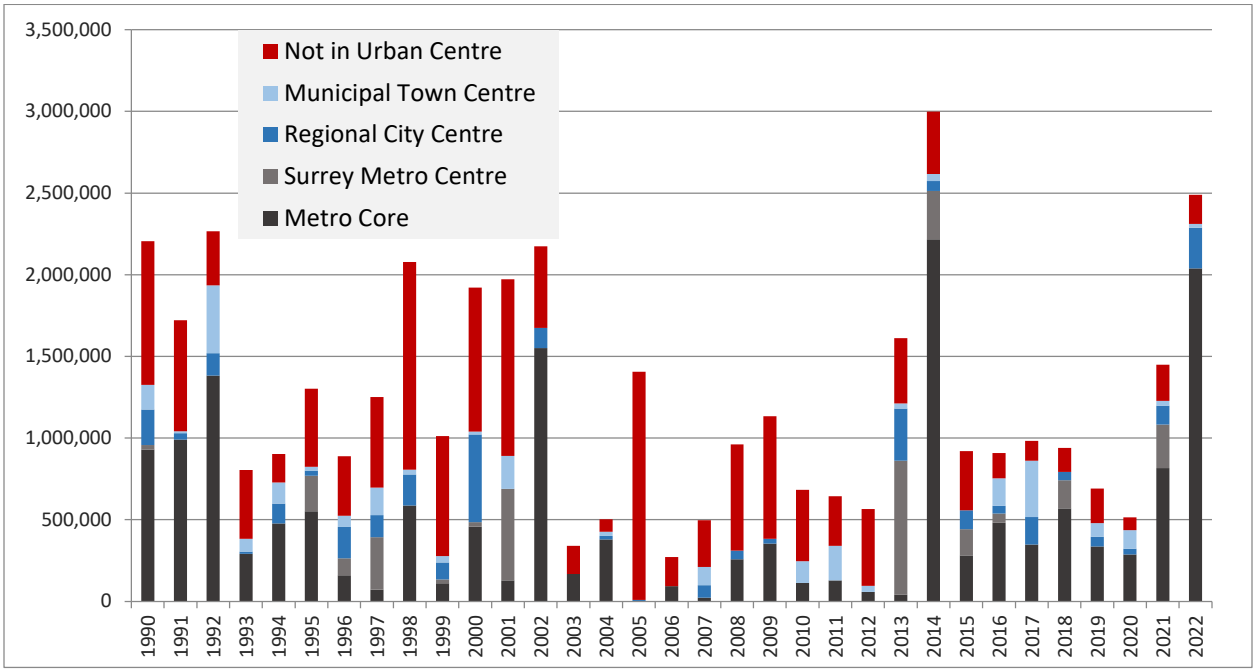
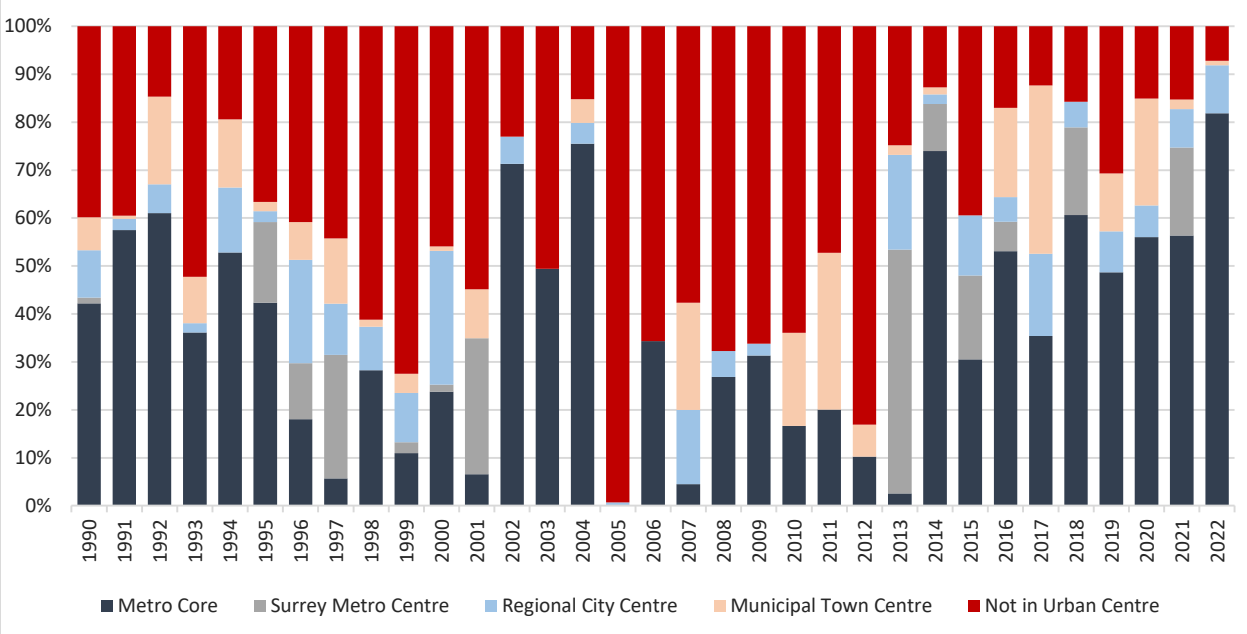


Chart 5.14 shows the building completions by year built from 1990-2022 relative to Urban Centre types as percentage of total completions. The distribution has differed considerably by year, although since 2006 the percentage of new office space development outside of Urban Centres has generally declined.

Chart 5.14: Inventory by Year Built and Urban Centre Type (1990-2022)



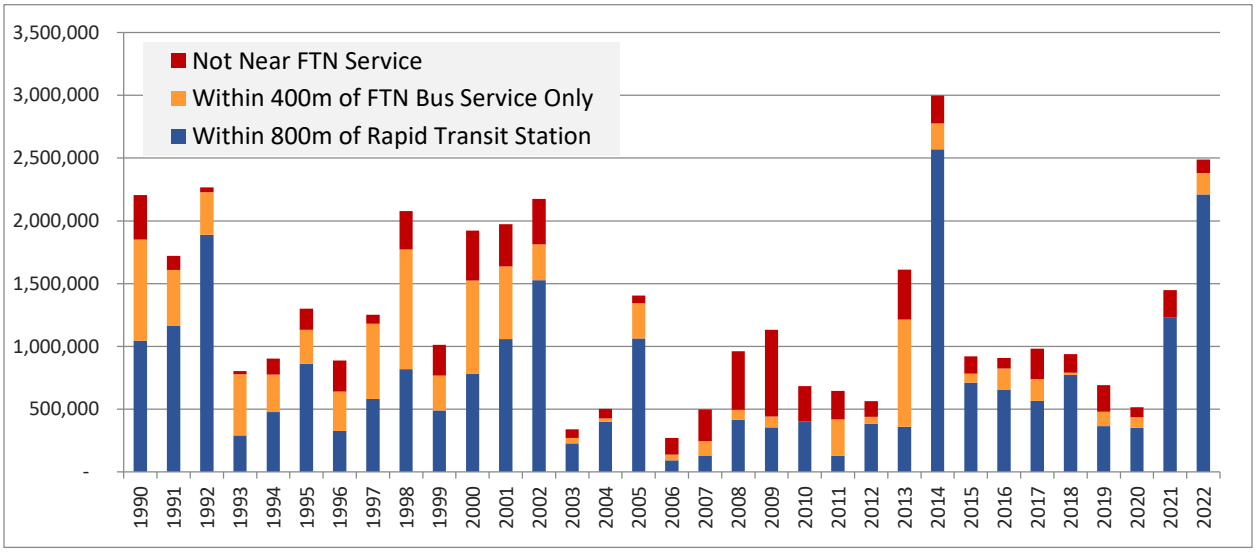
Frequent Transit Network

Chart 5.15 shows the office space growth in the region between 1990 and 2022 relative to the Frequent Transit Network (rapid transit stations and FTN bus). As can be seen, results vary

greatly by year, in some cases reflecting the impact of only a few new buildings completed per period, while in other years, completions of major projects have skewed the annual results.

Of the total growth for the 1990-2022 period, approximately 60% of new office space development was located within 800 metres of rapid transit, and 23% within 400 metres of FTN bus only. The balance, 7.0 million sq ft or 17%, was located in areas not accessible to the FTN.

Chart 5.15: Inventory by Year Built and Transit Service (1990-2022)



Cumulative Growth in Inventory Over Time

Charts 5.16, 5.17, and 5.18 show the cumulative growth in the office inventory from 1950 to 2022. Much of the pre-exiting inventory and growth was in the City of Vancouver and more precisely within the Metro Core. However, proportionally the amount of office space in Vancouver is declining, with growth in other areas such as Burnaby / New Westminster and Surrey / White Rock, some growth in other Urban Centres although also outside of Urban Centres, yet still mostly at locations with FTN transit service.

Chart 5.16: Cumulative Inventory Growth by Sub-Region (1950-2022)

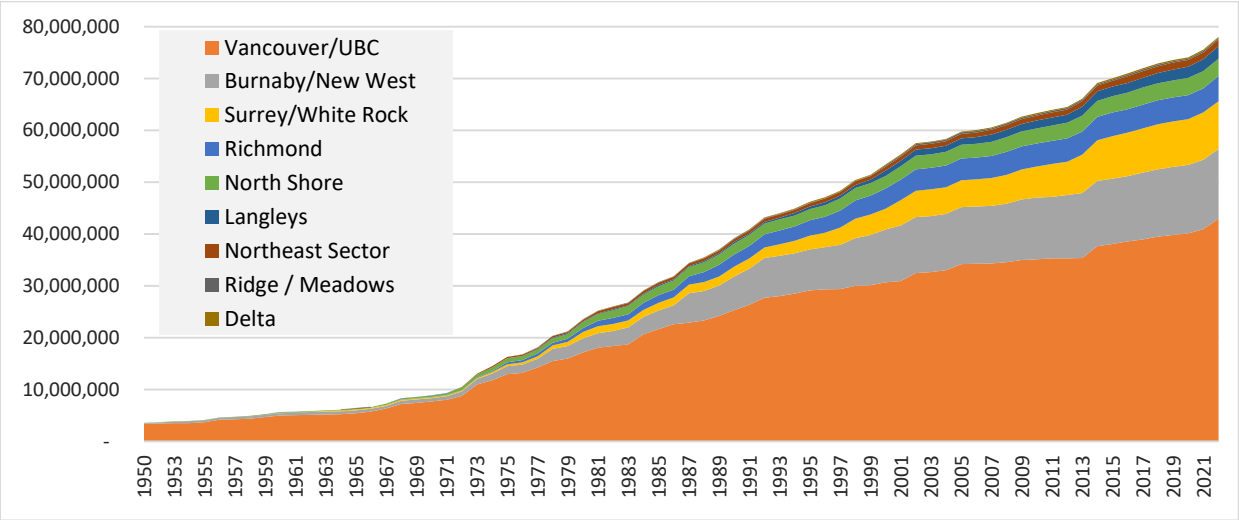


Chart 5.17: Cumulative Inventory Growth by Urban Centre Type (1950-2022)

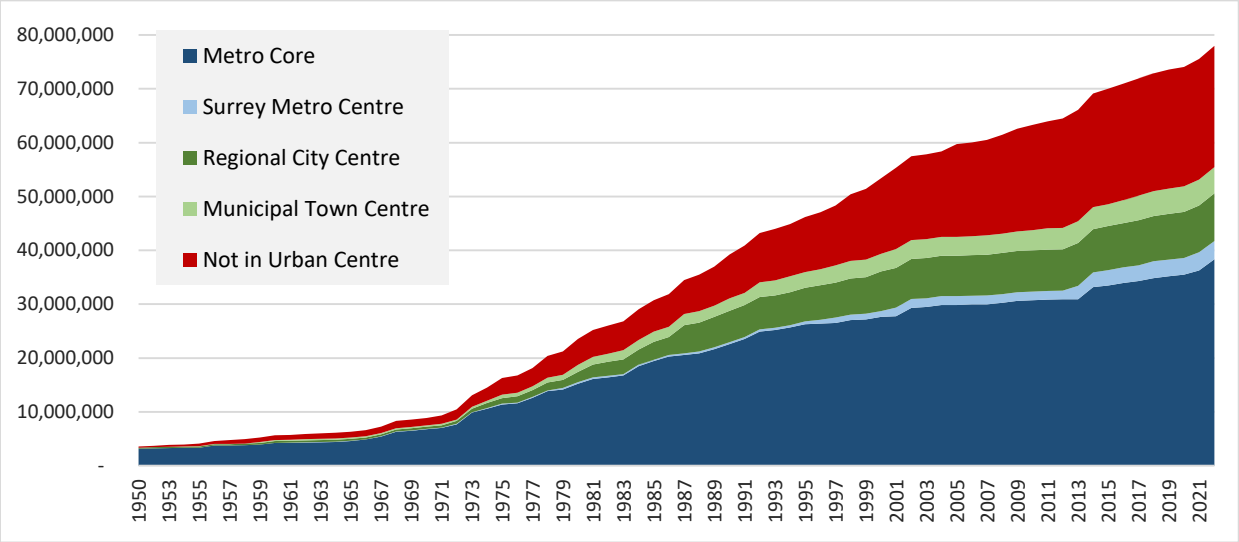
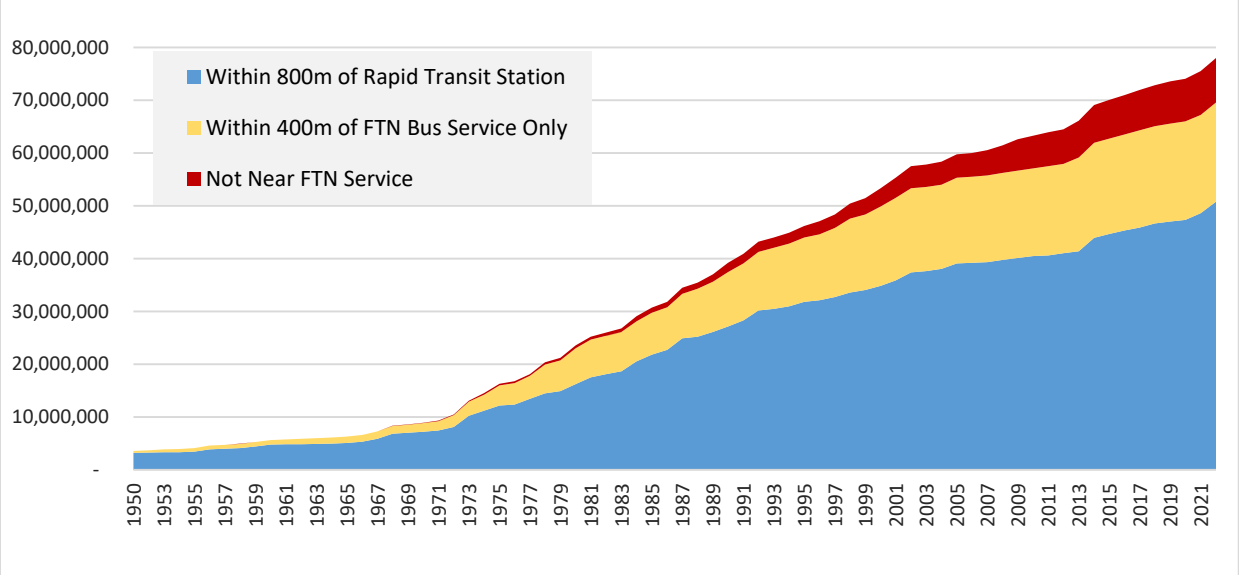


Chart 5.18: Cumulative Inventory Growth by Transit Service (1950-2022)



6.0 OFFICE TENANT CONSIDERATIONS

Office tenants are not all the same; the types of businesses and their accommodation needs vary, as do the local market characteristics and accommodation options in sub-markets. Some tenants need to be or prioritize downtown Vancouver near other corporate headquarters, some need to be close to their workforce, some serve their local community, and others prefer a business park campus-type environment. The following sections summarize the factors that tenants consider when selecting office space accommodations.

Although note that the office space market has been impacted at least temporarily by the COVID-19 pandemic. The ultimate long-term implications of the pandemic on office space demand and preferences are yet to be fully understood. Additionally, the 'war for talent', which grew with the pandemic especially for the tech sector and included employers providing employees much flexibility, has slowed, with now pressure to return to the office. The rationale and benefits of being in the office are still largely valid and valuable for activities that cannot be fully reproduced online.

Business Needs

Accommodation (re)location is a significant business decision by tenants. Different businesses with different needs are looking for different types of office accommodations. The list of criteria includes the following, with different prioritization or ranking depending on the sector or business:[23]

Business Objectives

- Employee retention
- Brand value enhancement
- Desire for prestige locations and client accessibility

Space / Design

- Current space needs and potential for future expansion
- Number of employees (range and estimated growth)
- Potential for efficiencies through consolidating multiple office spaces
- Office space and building design features – efficient and large floorplate design

Amenities / Features

- Image/quality/aesthetics
- Building services
- Office hours
- Security and access
- Communications infrastructure

Financial / Transition

- Budget
- Tenant improvement needs
- Timing / availability of space

[23] Adapted from: Colliers, Office Leasing Guide, 2016.

- Lease terms / structure /renewals
- Cost (lease rate, building management, property taxes) and tenant inducements
- Quality of property management service

Access

- Location
- Parking
- Accessibility – transit, roads, parking, congestion
- Proximity to airport and other regional destinations
- Proximity to employees, customers, suppliers, competitors, other corporate operations

Other

- Green building design features / environmental considerations / LEED Certification
- Signage / naming rights
- Requirement for non-office components (e.g. warehouse, storage, flex space)

6.1. Overview of Tenant Considerations

6.1.1. Workforce Demographics and Residential Location

Workforce demographics and place of residence have a bearing on office site selection. For example, employee age may influence preferences for commuting modes. Interviewees reported that older employees are more likely to own and use a vehicle to commute, whereas younger employees may prefer transit and biking. The type of work and pay level may also influence preferences.

Where employees live may also impact business location decisions, as tracked by postal code mapping analysis. Higher income employees may tend to live on the North Shore and west side of Vancouver and thus prefer a downtown Vancouver work location, whereas lower income employees may live in the eastern parts of the region where housing is generally more affordable, and prefer work locations in Burnaby or Surrey.

Common concerns of employees when faced with an office move are whether their commute will change, the design of the new office space, and the amenities available at or near the workplace. Businesses that are new to the region may also consider locations that are within convenient proximity to good neighbourhoods, housing, and schools, and other amenities for their workers.

6.1.2. Space Needs, Size of Space and Other Space Functions

The amount and type of office space per employee can vary greatly. For example, senior employees may require larger offices that include private meeting space, compared to junior employees who work in smaller workstations. There was a previous industry trend towards using office space more efficiently and increasing the density of employees, through smaller office sizes, more cubicles, open concept, fewer enclosed offices, and more efficient office design with modern furniture and equipment. However, with the COVID-19 pandemic this trend stopped and even reversed.

Smaller businesses prefer smaller building floorplates in order to avoid being one of many tenants on a large floor. Large businesses prefer buildings with larger floorplates that allow their employees to be spread over fewer floors, and provide for a more efficient design, such as fewer reception areas and common facilities.

Some businesses have quasi-industrial or non-office components, such as those that support manufacturing, distribution or warehouse functions, in proximity to their office / administration function. These types of businesses may be satisfied with Class B or C office space, rather than Class A. Such types of office / light industrial flex spaces are not typically found in Urban Centres. Therefore, these businesses may favour an office park / light industrial type building (i.e. flex space) and location (i.e. proximity to highways) to fulfil this need.

6.1.3. Employee Trips and Visitor Traffic

Although greatly impacted by the pandemic, some employees spend most of their day at their desk, whereas other employees often travel. The number of visitors to the business also varies depending on the sector. Accordingly, the importance of accessibility and proximity to customers, suppliers, branch offices / stores, and other related functions varies greatly. Accessibility and proximity, therefore, impact whether the business needs a location in an Urban Centre, near transit, or whether they may choose a suburban office park location with highway access. Accordingly, some companies are more likely to value an accessible location than others.

6.1.4. The Value of Prestige

There is a range of attributes offered by buildings, with some designs focused on architectural interest, while others on efficiencies. Some tenants are willing to pay a premium for unique and high profile space, while other businesses want a simpler space that effectively meets their needs and budget. For situations and scales that allow it, businesses may prefer to own or occupy an entire building in order to be in full control of how it is managed and help brand their company.

Some businesses desire a high prestige central business district office location (i.e. downtown Vancouver) and are willing and able to pay a premium. For example, a large law firm may want a downtown location close to its clients and other businesses and for profile. This proximity benefits the company and employees in terms of meeting time, accessibility to a larger number of other businesses, and provides more opportunities for face-to-face interactions. Proximity to a range of urban amenities is strongly desired by tech tenants.

Other businesses do not value such characteristics nor have the ability to pay as much. For example, a call centre may not afford higher rents, and does not generally have clients who visit the office, so a downtown location is not necessary.

6.1.5. Customer Market

Some businesses serve local population markets (e.g. medical or dental offices) and wish to be situated near their customers. These businesses tend to be smaller, and will likely grow at a rate similar to the population growth rate of the surrounding area. Other businesses serve the regional market and need a central location (downtown Vancouver, or near major highways), and may grow at faster rates. Some Metro Vancouver businesses operate beyond the region, so airport, rail, or port proximity is important to them.

6.1.6. Surrounding Uses

Some office tenants, especially corporate businesses, are very sensitive to the uses in the surrounding area, and may prefer to locate in an office-only building or commercial district, rather than having to share a building and facilities (i.e. elevator, lobby, parking) with non-office users such as residents and shoppers. Requiring mixed-use development in these cases can impose challenges for some office tenants (in addition to building design issues), and may deter some types of businesses.

6.1.7. Tenure and Leases

The nature of tenure itself impacts office markets. It is important to note that most businesses lease rather than own their accommodations, reflecting the fact that businesses prefer to invest their capital in their business operations rather than in a building. There are relatively few strata office buildings in the region, although some notable examples. A lease provides for lower costs and less commitment, whereas ownership provides security of tenure and capital appreciation potential.

Businesses often need to make decisions about office relocations 12-18 months before lease expiry because typical lease agreements and renewals require significant notice before the end of the lease. These office tenants must then be able to find a new office accommodation that meets their needs and that is available at the appropriate time. Relocating offices can be a significant decision for business tenants as it represents a major disruption in operations, moving expenses, a new location, and potentially higher operating costs.

Office space is usually leased for terms of five to ten year periods; longer for large and new spaces, and shorter for smaller spaces requiring less improvements. The tenant needs to have a reasonable understanding of their office space needs, which reflect their business and staffing requirements over this term, and then commit to leasing the space for this period. This can be a challenge for businesses that expand and contract significantly in response to changes in business or economic cycles. This has been particularly exemplified during the COVID-19 pandemic. Some businesses may be very sensitive to accommodation costs or may be less established or financially stable, which reduces their ability to incur significant costs or make a commitment to a long-term lease obligation. Co-working operators are filling this need for flexibility, and grew significantly leading up to the pandemic.

6.1.8. Business Costs

Tenants are sensitive to costs, and this can be especially true for branch offices, where their headquarters are located in another city and makes the final decision about accommodations. According to rough estimates by interviewees, office accommodation costs (e.g. rent, building management, and property taxes) are approximately 5% of a business' total operating cost. Staffing costs are usually by far the largest single cost (approximately 80%). Small and new businesses tend to also be very cost sensitive.

However, cost is not the sole deciding factor, and if space is poorly located or lacks needed features, low rent will not justify it. As office space in Urban Centres is usually more expensive (both rent and operating costs) compared to other locations, business tenants only pay a premium if there is a value or benefit to them. For some businesses, even aside from costs, an Urban Centre location may not meet their needs as well as an alternative location / facility.

Depending on the tenant needs and the office space, tenant improvements (renovation / customization) of the space must usually be made. This can represent a notable effort and cost to the tenant, only part of which is reimbursed by the landlord. In some cases, cost savings can be achieved by consolidating business operations into a single site and utilizing a more efficient design.

6.2. Office Amenities

The market for office space continues to change (and accentuated by the pandemic), with tenants increasingly demanding a workplace that appeals to workers. This is particularly the case during a competitive labour market where highly skilled workers are key, such as tech / software. Competition in the office market was once primarily determined by location, transit access, and costs. While those factors are still important, tenants are increasingly interested on building facilities and area amenities.[24]

To attract and retain employees, employers often seek space and buildings that provide amenities and vibrancy, yet also consideration of efficiencies. In the recent past, this included open plans with fewer private offices, typically resulting in less floor space per employee. Workers may not prefer these types of compact workspaces; they seek a more interactive, collaborative and vibrant office environment. The common element in successful designs is that they "activate" the spaces by creating opportunities for socialization and work in a wider range of places.

Providing activated spaces and many amenities has become increasingly a necessity, rather than a luxury, to attract and retain tenants and employees. The desired and increasingly required amenities for office tenants and workers continue to grow. This includes a good location, proximate transit access (i.e. rail rapid transit stations), surrounding urban destinations, building features, and modern space design.

[24] NAIOP Research Foundation - Richard Peiser, Raymond Torto, Activating Office Building Common Spaces for Competitive Advantage, 2017.

Some interviewees noted that in order to attract employees to the office, the workplace has to be superior to their home office and offer features and experiences that home does not have. That applies to both the work space and also the associated building amenities and surrounding destinations. For example, to overcome the commute, draw employees to the office because the workplace offers opportunity to interact with other team members, has on-site facilities like a gym or roof-top deck, is close to restaurants for lunch, and provides the ability to combine urban attractions and errands while downtown for the day (such as an event in the evening after work).

These increasingly-desired amenities and features are being retrofit into existing buildings and included in the design of new buildings. As more projects with these features come to market, they become the new Class AAA or A buildings. Tenants that want prime space will move to these modern buildings, out of other older ones which will move down the classification rating as they become dated, resulting in a reset or re-definition of building classifications, particularly in downtown Vancouver.

6.3. Building Features

For major building landlords, providing not only an office space but an entire building complex or campus is important. This may mean significant investments in enhancing the common areas (lobbies, elevators, and hallways), as well as proximate facilities, like plaza and retail with restaurants and associated place-making efforts. This is in order to make the entire experience attractive for employees as a 'third space', counterbalancing home and work. These efforts can include programing of activities and events in the building campus. If people are going to be induced to come to work, the experience of both the office space and the building place need to be attractive and active.

Amenities no longer simply mean a sandwich shop for lunch, rather a range of shops and services, such as restaurants, grocery stores, banks, gyms, entertainment, and other facilities in the immediate area. It is especially desirable if the facilities are within the same building or complex, highlighting the interest in mixed-use or multi-use developments.

In terms of building design, for top tier tenants, they want the best that new Class AAA buildings can offer. This includes large amenity spaces, conference facilities, ZERO Carbon and LEED Platinum certification, etc., as they plan to operate it for a long period.

For brand new office buildings, the space is usually offered by the landlord to the tenant as an empty shell (with only limited air conditioning system and no finished ceilings – this being a lower level of base delivery than in the past). The cost to build out accommodations for the tenant can be significant, in the order of $250 per sq ft; only a small part of which is funded by the landlord. To amortize this investment, the tenant will want a long enough lease, often ten years and with terms for extension. Existing space and smaller units may have shorter lease durations. (As improvement costs can be significant, some businesses don't want to walk away from their investment (which is a sunk cost); this can be more emotional for smaller businesses, while being purely a financial decision for big companies.)

Along with costs, the permitting process and construction period can both take considerable time, thus impacting how quickly landlords and tenants can respond to market forces and business changes. Permitting may be required even for relatively modest changes to existing space, causing delays for interior modification / upgrades / improvements and thus tenant moves.

6.4. Value of Locating in Urban Centres and Near Rapid Transit

Office location is typically very important to tenants; if the location is inaccessible, it can lead to operating inefficiencies and higher staff turnovers. Office locations with poor transit access are often difficult to lease, while locations close to rapid transit tend to have lower vacancy rates and higher rental rates.

Virtually all publications and interviewees stressed the importance of transit accessibility, namely SkyTrain. Since the 2010 Winter Olympics and construction of the Canada Line, there has been a marked increase in interest and acceptance of transit by SkyTrain for commuting. Office tenants have increasingly prioritized proximity to SkyTrain stations as an important criterion in selecting office accommodations. Light rail is preferred over bus, as bus service is seen as less permanent and not as reliable and comfortable as SkyTrain. SkyTrain service is extending to other parts of the region, including Port Moody / Coquitlam, Broadway Corridor, and Surrey / Langley City. Office developers are aware of the trend towards increased tenant appreciation of rapid transit access and are responding accordingly.

Transit accessible locations mean that there is less need for on-site parking per worker. However, developers caution that because of the greater space efficiencies in new buildings, parking requirements do not necessarily need to be reduced, as there may be more workers per sq ft (e.g. some offices accommodate 1 employee per 150 sq ft, compared to the previous standards of 1 employee per 250 sq ft). Even if an office building is well-served by transit, tenants still expect some level of parking because some employees will continue to drive to work, or use a vehicle during the day for work purposes.

In addition to access to transit, developers are cognizant that many employees also walk and bike to work, and are providing more facilities to support cyclists (e.g. locker facilities, secured bike parking, end-of-trip facilities). Also, the availability of amenities for employees, such as proximity to shops, restaurants, gyms and recreational facilities are of increasing importance for businesses.

Tenants want employees to be able to travel to work with ease, although workplace and commute patterns have been significantly impacted by the pandemic. Interviewees note that younger employees typically have a greater propensity to take transit, and that older employees who are accustomed to driving are not as likely to switch to transit if the employer moves to a location with good transit service. If the location is not near frequent transit service, employers or property managers may invest in a shuttle bus service to transport workers to the nearest rapid transit station. Office tenants are increasingly willing to pay a premium for access to rapid transit stations, or alternatively, may accept lower quality office accommodations if

located near rapid transit versus higher quality accommodations without such rapid transit access.

Access to SkyTrain and other amenities are ever-more important from the perspective of tenants, with an eye to attracting and retaining employees. A SkyTrain station alone is often no longer enough – business tenants want to be close to more amenities. Furthermore, desired accessibility to SkyTrain can mean less than the standard 400 to 800 metre (i.e. 5 to 10 minute) walking distance; while a shorter distance is preferred, it is important to recognize that how long a walk 'feels' can depend on the surrounding environment, sidewalk connectivity, and urban design.

6.5. Extent of Tenant Movement Between Geographic Areas

Interviewees and publications stated differing views about the relationship between the downtown Vancouver office market and that of the rest of the region. While most noted that relatively few tenants move between sub-markets (both geographies and office classes), some stated that with higher prices in the Vancouver CBD, some tenants may be tempted to move to less expensive locations. Conversely, in an effort to attract and retain a skilled workforce, some businesses (especially tech) 'need' to be in the downtown or surrounding core. And yet another perspective, is that with rising vacancy rates and sub-lease listings in the downtown, there may be more accommodation options for companies that want to relocate there.

Back-office employees that are not required to be downtown could be relocated to the suburban markets such as Burnaby, Richmond, and Surrey.[25] Although at the same time, some of this type of work is also being done by employees while working at home.

Suburban Office Obsolescence?

Suburban office parks have lost their luster for a variety of reasons, including a growing preference among younger workers to live (and work) in more dynamic urban centres than in the sometimes staid suburbs. Technological advancement has made the need for many clerical and processing jobs and associated back-end real estate increasingly obsolete.[26]

As the needs of the modern tenant becomes defined as trophy or Class AAA office space by rapid transit and robust amenities in Urban Centres, older properties are challenged to compete, especially 1980s and 1990s era campus settings. Yet, some outdated properties may still appear attractive to tenants who are value-conscious or who are seeking a specific type of space.[27]

Given that there have been very few new suburban office buildings constructed in the past decades, vacancy rates have been declining as space fills up in these buildings due to a local absorption. Businesses in suburban locations, when considering relocating to downtown, once they fully understand the much higher costs (both net rent and operating), typically renew at their existing location.

[25] Jones Lang LaSalle, Metro Vancouver Office Insight, Q2 2018.
[26] New York Times - Nick Corasaniti, As Office Parks Empty, Towns Turn Vacancies Into Opportunities, May 29 2018.
[27] NGKF Newmark Knight Frank, Suburban Office Obsolescence, 2015.

There are many factors that signify building obsolescence. Some of these can be addressed such as building upgrades and adding amenities, while others such as location or building design, cannot. Buildings near the incurably obsolete end of the spectrum are candidates for repurposing (i.e. by conversion to other uses or redevelopment).[28]

Other Locational Considerations

A central location for businesses is best to access the region's workforce - namely Vancouver or Burnaby - that is readily accessible from much of the region. Simple geography has resulted in much of Burnaby and downtown Vancouver being the central area and accessible via the transit and road networks.

Additional considerations about the market were expressed by interviewees, informing the potential, or limit, to attract office developments and tenants to outer Urban Centres:

- As the population, economic activity, and workforce grows in outer locations, the demand for office space in those areas will also grow. As more people move to the suburbs because of housing affordability, many may prefer to work within those communities to have shorter commutes. However, this may take a long time, as sub-markets still have limited scale and limited demand. And for some employees, working close to home in fact now means working at home, thus no increased demand for local office space.
- SkyTrain access helps, however in small markets, the impacts of new SkyTrain is limited compared to larger markets, and some areas are still 'at the end of the line', rather than in a more central location on the transit network. Office businesses want to be by other office businesses, making it difficult to establish new nodes.
- There is still a need for suburban office space. Some tenants enjoy a campus feel - low rise and accessible to certain amenities, instead of overly urban, congested, and high rises. However, businesses that want / need to be in the CBD are there and will pay for it.
- For Coquitlam City Centre, there is ongoing densification with multi-residential, but the office market is limited. Small office components in mixed-use buildings with local-serving businesses are more appropriate and realistic under current conditions. No large major tenants are likely to locate there unless locally owned or some other unique reasons.
- Surrey has the potential to accommodate an increasing number of local-serving firms and offices. Achievement of a critical mass is likely required to enable more office development over time, such as new corporate offices.
- On the North Shore, transportation access is a challenge for constructing new office buildings, and also for office tenants accessing the regional workforce.
- A number of interviewed developers commented that if municipalities require the provision of office space where it is not warranted by the market, or the approval process is too arduous, they may simply not build anything at this time, and wait for conditions to change.

[28] NGKF Newmark Knight Frank, Suburban Office Obsolescence, 2015.

- It was also noted that building new office space in a sub-market without adequate demand may simply steal or re-locate tenants from one part of that sub-market to another, not attract new tenants (i.e. zero-sum).
- The best effort to attract tenants to outer Urban Centres may be as a value proposition – i.e. lower rents, and offering urban features / amenities, in a location close to a growing workforce and economy. However, from a development perspective, construction costs are still high in all locations; so with low rents in areas with weak office demand, it is difficult to make such office development viable.

7.0 OFFICE DEVELOPER CONSIDERATIONS

The office development process is complex, capital intensive, and high risk. There are many different factors that can impact the development viability of sites and the potential for an office space component. The decision-making process may be gradual and iterative as the project investigation advances. In some cases, if circumstances become too challenging, a project may be deferred, cancelled, or an alternative use or design for the site may be considered.

Developing office buildings entail large and long-term investments, extending beyond individual business cycles. Developers and investors look to fundamental trends and forces over the decades, rather than months or years, balancing expected returns and possible risks.

To attract and retain the best tenants and employees, landlords and employers need to offer the best space. New buildings (Class AAA) are more efficient, have nicer space, with better amenities, etc. Whereas older Class B and C space is harder to lease, even if rent rates are lower.

For smaller or standard office units, tenants typically do not want to spend a lot of money and time to occupy them. Constructing and permitting office space improvements can take a long time and dissuade prospective tenants. Officer brokers suggest that landlords buildout small spaces for move-in-ready / turn-key condition to be more attractive to prospective tenants by shortening and simplifying the process.

7.1. Overview of Considerations

7.1.1. Developer Objectives

There are many aspects specific to the developer / investor that are relevant to the nature of an office project. This includes the type and amount of funds available for the investment (equity vs. debt financing), the corporate structure of the development company (i.e. whether they are the developer, investor, property manager, or all), risk tolerance, investment profile and objectives, and outlook (long-term vs. short-term). Some developers may prefer to develop and sell a project, whereas others (such as investment pension funds) may prefer to build and hold a project as a long-term investment.

The time and price at which the land was purchased impacts the financial viability of a project; if the land was acquired some time ago at a lower historic price, office development may be feasible, but not if the land were acquired at a more recent (higher) market price.

7.1.2. Market and Financial Conditions

Market conditions, specifically the demand for new office space, is the main driver for the viability of office buildings. Where and when the demand for office space is weak, there will be limited new office space built by the market. Local government goals for more office space will not be realized if the market demand is not in place to support the development. The market

reflects both the macro factors influencing office supply and demand in the region, and local area factors for specific districts.

Market conditions also affect the amount of building pre-leasing that is possible. Pre-leasing (or pre-sales for strata) is typically necessary to obtain project financing in order to proceed with construction. Generally, lenders will not finance a project until an adequate proportion of the building has been pre-leased. It can be challenging for office developers to secure pre-lease commitments (especially in suburban markets), because tenants may not want to commit to a new location in advance of it being built, they have other location choices available, and the relocation process is complex. Thus, some tenants may prefer to remain in their current space or move to an existing building. A slow absorption period for a building can mean a financial cost for the investor / developer. In a market such as Metro Vancouver, which has few large headquarters, it is difficult to attract new tenants to a yet-constructed building. Aside from some unique cases with large tenant committing to space in advance, developers may bring to market a limited amount of office space at a time, which is pre-leased or can be absorbed in a reasonable period.

Large office buildings (towers) are constructed all at once (with only very few exceptions), making the supply of new space very 'lumpy'. Conversely, low rise buildings can be built and leased in phases over time to match demand. Additionally, the cost of construction materials and labour may change during a development process, along with market conditions, which makes budgeting a challenge. All of these costs challenge developers when planning and evaluating the viability of a project.

Due to these financial challenges and requirements, investors in major office projects are typically pension funds, which can buy sites and hold them for long periods until the market supports a viable development. Institutional investors are typically well-financed, diversified, and interested in long-term investments and can wait longer for returns compared to merchant developers.

7.1.3. Land Availability and Cost

The challenge most cited by developers is the difficulty in acquiring sites for office development. Land costs are very high in the Metro Vancouver region and office development is usually a less profitable form of development, and values cannot compete against residential uses. If a municipal plan allows for a mixture of different uses on a site, the property will likely be priced by the vendor for the highest and best use, which may preclude the financial viability of office space. For some mixed-use projects the office component may add little net value for the developer.

In Urban Centres the properties are often smaller, thus necessitating a land assembly to create a larger viable development site. These properties usually have existing uses and businesses that may be difficult and expensive to assemble. The effort to purchase and assemble the properties from multiple owners (sometimes with individual properties each having multiple parties on title) can be time consuming and challenging. Instead, developers prefer a single

larger property; these rare types of sites are usually found in out-of-centre locations, such as industrial areas and greenfield sites, or redevelopment of urban retail plazas.

7.1.4. Construction Costs

High and rising construction costs (both the labour and material components) are a challenge for all developers. According to Altus[29], in the Metro Vancouver region, the cost to construct an office building ranges from $290 to $450 per sq ft, depending on the type of building, plus parking facility costs. Furthermore, tenant improvements / fit outs are an additional $85-$250 per sq ft, varying by the building and unit type and standard.

7.2. Municipal Approvals and Costs

The extent of municipal approval requirements is also a consideration in the development process. The municipal review and design process for a major project often lasts two or more years. The construction period is typically an additional two or three years. Together, this process represents a significant period while the investor is not receiving returns. Furthermore, risks during this period in the form of difficulty in obtaining municipal approvals, higher construction costs, changing economic cycles, or dampening market demand may hamper a project. Notably, not all projects that are approved actually get built, if such variables become negative.

Municipal fees and charges can be in the form of application fees, development cost charges, community amenity contributions, etc. Municipal processes and regulations impact the development approval time and costs, and add uncertainty and risks to a project. Jurisdictions in which the development requirements are not known or clear at the outset of an application are more challenging, because the costs are not predictable and are negotiated at the time of application review. These municipal processes and costs may lead developers to shift investments to jurisdictions that have a more “business-friendly” environment.

Some developers interviewed suggested that municipal development costs could be made lower at target locations, such as in Urban Centres and at rapid transit stations to encourage office development there, and allow mixed-use development where appropriate. It was also suggested that in municipalities that charge community amenity contributions, they should only be applied for residential components, because residential uses in a project generate the need for community amenities and the profitability to fund those amenities.

7.2.1. Municipal Development Policies

Both municipalities and developers appreciate policies that provide clarity and certainty about municipal expectations and development requirements in terms of use, density, design, and costs. As developers become more familiar with municipal plans, the process may run smoother. Plans and policies vary by city and area, as one size does not fit all.

[29] Altus Group, 2023 Canadian Construction Cost Guide, 2023.

That said, flexibility is also desired. Municipal plans / policies are often seen by developers as complex and inflexible, with long approval processes prone to delays which increase holding costs. There needs to be an appropriate balance between municipal goals and developer objectives.

Developers and brokers recognize municipal objectives for community building, however are concerned about policies requiring office in places where there is little or no market demand. Most developers are opposed to municipal policies that require developments to include a certain minimum amount of office space provision. Developers and brokers believe that such requirements can create excessive office supply in sub-markets that cannot be profitably leased, which drives down rents and competes with other successful office buildings. The developer often makes most of the profit with the residential component of a mixed-use development, and may rent or sell the office space at a discount. Alternatively, the office space may instead be sold as strata tenure to investors as smaller units.

Market forces, not municipal policies / regulations, are the primary reason to build office space; demand should be the driver of supply. The market rents in an area must be high enough to support development costs and the investment, and even that still does not guarantee project viability. Developer needs for financial viability should be considered as part of municipal plans.

7.2.2. Municipal Office Space Permitting Process

For the build-out of interior office space, which comprises either starting with the shell space in a brand-new building or taking over an existing space needing some upgrades / renovations, municipal permitting for various interior work are typically required.

Many interviewees noted that the process for permitting is long and unreasonable, which delays construction commencement and extends the entire business move timeline, with associated higher costs. In the City of Vancouver, there was previously the TIPs (Tenant Improvement Permit System) which was well-regarded and allowed for easy permitting of space in existing buildings that had previously gone through the permitting process. However, the program is now largely discontinued, with the city reviewing each permit anew.

Some suggested that some simple or low risk interior construction / renovation work should be allowed to commence while the permit is under review, in order to reduce downtime. For basic renovations associated with simple improvements and renovations, the City could identify office units that can be occupied and tenanted without triggering a change in use permit. Landlords and brokers also suggested that the city allow Certified Professionals to review drawings in order to save time.

The entire process of findings a space, negotiating a lease, obtaining permits, arranging renovations, and moving, can take over a year. In most cases, the landlord offers the occupant a Tenant Improvement allowance, but this amount is only a fraction of the total cost of renovating and holding the space while unused. Improvement costs for a shell can be up to $250 per sq ft, including voice / data drops and furniture. Cold (bare minimum) space vs Warm (lighting and some improvements) space varies in terms of delivery of the completed shell

space. Along with approval duration, rising construction costs and extended supply chains are also challenges.

Often, when considering a move, businesses are surprised by the time and cost, and instead may decide to simply stay in their existing space. With high costs, some tenants can be price sensitive when considering a possible move, which motivates them to stay or 'stick' in their existing space. To facilitate tenants moving into standard spaces, landlords can proactively build-out space in generic functional ways to make it easier and quicker to occupy. Whereas large international companies may not be as patient for a move to new or expanded accommodations; they can shift their operations to another international jurisdiction.

7.3. Mixed-Use, Multi-Use, Stand-Alone Projects

Mixed-use development can provide some benefits because it accommodates a wider range of uses with greater activities. In a mixed-use development, the retail component can be an amenity to the office component, and the residential occupants can help support the commercial businesses as a customer base. From the perspective of the developers, a mixed-use project (or multi-use, where the separate use buildings comprise a complex) with complementary uses, under the right conditions, can provide an opportunity for the residential component (which is typically higher value) to support or cross-subsidize the office component. This may be especially beneficial in suburban markets where it is difficult to pre-lease office space, yet the residential part can be pre-sold to secure project financing.

However, mixed-use development can also have some drawbacks. Residential and office users have different needs, due to the design requirements for the different users, preferences for floorplate sizes, and separate access facilities (lobby, elevator, parkade). This can impose extra design complications, costs, and inefficiencies. An office component within the podium of a multi-use building can lead to office floorplates that are sub-optimal – designed around the main part of the building, with the residential tower above and retail space below. In such cases, office unit sizes / depths, columns, elevators, lobbies, may not be ideal for the needs of office tenants, especially larger ones.

Tenure can also be an issue in mixed-use projects, with some parts of the building owned by occupants (condominium apartments) and other parts occupied by rental tenants (retail, office), with different tenures, terms, and interests. Mixed-use development should be considered at appropriate locations, reflecting site characteristics and market demand, and not forced into unsuitable locations. In some cases, multi-use development, with different uses in separate buildings may better serve the objective. In larger markets, standalone office buildings may be possible.

7.3.1. Other Considerations and Views

There are divergent views on the office aspect of mixed-use developments. Some interviewees noted that having a range of uses at a focused location, such as Transit-Oriented Development (TOD), provides for a desirable community. However, others reference examples of mixed-use projects poorly executed, such as commercial podiums with ground floor retail and only a few

floors of office, with a high-rise residential tower above. In such situations, the residential component may be the main driver of the project, and the office is an 'afterthought' that is 'tagged on', and not given enough attention or consideration.

Successful retail is an amenity, and if done well can attract residential and office uses. Whereas if done poorly, and stratified (which is often associated with lack of cohesive property management), it can be a negative attribute of a building. Conversely, a large complex with stand-alone commercial businesses can be better designed and managed, and is typically preferred by corporate office tenants.

There was also a range of views on the appropriateness of municipalities 'forcing' rather than 'encouraging' and 'supporting' office components in new development projects. Most developers are concerned that being required to build office space in a location with weak demand may lead to long-term vacancies, while some other interviewees believe that the office market may fulfil itself once built, even though pre-lease in those locations can be difficult.

If municipalities compel an office component on a site where the developer does not believe there is a market, the outcome may be that the site will not be (re)developed; instead, a phased approach or a smaller scale office component may be a solution. Yet in other locations, some lands are zoned / designated for exclusively employment uses (office, retail, industrial, potentially combined), but at urban locations by transit, apartment rental residential could also be part of mixed-use or multi-use developments, according to some developers. Allowing residential uses could be used as a tool to create and activate the desired employment space, that could lead to projects that support a complete community.

7.4. Development Risks

Developing office towers are complex in terms of design, approval, and construction processes. This lengthy process brings risks, because as time passes, the developer faces greater uncertainty; for example, the economy can slow, the office market can soften, or construction costs can increase. Although there may be strong demand in (some) Urban Centres, urban locations can magnify development challenges because there is more regulatory approval, design review, and public engagement.

As with any investment, if risks are high, investors will require a commensurate high return. Therefore, for projects to advance which are perceived as higher risk, they will need to offer a significant profit to attract investors / developers. This may attract only a very small number of interested parties, which limits competition and development activity.

Office development risks can be exacerbated in a volatile market or where there are uncertainties associated with the approval process. One noted challenge is finding good sites available in downtown Vancouver to develop at a financially viable price for office development.

In order to arrange project financing, typically pre-leasing commitments are required. Depending on market conditions, these commitments can be difficult to arrange, especially in

suburban markets or if the delivery dateline is uncertain due to the municipal approval process. Although as one interviewee noted, over time, Vancouver may be becoming less of a pre-lease market, with some developers willing to construct office buildings without pre-leases – this new supply can better accommodate office tenants wanting space with less lead time. However, that possible trend may be concluded with COVID-19 impacting the office market.

Municipal zoning that allows for a wide range of possible office tenants, or 'general office', is preferred over zones that are more restrictive and only allow certain specific types of business office uses, as this greatly reduces flexibility and increases investment risk if tenants change.

7.5. Landlord Tenanting Decisions

From a landlord leasing perspective, small and new companies are viewed as a higher risk type of tenant, with limited history and financial covenants, and a higher likelihood of not renewing their leases (as they are prone to either failing and closing, or booming and outgrowing their space). Instead, larger and established companies are the preferred types of tenants.

Some tenants may prefer an architecturally unique and high-profile building; however these buildings can be less efficient and cost more. From the investor / landlord perspective, they consider the long-term utilization and operation of the building, not just current needs.

Helping to fill the need for flexibility are the co-working providers (namely, WeWork and Regus / Spaces) that offer businesses a variety of office space accommodation options (which may be needed temporarily as a swing site for a business in between locations or for a specific project). These accommodations are available without the requirement for long-term leases, although that flexibility comes at a cost.

8.0 OFFICE DEVELOPMENT FROM THE MUNICIPAL PERSPECTIVE

Office buildings provide space for businesses, which helps to advance municipal objectives, ranging from growing employment within the community, reducing commute distances, complementing local amenities, and growing the economy of the city. Furthermore, office space and associated activity supports and enhances the build-out and success of transit-oriented Urban Centres.

Municipal governments, through their economic development and planning functions, can encourage and regulate development in all its forms in their communities. This includes promoting the community as a location for investment and directing office development to Urban Centres. Municipal economic development staff may help increase the profile of the community, promote economic opportunities, and share information to attract investment, while planning staff may establish the necessary land use plans and review development applications. In practice, municipal economic development offices may be more interested in attracting development to their municipality in general rather than to specific locations within Urban Centres, while planning staff are more interested in land use and design integration.

Ideally, government departments work in concert to facilitate desired investment and development, recognizing that there are different types of business tenants requiring different types of premises. However, the ability of municipal governments to attract business activity is limited, as developers and tenants invest in locations that are desirable from a market perspective, and government policies and tools have a minor impact on influencing market fundamentals. All of the interviewees recognized that the regional office market is limited and grows incrementally (with downtown Vancouver being a unique sub-market), making it a challenge to attract office development to many other Urban Centres.

Some of the planning, regulatory and fiscal tools noted in this report have been used by municipal governments at different times. As for policy, some plans require a certain amount of a development to be reserved for office or employment space. Another approach are policies that encourage office development, and provide for bonus density in exchange for the provision of office space. A common policy lever is to permit or require office (and retail) space as part of a mixed-use project; but municipal representatives indicate that this is sometimes resisted by the developer where office space is not in demand or deemed profitable.

Fiscal incentives have been tried as well. Lowering permitting fees seems to be the easiest tool, compared to the challenges of lowering municipal charges or property taxes. Municipal representatives interviewed noted that lowering Development Cost Charges (DCCs) is not an easy matter given the legislative requirements of DCC bylaws. Property tax exemptions for office space or providing “tax holidays” are not allowed under provincial legislation. Although in some jurisdictions, revitalization tax exemption programs have been used as an incentive to attract development in support of economic growth in the downtown. Lowering property tax rates or providing municipal grants equivalent to a portion of property taxes owing for the

creation of new office space has been used as an incentive in some jurisdictions, and is an option to consider where appropriate.

Some municipal staff interviewed cited a number of challenges with attracting and growing businesses that occupy office space: high employee housing costs and other costs of living; high business costs; numerous building, development and permitting regulations; limited amount of skilled workers available; and difficulty in accessing capital to grow businesses. In some cases, businesses find it challenging to remain in a smaller municipality; as they grow the number of employees or their needs evolve, they cannot find adequate space, and need a more central location.

8.1. Long Range Municipal Plans

Municipalities have land use plans and policies that are supportive of long-term community building, and require some space devoted for employment uses, such as office. As the area population and economy grow, those employment spaces will be needed. Having a long-term land use vision is important, yet some flexibility is helpful. For example, exact uses may evolve over time, phasing can change, and also consideration of broader economic issues. In addition to plans and actions to enhance area amenities and features, municipal economic development initiatives may help to attract businesses and workers to Urban Centres.

In the immediate term, outside of Vancouver, municipalities are generally attracting mixed-use projects with office in podium buildings (usually 2-6 levels). Gradually, over the longer-term, more standalone office buildings on lands designated for such are expected to be built as the demand for office space grows, providing accommodations for more businesses and larger office tenants.

Still, tensions remain between developers and municipalities about how much office is the right amount. City policy requirements for office space in a mixed-use development can be significant. In some cases, office-supportive uses or functions such as retail or amenities can be counted towards that space.

Developers also say that planners need to be less prescriptive. Rather than only allowing a very specific or limited form of office use in certain areas, allow all types of office uses and let the market determine specific uses. In the past, the concern was that tech tenants could not pay as much rent as regular office tenants; now the situation has reversed.

Other suggestions by developers included: letting the downtown emerge as a new innovative district; allowing greater flexibility and facilitate quick permitting, as was done with street patios during the pandemic; testing new initiatives as pilot projects, temporary uses, experiments, etc.; and set an overall tone for a business-friendly environment, and positivity about investment.

Proactive municipality incentives could include efforts to attract entrepreneurs, including package of lifestyle / workstyle improvements by making the place special and unique, such as creative districts, entertainment features, improved transit, etc. A major anchor / institution

(such as a government agency) can attract additional activity and create critical mass for an area to support market office development. Universities, possibly focused on technical skills training aspect, including employers involved in informing the curriculum, can help incubators expand, and grow the workforce and business ecosystem.

8.2. Metro Vancouver Regional Government Role

Municipal staff appreciate Metro Vancouver as a creditable source about the need for employment and job-supporting lands and their protection, and to defend against ongoing pressures for conversion to other uses. Namely, focusing office development to Urban Centres, and protecting industrial lands for industrial uses. This can and should include the provision of resources, references, guidelines, best practices, etc., that can help with local planning initiatives, however municipalities do not want regional policies that impose additional requirements or that limit municipal flexibility.

The regional growth strategy recognizes the long-term intent for further growth of Surrey and specifically Surrey City Centre, and the city appreciates enhancing this action. Through continued population growth in the region shifting east, Surrey is increasingly a major and connected centre for the Fraser Valley area.

9.0 FUTURE CONSIDERATIONS FOR OFFICE IN URBAN CENTRES

This section outlines various actions by different parties to support office space development and occupancy in Urban Centres. These items are organized into two parts: immediate priority actions, and a list of other areas for further exploration. All of these actions require a combination of technical solutions and political and industry support coordinated between the public and private sectors.

Municipalities in the Metro Vancouver region continue to undertake various efforts to attract office development. In some cases, these policy efforts match market forces, such as in downtown Vancouver where there is strong demand, especially for tech sector tenants who seek locations with rapid transit and urban amenities. In other places, market demand is spurring office development at SkyTrain locations that are not necessarily in Urban Centres. Elsewhere, municipalities are encouraging and requiring mixed-use development with office space components even where developers state that there is limited office market demand. Municipalities are requiring supply in the hopes of generating demand.

Municipalities want to attract office investment to their Urban Centres, while developers want to build development that fulfils market demand, and businesses want accommodations that meet their operational needs. Ultimately, office development is a large and long-term investment, with the main decision factors being market forces and values, specifically: land prices, construction costs, and lease rates.

9.1. Priority Actions

The issues most consistently expressed in interviews and supported by research, and which can be advanced in the shorter term with a relatively high potential of effectiveness, include:

9.1.1. Development Approval Process

Streamline the development review / approval process, reduce the uncertainties and risks, and manage municipal charges / fees.

- By providing a streamlined development application process and reducing regulatory barriers, the review process will benefit from less risk, time, and costs for developers. This will encourage and facilitate investment in municipalities with approval processes that are clear, consistent, and predictable.
- This is in response to the challenges developers experience; interviewee suggestions ranged from removing obstacles to development by simplifying the approval process, and allow higher densities where appropriate.
- As argued by several developers, the supply of office space in Vancouver is constrained by a slow approval process, in addition to the need to recognize market forces and business cycles. A quicker approval process would allow for more responsive office developments to meet market demand. Projects take a very long time - many years from

concept to completion - with approvals taking a significant part of that process, which makes it more difficult to make investment decisions that respond to market signals.

9.1.2. Land Use Planning

Encourage, but do not mandate, mixed-use projects with office components. Allow market demand to inform the supply of office development built in specific locations.

- Municipal government plans need to prioritize office development at Urban Centre (and secondarily to FTDA) locations and provide supportive and consistent policies. Plans that clearly designate "CBDs" in Urban Centres help provide direction and focus on where office development should go. If sites are designated / zoned for office uses only and this is not consistent with the market, they may remain undeveloped for a significant time.
- Municipalities can assist office development in Urban Centres by assembling lands in key areas and selling these to developers as prepared sites ready for development.
- Granting increased development rights for larger sites may encourage land assembly.
- Municipalities can help by providing the infrastructure, amenities, and facilities desired by businesses and workers in Urban Centres. Municipalities can also invest in initiatives that improve downtowns, such as façade improvement and crime reduction programs, urban design upgrades, supporting business improvement associations, and downtown promotional events.

9.1.3. Zoning Definition

Allow general office uses, rather than overly specific / limiting types of office uses. This would improve tenanting flexibility and decrease landlord risk.

- Interviewees stressed the importance of municipalities establishing zoning specifically for office uses in priority locations where there is market demand. Developers and brokers repeatedly stated that municipal zoning bylaws should not be overly prescriptive or restrictive about the specific type of office use permitted; rather, allow for 'general office', which could be used by different types of tenants to provide flexibility as the economy and market evolve.
- They also suggested flexibility for office zones to allow other supportive and ancillary activities.

9.1.4. Tenant Permits

Shorten and simplify the permitting process for basic interior renovations and improvements needed when new office tenants occupy a premise and operate a business.

- The tenant representatives interviewed had a number of suggestions for municipal actions. They requested consultation on government initiatives that could impact businesses (e.g. permitting and approval requirements and processes), and asked that governments keep business costs down, have competitive property tax rates, and improve processes for obtaining business licences.

- In terms of permitting, for office tenants moving into a building, the time to get a permit can be many months, for simple tenant improvement and occupancy permits. Building code requirements can trigger costly upgrades that make it difficult to bring existing space up to new standards, especially with older buildings.
- This lengthy, expensive, and cumbersome requirement can be costly for both the landlord and tenant. Accordingly, some tenants decide to stay in their current space rather than move.
- Cities are encouraged to simplify this permitting system, similar to the past City of Vancouver Tenant Improvement Permit System[30], but applicable to a wider range of buildings. Also, that municipalities should allow Certified Professionals to review drawings to expedite the approval process.

9.1.5. Municipal Incentives

Explore financial, regulatory, and other incentives to encourage office development.

- Municipalities could offer incentives for office development in Urban Centres, such as providing bonus density, reducing development fees, expediting development review processes, or lowering property taxes, and utilizing revitalization tax exemption programs, as appropriate. There may be lessons learned from some municipal programs with incentives to encourage rental and affordable housing developments.
- Other incentive or benefits may be in the form of improving the features and amenities of Urban Centres, ranging from enhanced urban design, investments in infrastructure and facilities, public spaces, transportation upgrades, etc., which all improve the desirability of the area.

9.1.6. Research

Undertake further relevant research and case studies / best practices / innovation profiles into topics such as mixed-use development, such as identifying opportunities to integrate office space into mixed-use and multi-use projects, but also identify where office components may or may not be warranted.

- Interviewees appreciated research and reference publications by Metro Vancouver about office, industrial, and employment matters. Specific possible additional areas for research: explore more consistent municipal zoning provisions across the region, explore how better to achieve a balance of housing and employment growth objectives, and document local market conditions.

9.2. Other Areas for Exploration

The following are potential additional areas and actions that could be explored by Metro Vancouver, municipalities, developers, and other organizations to encourage and facilitate office development in Urban Centres. Generally, these initiatives support sound land use

[30] TIPs is an alternative permit-issuing process for renovation projects which require a building permit or a development-building permit.

planning and policy development, an increase in technical research and information sharing, and further enhancing coordination and collaboration. Participation by all stakeholders is required to achieve success. Some of these actions are shorter term while others are longer term, and plans to encourage office development in Urban Centres must recognize market fundaments and tenant and developer needs, while advancing both local and regional goals. These actions are organized by the relevant level of government and can be advanced through inter-agency and industry collaboration.

9.2.1. Metro Vancouver

- Advance and implement the regional growth strategy and regional context statements with supportive municipal plans and policies that direct investment, jobs, and development to Urban Centres and secondarily to Frequent Transit Development Areas, and restrict significant office development in out-of-centre locations.
- Work with municipalities, other agencies, and the development community to consider possible refinements to regional policies to best support the goal of attracting office development to Urban Centres.
- Promote the importance of business and office space in the region as part of a healthy economy supporting prosperity in the form of investment, employment, and taxation. This can be through advancing and implementing the goals, strategies, and actions in the regional growth strategy and ensuring that municipal plans, including regional context statements, official community plans, area plans, and economic strategies, highlight the importance and value of office space to the economy and community.
- Document and share regional economic issues and explore advancing initiatives that support economic and employment growth, including office-based businesses, and promote the region as a destination for investment. This can include encouraging efforts by municipalities and the province to retain and attract businesses to the region and office space to Urban Centres through an environment that is conducive to business investment and growth.
- Collect and promote case studies and best practices about ways municipalities and developers can encourage and support office growth in Urban Centres.
- Maintain and share data, statistics, and other information resources about office buildings and Urban Centres that may be of use for municipalities, businesses, investors, developers, and tenants. Specifically, periodically update the inventory of office buildings in the region.
- Encourage, as appropriate, municipalities to:
    - Streamline the development and permit application processes – review, costs, time, risk – in general and specifically for office development in Urban Centres. This may include developing guidelines to facilitate a clear and timely review process.
    - Develop incentive programs for office development in Urban Centres. This may include conducting research about possible incentives and sharing materials with municipalities to inform them about available tools.
    - Prepare development policies and design guidelines to support office development in Urban Centres. This could include guidelines or templates benefiting municipalities, or hosting education / information sharing events.

- Encourage TransLink to continue to improve transit service to Urban Centres, and where appropriate, improved local transit service to connect existing office parks located in urban areas to the Frequent Transit Network or commuter level transit service.
- Work with TransLink and member municipalities to develop appropriate transportation and land use policies that support the development of office space in Urban Centre locations.
- Work with the provincial and federal governments to encourage them to locate their major office accommodations and appropriate facilities in transit-oriented, Urban Centre locations.
- Continue to support coordination on economic issues at the regional level. Activities such as data collection, research, information sharing, and networking to supplement municipal efforts.

9.2.2. Municipal Governments

- Fostering a business-friendly environment by promoting the importance of office space as part of a healthy economy supporting prosperity in the form of employment and taxation. This can be done through municipal official community plans and area plans as well as economic strategies that respond to the needs of business, specifically office tenants, and best ways to accommodate this form of development within the community.
- Promote the infill and intensification of Urban Centres through municipal plans and policies as opportunities for developers and businesses to invest.
- Ensure that municipal policies and zoning clearly identify and promote the CBD within each Urban Centre. Consider which areas can accommodate large scale office uses, and which are best for local serving office.
- Through official community plan or other council policy, not support or approve significant office developments in locations outside of Urban Centres.
- Within the context of overarching municipal and regional goals and objectives, consider reviewing zoning bylaws for office uses to:
    - Ensure that they do not unduly limit office development potential on Urban Centre lands.
    - Pre-zone lands for office uses, and not allow other unrelated uses, in appropriate locations. This would send clear direction to landowners and developers about the desired long-term use for those lands. This could also include establishing higher density zoning or bonus density provisions for office space use or a density transfer program.
    - Allow different forms of office building designs, such as larger floorplate low-rise office spaces which may be in demand and more efficient than smaller floorplates, while respecting local conditions.
    - Ensure requirements that mixed-use buildings include an office component only apply where appropriate and where the market supports it.
    - Implement flexible zoning that allows for 'general office' uses, rather than specific and restrictive types of office uses.
    - Limit office uses and amounts to a scale that are accessory to industrial uses in designated industrial areas.

    - Discourage significant office developments in locations outside of Urban Centres.
- Explore specific economic development initiatives to attract office investment; an 'open for business' approach for office development will encourage developers and businesses to consider investments in these communities.
- Invest in public infrastructure and facilities / amenities in Urban Centres to attract private sector investments. This could include investments in transportation and other infrastructure and community facilities / amenities that benefit businesses and workers.
- Consider offering greater development rights for larger sites to encourage land assembly for office development.
- Investigate implementing a program that fast-tracks building interior and occupancy permits for tenants (modelled on the previous City of Vancouver's "TIPs" program) as well as using Certified Professionals to review applications.
- Explore pre-servicing areas to be 'building-permit ready' for office buildings.
- Review property tax rates to support competitive business costs, and consider other appropriate financial incentives for new office buildings.
- Support Business Improvement Associations which may assist with promoting and improving business districts to make Urban Centres more attractive for office tenants.
- Locate municipal offices and facilities in Urban Centres; interviewees noted the City of Surrey's relocation of city hall to Surrey City Centre as a positive example.

9.2.3. Provincial / Federal Governments

- Share available data about office and employment development and related economic matters, through BC Assessment Authority, BC Stats and other applicable agencies.
- Locate provincial, federal and other government agency offices as well as major institutional facilities such as universities and hospitals in Urban Centres, where possible.
- Province – assist with review of property tax rates for office space to support competitive business costs. This may include leading a taskforce with stakeholders to review possible adjustments to property tax rates and policies.
- Province – support economic development initiatives that retain and attract businesses to the region. This may be through working with Metro Vancouver / Invest Vancouver and stakeholders to explore preparing a regional economic strategy and advancing initiatives that support economic and employment growth in the region, including efforts to retain large businesses and grow smaller businesses, and promote the region as a destination for investment.
- Invest in necessary infrastructure and facilities / amenities in Urban Centres to attract private sector investments. This could include investments in transportation and other infrastructure and community facilities / amenities that benefit businesses and workers.
- Develop implementation agreements or memorandums of understanding consistent with the regional growth strategy directing government investments to Urban Centres as well as other supportive actions.
- Province - help with training an educated workforce.
- Federal - allow immigration or temporary visas for skilled workers needed by growing businesses.

9.2.4. Development Community

- Share information and research with local governments to foster a better understanding of the development process. This may include periodic meetings to exchange information and ideas between the public and private sectors or other types of special events.
- Development groups, such as NAIOP, UDI, ULI, and BOMA, could work with local governments to inform municipal plans and policies that are supportive of office development in Urban Centres. This could include sharing expertise about the office development financial and market requirements for land use plans and policies to include viable office space components.
- Work with municipalities and Metro Vancouver to identify and address regulatory barriers and challenges for office development in Urban Centres.
- Explore the potential for mixed-use and multi-use developments with office components, where appropriate.
- Consider the commuting needs of employees and access via different transportation modes for office development, including the potential for transportation demand management strategies to encourage transit usage.
- Further explore financial and market viability of office development opportunities at Urban Centre locations, especially beyond the Vancouver Metro Core, rather than non centre locations for office projects.
- Apply lessons from other jurisdictions about office development in Urban Centres to the Metro Vancouver region.
- Promote the benefits of locating in Urban Centres to office developers, investors, businesses, tenants, and workers.

Appendix A: List of Interviewees

Organization	Name / Title
Altus Group	Andrew Petrozzi, Research Director for Western Canada
CoStar	Paul Richter, Director of Market Analytics, Western Canada
Hemson Consulting	Adam Mattinson, Consultant
Regus / IWC	Alex Kanaan, Team Lead Area Sales Manager
WeWork	Sean Lemckert, Portfolio Manager
GWL Realty Advisors	Wendy Waters, Vice President, Research Services & Strategy Anthio Yuen, Senior Director, Research Services & Strategy Sara Obidi, Research Analyst, Research Services & Strategy Peter Jenkins, Director of Leasing
Hudson Pacific Properties	Chuck We, Senior Vice President, Western Canada David Haugen, Senior Director Leasing
Oxford Properties	Ted Mildon, Director, Office Leasing
PCI Developments	Dan Turner, Executive Vice President Jarvis Rouillard, Senior Vice President
QuadReal Property Group	Jeff Rank, Senior Vice President - Leasing
Avison Young	Glenn Gardner, Principal - Office Sales & Leasing
Colliers	Rob Chasmar, Senior Vice President Shalisha Senkow, Associate Vice President, Workplace Advisory Russell Whitehead, Senior Vice President, Planning & Placemaking Susan Thompson, Associate Director, Research Adam Jacobs, National Senior Director of Research
CRESA	Ross Moore, Senior Vice President & Managing Broker
Cushman & Wakefield	Paul Carrothers, Vice President, Office Svetlana Lebedeva, Research Manager
CBRE	Eli Applebaum, Vice President
JLL	Mark Chambers, Executive Vice President of Office Leasing Shawna Rogowski, National Research Manager - Office
City of Burnaby	Chun Nam Law, Strategic Initiatives Planner Ian Wasson, Senior Planner Jesse Dill, Senior Planner Lily Ford, Senior Planner
City of Coquitlam	Andrew Merrill, Director Development Planning Genevieve Bucher, Director Community Planning Andre Isakov, Economic Development Manager
City of Richmond	John Hopkins, Director, Policy Planning Suzanne Carter-Huffman, Senior Planner

	Jill Shirey, Manager Economic Development
City of Surrey	Patrick Klassen, Community Planning Manager Preet Heer, Community Planning Manager Andrew Dong, Community Planner
City of Vancouver	Matthew Bourke, Planner III - City-Wide & Regional Planning Chris Clibbon, Planner II - City-Wide & Regional Planning Thien Phan, Senior Planner - Rezoning Centre John Grottenberg, Planner III - Special Projects Office Sean Martinez, Planner II - City-Wide & Regional Planning Nathan Bunio, Planner - City-Wide & Regional Planning
Vancouver Economic Commission	Bryan Buggey, Director - Strategic Initiatives and Sector Development James Raymond, Manager - Research & Analysis

Thank you to the interviewees who provided their insights to inform this report.

Interviews were conducted by Eric Aderneck, Senior Planner, Metro Vancouver, between mid-September 2022 and mid November 2022.

The preparation of the earlier edition of this report was informed by other interviews at that time. Comments that are still relevant are retained in the updated edition of this report.

Appendix B: Interview Discussion Questions

The following questions were provided to interviewees in advance of meetings for their preparation, noting that not all questions applied to all interviews.

Views on Metro Vancouver Office Market Issues and Trends:

1. What are the region's major strengths and weaknesses regarding office development and tenancy?
2. What are the greatest barriers / challenges to growing the corporate / headquarter office market in the region?
3. What are major issues or trends facing the office development market in Metro Vancouver (such as: impacts of COVID-19 and associated Work-From-Home vs Back-to-Office patterns, changing nature of work, tenure / co-working, tenant needs, lease values, land values, construction costs, building designs, regulatory / permitting, etc.), and how is this evolving?
4. For office tenants that are moving to the region, where are they moving from, and what are they seeking?
5. For office tenants that are expanding within the region, do they typically stay in the same geographic area or move, and what are they seeking?
6. Which sub-markets within the region compete / complement with each other, and which do not?
7. To what extend could office development and office tenants be guided to other Urban Centres outside of the City of Vancouver Metro Core?
8. How has the new supply of office buildings in the region, particularly in downtown Vancouver, impacted office market and tenancy?
9. Any notable observations about the sectors and sizes of office tenants seeking accommodations, and the type of desired spaces and features?

Questions for Developers and Brokers (some questions relate to tenants):

1. What are the key considerations / criteria for selecting a site for an office building development, and how might this be evolving (such as area features/amenities, proximity to transit, proximity to highways, availability of parking, mixed use vs single use complex, building designs, land values, lease rates, etc.)?
2. What are office tenant key selection criteria, and how has this changed?
3. Has the premium that tenants are willing to pay to locate in Urban Centres / near transit / amenities vs other locations without these features changed over the past five years (or since 2020 due to COVID-19)?
4. What do developers and tenants perceive to be positive or negative qualities associated with Urban Centres?
5. How does the market differentially consider Urban Centres, SkyTrain stations (historic, new, or planned), or proximity to frequent bus transit routes?
6. What are challenges or barriers to developing in Urban Centres vs other locations?

7. Could efforts by municipalities to reduce costs (such as reduced DCCs, application fees, approval processes timelines, etc.) or enhance services / amenities have a significant impact on office development / tenancy decisions?
8. What could municipalities or Metro Vancouver do to encourage additional office developments in Urban Centres?

Questions for Municipal Staff (Planning and Economic Development):

1. What are some notable municipal experiences or examples (both successes and challenges) to attract office development to cities or more specifically to Urban Centres?
2. What sorts of policies or programs does the city have in place to encourage office development in Urban Centres (or other target locations), and how do developers respond to those?
3. Has there been a notable shift (in the past five years, or since 2020 due to COVID-19) towards more office development occurring in Urban Centre locations vs suburban / highway oriented locations?
4. How do developers consider municipal and regional plans when selecting an office development site?
5. What if any planning research / policy could help support more office development in Urban Centres?

Appendix C: Corporate Headquarters and Major Office Employers

Large office tenants, such as corporate headquarters or major branch facilities, are usually required to warrant large office developments through pre-leasing space to finance new office buildings. Other major Canadian cities/regions have more corporate headquarters (HQs) that are able to commit to new office space; this is not generally the case in Metro Vancouver, which has more small and mid-sized offices. However, over the past few years significant tech companies have entered the Vancouver market and taken up large blocks of office space.

The Importance of Head Offices

The role of head offices and their associated benefits are described in this section, copied from a report focusing on trends in office headquarters and particularly in Vancouver[31]:

> *While head offices only employ a few hundred workers, they generate indirect benefits to the local economy. Their employees are highly-skilled, contribute more to the tax base, and support innovative activities. There is also likely to be additional employment generated by related businesses in the business service industry. The majority of head offices outsource accounting, legal, and advertising services. Expenditures on outsourcing for these three services amount to 65% of the wage bill of head offices, mostly on advertising. Jobs related to head office activities tend to require high skills, pay high wages and contribute strongly to tax revenues. Head office activities are innovative and innovation may generate knowledge spillovers and above-normal profits. Head offices of major corporations can be philanthropic, funding arts, education, and other community programs.*

Further, the following text is taken from a report on office headquarters in British Columbia and Vancouver by Business Council of British Columbia:[32]

> *The choice of head office location carries significance for the company and host jurisdiction alike. Of course, the presence of head offices also matters in a substantive way, not just symbolically. 'Head offices function as centres of command and control for corporations; they are often where key decision-makers are located.'[33] There are sound economic reasons why cities, states and provinces are keen to host the headquarters of large firms. To begin with, head offices bring high paying jobs, both directly but also indirectly because they are an important source of demand for locally provided producer services – e.g., law, accounting, engineering, executive search, etc.[34] Head offices act as anchors to the surrounding community by utilizing local suppliers, providing leadership*

[31] University of British Columbia, Sauder School of Business, Competition Policy Review Panel Research Paper Summary - Keith Head, John Ries, Head Office Location: Implications for Canada, 2008.
[32] Business Council of British Columbia - Jock Finlayson, Karen Graham, Corporate Headquarters and Head Office Employment in British Columbia: 2006 Update, 2006.
[33] Statistics Canada - John Baldwin, W. Mark Brown, Foreign Multinationals and Head Office Employment in Canadian Manufacturing Firms, June 2005.
[34] Federal Reserve Bank of Chicago, Economic Perspectives - T. Klier, W. Testa, Location Trends of Large Company Headquarters During the 1990s, Q2 2002.

and sponsorship of charitable organizations and the arts, and helping to establish business clusters of expertise and ideas.[35]

Indeed, the evidence suggests that the concentration of numerous head offices in a particular city or region often has a "cluster" effect, as corporate networks are formed, supplier industries develop tight linkages with headquarters operations, and ideas and best practices are shared among business leaders. These kinds of business clusters contribute to the development of vibrant communities.

The presence of a corporate headquarters can have numerous direct and indirect effects on a local economy[36]. They tend to have higher-paying jobs, and can attract other businesses that serve the corporation's needs and those of its well-paid employees. From the corporation's perspective, there are efficiency gains to be had from sharing services and having a concentration of knowledge.

Headquarter Location Decision Factors

Researchers have identified the main determinants of head office location as[37]:

- International accessibility
- A skilled workforce
- High quality of life to attract international staff
- Low corporate and personal taxes
- Excellent information and communication technology infrastructure
- Well-developed business support services (legal, accounting, public relations)
- Low risk (in terms of crime, exchange rates, regulatory and tax changes)
- Proximity to customers
- Proximity to production operations
- Cost and availability of office space

The propensity of attracting additional headquarters increases with the number of same-industry headquarters and activities in a region. The presence of specialized intermediate service providers including business services (such as advertising, employment agencies, computer services, legal services, engineering, and management services), and financial services (such as commercial banks, security and commodity brokers) exerts a positive and significant influence on the probability of receiving headquarters investment.

Economic geography theory suggests that the choice of headquarters location is a competition between the corporate need to be in proximity to customers and suppliers, high-level professional services and infrastructure, and motives for cost and tax savings. Headquarters relocation can thus add value to a firm and falls into a firm's value creation program. However, moving headquarters entails substantial costs - property acquisition and business interruptions, employee relocation, hiring, and training.

[35] International Financial Centre, British Columbia Newsletter - Ian Heine, The Loss of Head Offices in BC, June 2006.
[36] Fraser Forum - Hugh MacIntyre, Jason Clemens, Nadeem Esmail, Corporate Headquarters in Canada, January/February 2013.
[37] University of British Columbia, Sauder School of Business, Competition Policy Review Panel Research Paper Summary - Keith Head, John Ries, Head Office Location: Implications for Canada, 2008.

Attracting and Retaining Corporate Headquarters

To encourage headquarter development, the best response is to promote policies aimed at fostering a knowledge-based economy and a competitive business environment, such as investment in education, basic research, R&D promotion, and competitive taxes. This will benefit the economy as a whole along with helping to attract and grow head offices and associated employment.[38]

Experience from other jurisdictions can be summarized as a common set of factors (or conditions) that are necessary for a city-region to be successful in attracting new – and growing local – corporate offices. Research suggests that the most important factors are:[39]

- A clear regional vision and well-defined and well-executed investment attraction strategy;
- Aligned leadership by local business and civic leaders, acting as ambassadors for the city-region;
- A competitive overall business environment (tax burden, regulatory complexity, and immigration rules);
- Political and regulatory stability / certainty;
- World-class infrastructure (transport and telecommunications links), a high quality of life, and availability of good educational, health and financial / professional services;
- An effective investment promotion / attraction agency (ideally, a one-stop shop to communicate comparative advantage and facilitate investment); and
- An available skilled workforce.

Metro Vancouver Headquarter Attributes

The number of corporate headquarters in the Metro Vancouver region has declined or stayed constant over the past two decades, despite a growing population, workforce, and economy. This is due in part to past natural resource sector companies based in BC closed, relocated, or consolidated. These HQs have not been fully replaced by local companies expanding to national or international scale HQ operations, or HQs relocating to the region from elsewhere.

That noted, there have been significant 'branch' offices that have come to Vancouver and expanded. These are associated with the tech sector (software, animation, gaming, film, etc., and more recently bio-tech / life sciences), notably Microsoft and Amazon. Vancouver's proximity to Seattle and California and being in the same time zone are noted attractions, along with relatively low costs (both accommodations and labour), ease of entry for international talent, and favorable USD/CDN currency conversation rates.

Although high cost by Canadian comparison, Vancouver is not exceptionally expensive compared to other international cities. Most immigration, which is high in Canada, goes to Toronto and Vancouver. To attract international skilled workers to North America, visas to

[38] Statistics Canada - Desmond Beckstead, Mark Brown, Insights on the Canadian Economy: Head Office Employment in Canada, 1999 to 2005, 2006.

[39] Business Council of British Columbia, Canadian Head Office Survey: How Do Metro Vancouver and British Columbia Stack Up?, 2016.

Canada are easier to obtain than USA. According to some views, Canada now stands on its own as a destination, not just as a steppingstone to USA.

These features are incentives for tech companies to locate major branch operations in Vancouver, but not enough to attract full HQs. While virtually all large cities / regions want additional HQs, that may not be readily possible for Vancouver, nor as needed, given the diverse economy and growth of the tech sector.

Vancouver is now on the international map, yet has lower cost compared to San Francisco and Seattle, for example. This is a consideration for decisions by international companies about where to locate their operations and staff teams. One interviewee believed that if during an economic slowdown international tech companies start to layoff staff, they would do so first in cities where costs (which comprise mostly labour) is highest, before Vancouver.

Specifically, with a growing tech sector is an expanding workforce comprising both local university graduates and international immigrants. Some of these businesses and employees in the region may lead to spinoff / start-up businesses that further grow the local employment market and expand the associated economic ecosystem. (Associated with this growth in workforce is a need for increased housing supply, particularly well-located rental apartments close to employment centres, along with investments in transit, and enhanced amenities.)

The growing tech sector tenants are as large as some corporate HQs in terms of office sizes. These large 'lumpy' amounts of space are both substantial to build and to occupy all at once. In the past, it was extremely rare for a single tenant to occupy 400,000 sq ft of office space in the Metro Vancouver region. Companies like Amazon have pre-leased and absorbed such blocks of space, driving the development demand to build it. And now that there is an increasing number of large office buildings and modern spaces, they can accommodate other growing tenants.

Few HQ tenants in Vancouver means many smaller tenants, providing for a more diversified (and some say resilient) tenant market not dominated by a few large players, and thus less risk for office developers and landlords. The Vancouver office market, long known for small tenant sizes, is growing both through the noted large tech tenants and some expanding local companies (such as tech, apparel / clothing, as well as various professional services).

A sectoral or economic decline is not likely to affect all the many small tenants in the same way. Furthermore, smaller tenants are less able to readily rid excess office space, whereas large HQs with huge blocks of space can unload surplus space multiple floors at a time.

Relative to other major office markets in Canada, Vancouver is seen as distinct. Toronto is larger and is the financial capital of the country, and increasingly an international destination for such activities and firms. Calgary is associated with the oil and gas sector, with its periodic swings that can greatly impact the dependent business economy and office market.

Seattle is well-known for Microsoft and other software companies, but is in a league ahead of Vancouver. Vancouver's Asian connections are often noted as a feature, however given geo-political strains with China, not necessarily as strong or relevant as in the past. While Vancouver

is appreciated by residents for its nice weather and quality of life, that is not the main consideration for corporate location decisions; rather good value for the business, even if employees face high housing costs.

Also, according to some sources, for commute patterns in Vancouver versus some other city-regions, the commute lengths (as well as tolerance for such by workers) is notable lower in Vancouver. That may be a function of the relatively good transit service including SkyTrain in the Metro Vancouver region.

Other Considerations

The strengths of the Metro Vancouver regional economy that particularly relate to the office market, as noted by interviewees, include: a 'Vancouver' brand that is well recognized, growth in the tech sector with large American companies locating facilities in Vancouver to access an international workforce via Canadian immigration policies, the region being a livable and desirable place with many amenities, and a strong educational system that fosters talent.

In terms of challenges or weaknesses of the region, high cost of housing and living were noted by many interviewees, as well as high land and construction costs for development, and excessively long and uncertain approval processes that increase risks for building projects.

Although Vancouver is known for high housing prices and office rental rates (by Canadian standards), compared to some other cities from where businesses and employees are moving from, such as San Francisco or New York City, it is not more expensive.

Corporate Headquarters and Employment

There is a fundamental fact about the Metro Vancouver office market – there are relatively few large corporate headquarters and associated office employees. Over the past few decades, mainly due to changes in the resource sectors, which represented a significant number of the headquarter offices in the region, these businesses have declined. Since then, the tech sector has grown, however not necessarily in the form of headquarter operations.

Many foreign corporations are attracted to Toronto as a national office location or Calgary as a Western Canada regional office location, rather than necessarily Vancouver. However, this is evolving, with less office demand in Calgary, due to fluctuations in the resource economy. There are a number of factors that challenge Metro Vancouver and British Columbia as a location for office headquarters compared to other Canadian centres, namely higher real estate costs, high costs of doing business, and high housing prices which can impose challenges in relocating and attracting staff. Yet on the other hand, Metro Vancouver region offers many benefits as earlier noted.

The below table and figure contains data from 2012 to 2020, showing the number of corporate headquarters located in Canada, British Columbia, and Metro Vancouver. Approximately 77% of corporate headquarters in the province of British Columbia are located within the Metro Vancouver region. Because the companies in the Metro Vancouver region are larger than the provincial average, they comprise approximately 88% of the HQ jobs in the province. While the

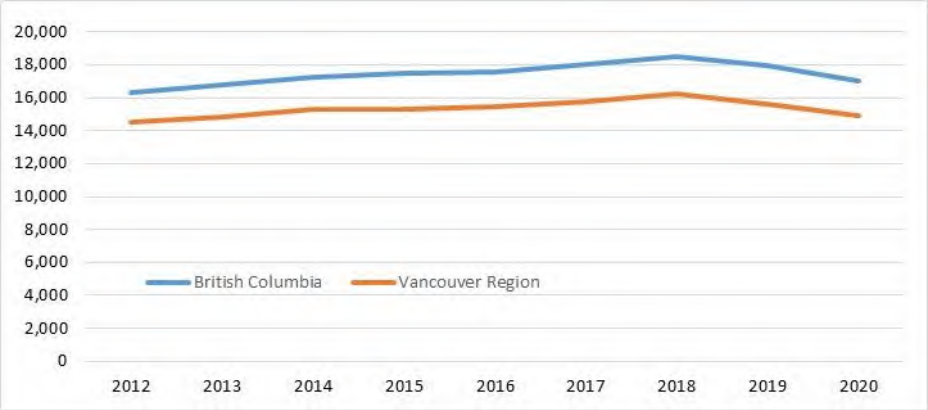
population and employment of the province and the region have increased, growth in headquarters and associated jobs has been relatively flat.

Table: Corporate HQ Offices and Jobs – Canada, British Columbia, Metro Vancouver

Corporate Head Offices	2012	2013	2014	2015	2016	2017	2018	2019	2020	*% Change*
Canada	2,793	2,773	2,759	2,736	2,728	2,729	2,737	2,736	2,694	*-3.5%*
British Columbia	319	319	313	311	307	308	313	319	314	*-1.6%*
Vancouver Region	244	242	239	237	239	239	242	247	241	*-1.2%*
Head Office Jobs	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	***% Change***
Canada	222,339	224,779	230,394	227,293	227,416	228,130	226,631	223,565	210,262	*-5.4%*
British Columbia	16,343	16,813	17,289	17,459	17,593	18,027	18,524	17,953	17,055	*4.4%*
Vancouver Region	14,513	14,840	15,281	15,290	15,423	15,783	16,261	15,605	14,898	*2.7%*
Population	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	***% Change***
Canada	34,714,222	35,082,954	35,437,435	35,702,908	36,109,487	36,545,236	37,065,084	37,601,230	38,007,166	*9.5%*
British Columbia	4,566,769	4,630,077	4,707,103	4,776,388	4,859,250	4,929,384	5,010,476	5,094,796	5,158,728	*13.0%*
Vancouver Region	2,418,938	2,459,426	2,507,414	2,544,484	2,582,202	2,616,904	2,658,582	2,709,277	2,746,491	*13.5%*

Source: Statistics Canada. Table 17-10-0135-01, Population estimates, July 1, by census metropolitan area and census agglomeration, 2016 boundaries

Chart: Head Office Jobs – British Columbia and Metro Vancouver



Metro Vancouver Headquarters

Over the last few decades, the Metro Vancouver region has seen the disappearance of some sizable businesses, due to consolidation in industries like mining and forestry, take-overs of large BC-based enterprises, and the relocation of companies to other jurisdictions. This has been offset to a significant extent by the growth of other BC-based enterprises, which have evolved from small firms to become larger organizations, as well as growth in the tech sector, although these are not necessarily corporate HQs.[40]

The following figure shows for the 2012 to 2020 period the number of corporate headquarters and number of headquarter jobs in the Metro Vancouver region. The number of corporate headquarters declined slightly and the number of headquarter jobs increased slightly during this decade. This was while the overall population and labour force of the region continued to grow. Thus, the number of headquarter jobs in the Metro Vancouver region as a proportion of total employment has stayed flat or declined.

[40] Business Council of British Columbia, Developing a Stronger Corporate Head Office Cluster, 2017.

Table: Corporate HQ Offices and Jobs – Metro Vancouver, 2012-2020

Geography	2012	2013	2014	2015	2016	2017	2018	2019	2020	*% Change*
Vancouver - HQs	244	242	239	237	239	239	242	247	241	*-1.2%*
Vancouver - HQ jobs	14,513	14,840	15,281	15,290	15,423	15,783	16,261	15,605	14,898	*2.7%*
Vancouver Region Population	2,418,938	2,459,426	2,507,414	2,544,484	2,582,202	2,616,904	2,658,582	2,709,277	2,746,491	*13.5%*
HQs per 1000 residents	0.101	0.098	0.095	0.093	0.093	0.091	0.091	0.091	0.088	*-13.0%*
HQ jobs per 1000 residents	6.00	6.03	6.09	6.01	5.97	6.03	6.12	5.76	5.42	*-9.6%*
Statistics Canada. Table 33-10-0110-01 Head offices and head office employment										

Using the same data and analysis, the number of headquarter jobs per 1,000 residents in the major business centres in Canada is shown in the below figure. Toronto has by far the greatest concentration of headquarters and associated employment in Canada, followed by Montreal, Calgary, and Vancouver.

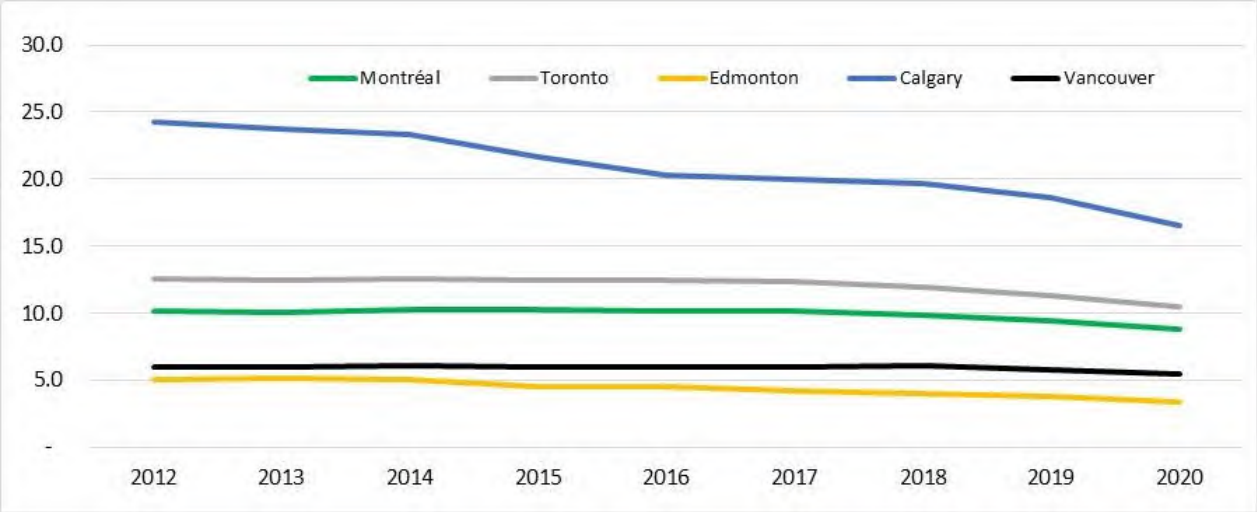
All Canadian metro regions experienced a decline in the number of headquarter jobs as a proportion of total employment during the 2012 to 2020 period, although Vancouver declined the least (it was the only geography not to decline in absolute numbers). Thus, Metro Vancouver's share of total headquarter employment in Canada increased slightly over this period, in part due to greater declines in other jurisdictions (and a total overall decline in Canada). Nevertheless, Metro Vancouver has a lower ratio of corporate headquarter jobs as compared to most other Canadian metro regions, apart from Edmonton.

Table: Corporate HQ Offices and Jobs – Major Canadian Markets, 2012-2020

Number of Head Offices	2012	2013	2014	2015	2016	2017	2018	2019	2020	*# Change*	*% Change*
Montréal	397	392	386	381	381	385	385	383	379	*-18*	*-4.5%*
Toronto	718	702	696	695	697	696	698	705	697	*-21*	*-2.9%*
Edmonton	120	119	118	113	114	115	117	120	115	*-5*	*-4.2%*
Calgary	222	216	215	210	209	213	212	204	197	*-25*	*-11.3%*
Vancouver	244	242	239	237	239	239	242	247	241	*-3*	*-1.2%*
Total	***1,701***	***1,671***	***1,654***	***1,636***	***1,640***	***1,648***	***1,654***	***1,659***	***1,629***	***-72***	***-4.2%***
Vancouver as % of Total	***14.3%***	***14.5%***	***14.4%***	***14.5%***	***14.6%***	***14.5%***	***14.6%***	***14.9%***	***14.8%***	***0.4%***	***3.1%***
Head Office Employment	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	*# Change*	*% Change*
Montréal	40,824	41,106	41,977	42,189	42,225	42,619	41,925	40,719	38,638	*-2,186*	*-5.4%*
Toronto	73,380	73,673	75,475	75,281	76,436	77,167	75,681	73,278	68,670	*-4,710*	*-6.4%*
Edmonton	6,242	6,559	6,658	6,138	6,148	5,924	5,739	5,518	4,951	*-1,291*	*-20.7%*
Calgary	31,572	31,935	32,284	30,604	29,161	29,068	29,251	28,222	25,606	*-5,966*	*-18.9%*
Vancouver	14,513	14,840	15,281	15,290	15,423	15,783	16,261	15,605	14,898	*385*	*2.7%*
Total	**166,531**	**168,113**	**171,675**	**169,502**	**169,393**	**170,561**	**168,857**	**163,342**	**152,763**	*-13,768*	*-8.3%*
Vancouver as % of Total	***8.7%***	***8.8%***	***8.9%***	***9.0%***	***9.1%***	***9.3%***	***9.6%***	***9.6%***	***9.8%***		
HQ Jobs per 1000 Residents	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	*# Change*	*% Change*
Montréal	10.1	10.1	10.3	10.3	10.2	10.2	9.8	9.4	8.8	*-1.3*	*-12.6%*
Toronto	12.5	12.4	12.6	12.5	12.5	12.4	11.9	11.3	10.5	*-2.1*	*-16.5%*
Edmonton	5.1	5.2	5.1	4.6	4.5	4.3	4.1	3.8	3.4	*-1.7*	*-33.3%*
Calgary	24.3	23.7	23.3	21.6	20.3	19.9	19.7	18.6	16.6	*-7.7*	*-31.7%*
Vancouver	6.0	6.0	6.1	6.0	6.0	6.0	6.1	5.8	5.4	*-0.6*	*-9.6%*
Average	**11.2**	**11.2**	**11.2**	**11.0**	**10.8**	**10.7**	**10.4**	**9.9**	**9.2**	*-2.1*	*-18.4%*

Source: Statistics Canada. Table 17-10-0135-01, Population estimates, July 1, by census metropolitan area and census agglomeration, 2016 boundaries

Chart: Headquarter Employment per 1000 Residents by Metro Region, 2012-2020



The following figure shows the amount of market office space (according to Colliers reports as of Q3 2022) and the regional population (according to census as of May 2021) for the major business centres in Canada. Calculating a ratio between the two values indicates the average amount of office floor space per resident in these metro regions. Based on this method, Metro Vancouver had 27 sq ft of market office space per resident, which is notably lower than Toronto at 38 sq ft and Calgary at 46 sq ft. (Note that these calculations exclude non-market office space such as government offices and institutions, which would likely be higher in government capital cities like Ottawa and Edmonton.)

The lower amount of office space reflects the fact that Metro Vancouver has a relatively limited corporate employment profile compared to the other Canadian cities, adjusted for population.

Table: Canadian Major Cities Office Space and Population Ratios

Region	Office Space Sq Ft	Regional Population	*Office SF per Pop.*
Montreal	99,011,837	4,342,213	*22.8*
Ottawa	44,275,821	1,125,306	*39.3*
Toronto	251,824,021	6,572,524	*38.3*
Edmonton	30,186,393	1,480,754	*20.4*
Calgary	72,107,737	1,559,284	*46.2*
Vancouver	75,178,790	2,773,148	*27.1*

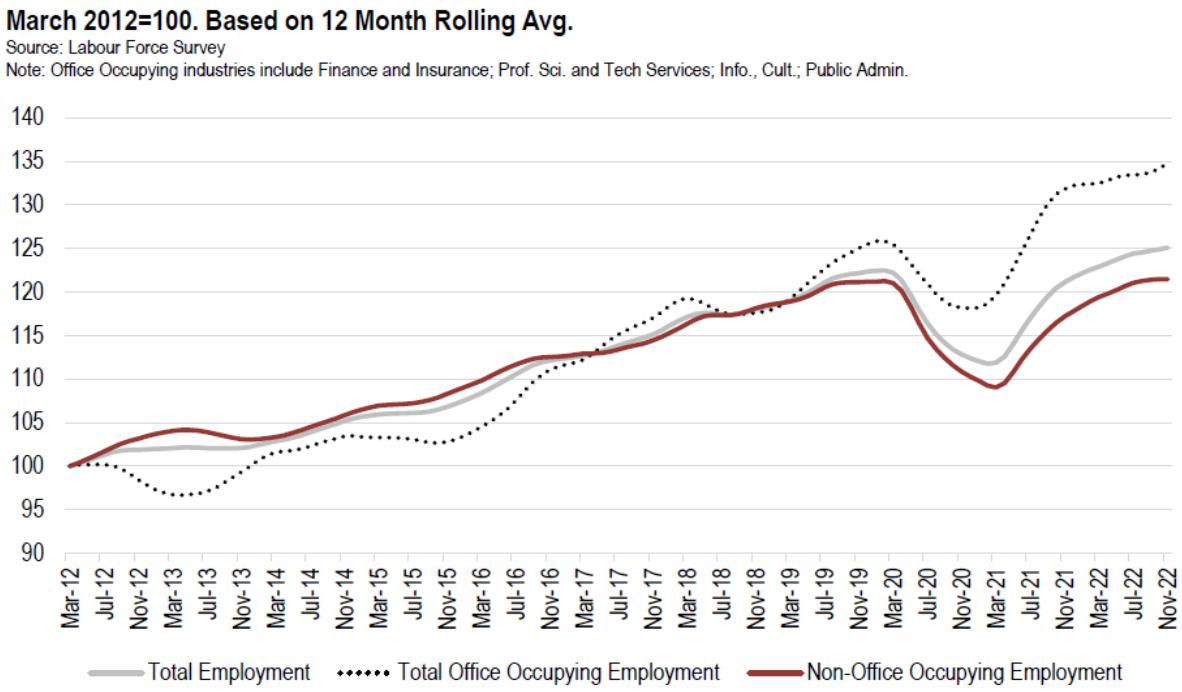
Note: Source: Statistics Canada. Table 17-10-0135-01. Population estimates, July 1, by census metropolitan area and census agglomeration, 2016 boundaries. Colliers Office Market Reports Q3 2022, Montreal, Ottawa, Toronto, Edmonton, Calgary, Vancouver. Ottawa office inventory and population does not include Gatineau. Office space is amount tracked in the market, not necessarily total inventory.

Office Employment Growth

The below figure shows the growth in employment in the Metro Vancouver region between 2012 and 2022. According to the classification of the labour force survey data, this shows that office type employment has grown faster that non-office employment, particularly between 2019 and 2022. All else being equal, this would indicate additional demand for office space to

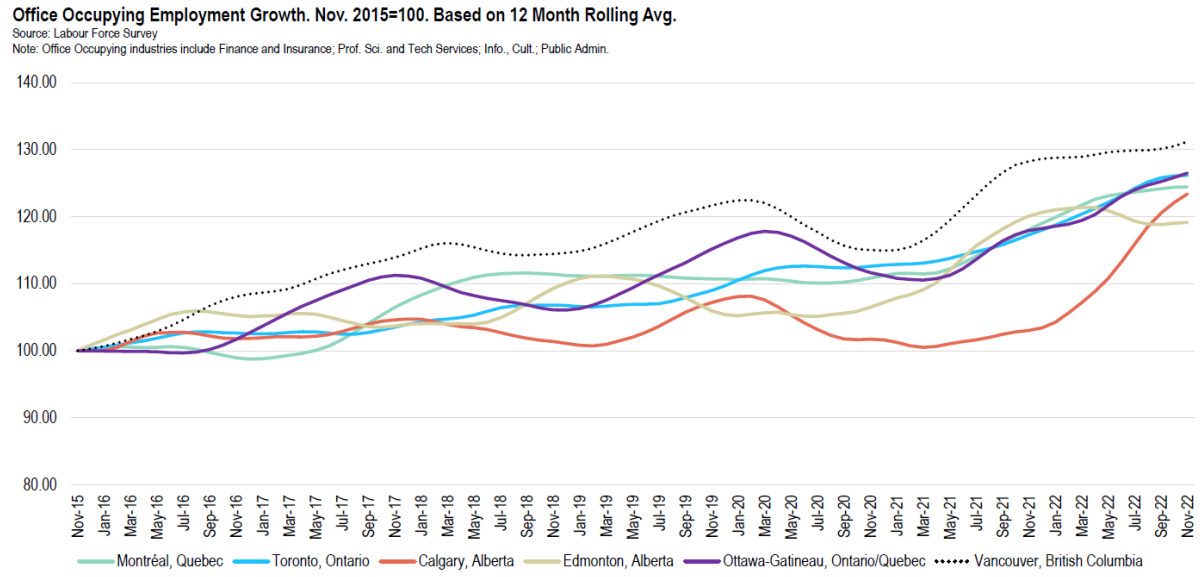
accommodate this growth in office employment, although adjusted for the fact that some employees may be working from home due to COVIC impacts. (Source: GWL Realty Advisors)

Chart: Metro Vancouver Office-Oriented Employment, 2012-2022



Comparing employment growth in Metro Vancouver with other major markets in Canada, between 2015 and 2022, percentage-wise Metro Vancouver grew faster and more consistently than the other markets. This may be a reflection of the strong growth in the tech sector in Vancouver during this period. (Source: GWL)

Chart: Vancouver Office Employment Growth, 2015-2022



Appendix D: The Evolution of Employment

For most businesses, their employees are key. With increasing attention to attracting and retaining talented staff in a competitive environment, especially in the tech sector, businesses are responding by selecting accommodations that have the location and features that employees want. The new and younger workforce, who sees work as a lifestyle and more than just a place to work and get paid, are no longer satisfied with a staid space. Instead, they want to work in a 'cool' place.

In some cases, COVID accelerated pre-existing trends and in other cases created new trends regarding workplaces.

Although real estate costs have risen, for most businesses accommodation costs are relatively small compared to staffing cost. Thus, looking holistically, businesses realize that paying a premium for a better location will result in benefits through higher employee satisfaction and retention. That said, for other businesses, perhaps with a workforce that is accustomed to commuting by car, a downtown location may not be desired or ideal.

Attracting Employees - The 'War for Talent'

Most work now is fundamentally different than it was in past decades, and the pace of change, fuelled by technology, economic and cultural trends, continues to accelerate. Amid this changing environment, companies must continuously maintain a competitive advantage to retain and attract talent.[41] The majority of workplaces in the past was dull, demotivating and incapable of effectively supporting collaborative or concentrated knowledge work. According to one publication: "In an attempt to create 'one size fits all' what resulted was 'one size fits nobody'".[42]

According to CBRE, agile real estate strategies incorporate:[43]

- **Diverse workplace design solutions**, fuelled by technology, to ensure the highest and best use of committed leased or owned space for the given requirements.
- **Flexible space solutions**, solving for requirements that are uncertain, transient or short-term.
- **Experience-led amenities, services and programming**, supported by technology, that offer substantive value to tenants beyond building location.
- **Diverse lease models** that range from long-term traditional leases and short-term turnkey solutions to on-demand, shared workspaces.

For occupiers and landlords, that means a focus on creating environments that enhance the workday experience. Across many industries, companies are adapting to the changing nature of work by refocusing on a workplace that offers balance, variety, and a sense of purpose. "It's not just about desks, offices, and conference rooms anymore, it's about engagement — specifically

[41] CBRE, The Agile Advantage, 2018.
[42] CBRE, FAST FORWARD 2030: The Future of Work and the Workplace, 2014.
[43] CBRE, The Agile Advantage, 2018.

a focus on the individual and supporting the uniqueness and value that comes from each person."[44]

The newest office designs are offering choices in when and where to work, placing more emphasis on purpose, providing places for social interaction, and adding interactivity that engages people.[45]

Considerations for Occupiers:[46]

- Commit to long-term requirements that are reasonably certain, and explore flexible space solutions for the rest.
- Focus on density and mobility in the workplace over traditional per-seat metrics.
- Design a workplace based on functionality for today and adaptability for the future.
- Invest resources into technology-enabled amenities, services and programming focused on the employee.
- Choose landlords committed to enhancing the overall experience of the building.

Considerations for Owners and Investors:[47]

- Build shared amenity floors that promote efficiency within traditional, tenant-leased environments.
- Provide the technology that tenants need to be successful and employees need to be engaged.
- Commit to the tenant experience journey through amenities, services and bespoke programming.
- Consider flexible space solutions to support evolving tenant demands.

Flexibility - From 'Workplaces' to 'Places to Work'

According to CBRE's view of the future, reference to the high-performance workplace will no longer refer to only space within the corporate office, although that will still remain a dominant part of where people work. "In 2030, we will think more about 'places to work' rather than the 'workplace'."[48]

Concepts such as 'the third place' (i.e. working in coffee shops and other public places) and co-working centres (i.e. work centres, often with memberships) could be considered as an extension of a corporation's core workplace.

Mobile technology has made "work from anywhere" a reality. The potential benefits of teleworking include increased productivity levels, reduced commuting times and costs, a wider pool of potential employees and improved employee job satisfaction linked to a better work/life balance.[49] Recent moves to more outcome-based work are making it possible to

[44] Gensler Dialogue ISSUE 31 - Vernon Mays, The Workplace Is Your Key Recruiting Tool, 2018.
[45] Gensler Dialogue ISSUE 31 - Vernon Mays, The Workplace Is Your Key Recruiting Tool, 2018.
[46] CBRE, The Agile Advantage, 2018.
[47] CBRE, The Agile Advantage, 2018.
[48] CBRE, FAST FORWARD 2030: The Future of Work and the Workplace, 2014.
[49] Griffith University: Peter Ross, Susan Ressia, Neither Office nor Home: Co-working as an Emerging Workplace Choice, 2015.

further decouple 'work' from a particular 'place'. Businesses have begun to rethink how they make use of their real estate to best facilitate work, by doing 'more with less'.[50]

At the same time, "going to the office" has other important qualities, such as being part of a community of people who exchange ideas and facilitate learning and co-creation, and thus spur innovation. For many workers today, co-working spaces offer the flexibility to combine mobile work with the connectedness and identity found in traditional offices.[51]

Activity-based working (ABW) describes a way to design space around different kinds of activities, or 'how' work gets done. In ABW spaces, employees select spaces suitable for the work task at hand. ABW offers a range of configurations geared towards different activities: creative team collaboration, meetings, quiet work, reflection, rest, and integrating workspace with hospitality amenities such as cafes.[52]

Real Estate as a Service - Rise of Co-working Operators

Prior to the COVID pandemic, co-working experienced exponential growth and established a global identity.[53] Co-working represents the rise of the real-estate-as-a-service model; real estate is transforming from a space utilization business to a service business.[54] The expansion of co-working employment has been described as a decentralised yet reflexive global movement.[55] Specifically, it reflects the decline in the number of traditional office workers and an increase in freelance and contract office workers.[56]

The stereotypical co-working space may be the opposite of traditional corporate workspaces, with a focus on technology, socializing, and informal 'play' spaces. However, new more sophisticated co-working spaces now provide concepts more relevant to larger organizations.

Unlike renting space in traditional offices, members of co-working spaces are not required to sign long-term leases, pay any deposits or spend large capital outlays on fit-outs, yet receive the right to use the office space and associated facilities.[57] People co-work for a broad range of reasons, including its relative cost, rental flexibility, the nature of their precarious work, the need for social interaction, the ability to engage in project work collaboration, and a better separation of work and home life.[58] Flexible office space arrangements are particularly attractive to small businesses that have difficulty acquiring the capital required for traditional real estate leases and are more uncertain about future space needs.

[50] University of Sydney, Co-working Spaces Australia: The new places where people work, businesses grow, and corporates connect, 2017.
[51] University of Sydney, Co-working Spaces Australia: The new places where people work, businesses grow, and corporates connect, 2017.
[52] University of Sydney, Co-working Spaces Australia: The new places where people work, businesses grow, and corporates connect, 2017.
[53] Cornell University / Cornell Real Estate Review - Daniel Wright, "Match Made in Heaven: Investment Benefits of Co-working Spaces in Historic Sacred Places", 2018.
[54] ULI Urban Land - John Egan, "Co-working Spaces Seen as Key Tenant for Houston Office", December 7 2018.
[55] City University of London - J. Merkel, "Co-working in the City", 2015.
[56] Cushman Wakefield, CO-WORKING and Flexible Office Space, 2018.
[57] European Real Estate Society - Chris Eves, Dulani Halvitigala, Hera Antoniades, "Co-working Space v. The Traditional Office Space: Challenges and Opportunities in Sydney", 2018.
[58] Griffith University: Peter Ross, Susan Ressia, Neither Office nor Home: Co-working as an Emerging Workplace Choice, 2015.

Co-working space is commonly a collaborative space in an office-like environment. The space can be in the form of very short office leases / agreements, used independently or collaboratively. The intent of co-working spaces includes a sense of community, encouraging greater productivity, providing access for mobile and freelance workers, and offering affordable solutions to start-ups unable to enter into long-term leases.[59] The fundamental concept of co-working is: create accessible, fully fitted out, office space on short-term leases.[60] Co-working providers are meeting the need with finished space that removes the hassle that small companies often face when they need to accommodate changing space requirements.[61]

Co-working spaces are shared working environments in which independent knowledge-workers gather to create knowledge and benefit from it, thereby "working alone, together" – or as one operator terms it: "*Work For Yourself, Not By Yourself!"*[62]

WeWork states: "It's about attracting and retaining talent among an increasingly liquid and digital workforce. We want people to make a life, not just a living."[63] Co-working with open concept work environments, with living-room style common areas and perks such as micro-roasted coffee, craft beer on draft and social events, also appeals to the millennial workforce, which has surpassed the Baby Boomer generation in size.[64]

In the face of long-term work fragmentation and outsourcing, co-working provides knowledge-workers with local communities and greater opportunities for collaboration with those communities.[65] However, simply putting people together in an open office space does not guarantee collaboration between co-worker members.[66] Coworkers frequently work alone in a shared space without much interaction, mutual support, or community orientation, which gives co-working hosts a special role in facilitating team work.[67]

Corporate occupiers can use co-working within their real estate portfolio, either as a provider of space at a single location or, on the other end of the spectrum, as an integrated partner across an entire portfolio. Large business occupiers are considering co-working for several reasons:[68]

- **Flexibility:** Co-working offers companies the option to quickly and easily expand or shrink their office portfolios on the margins. Co-working "swing space" can be used to manage space if a company needs to ramp up hiring or reduce headcount quickly.

[59] European Real Estate Society - Chris Eves, Dulani Halvitigala, Hera Antoniades, Co-working Space v. The Traditional Office Space: Challenges and Opportunities in Sydney, 2018.
[60] Cushman Wakefield, CO-WORKING and Flexible Office Space, 2018.
[61] BOMA BC Leasing Guide: Commercial Real Estate Office Space - Peter Mitham, "Shared Space - Co-working providers are changing how tenants lease space", 2018.
[62] Griffith University - Peter Ross, Susan Ressia, "Neither Office nor Home: Co-working as an Emerging Workplace Choice", 2015.
[63] ULI Urban Land - Leslie Braunstein, Inside the Office Space Revolution, October 26 2017.
[64] Altus Group, Top 10 Real INSIGHTS, 2018.
[65] White Rose Research / Journal of Business and Technical Communication - C. Spinuzzi, Z. Bodrožić, G. Scaratti, et al., Co-working is about community but what is 'community' in co-working?, 2018.
[66] Griffith University: Peter Ross, Susan Ressia, Neither Office nor Home: Co-working as an Emerging Workplace Choice, 2015.
[67] City University of London - J. Merkel, Co-working in the City, 2015.
[68] Cushman Wakefield, CO-WORKING and Flexible Office Space, 2018.

- **Talent Attraction/Retention:** Many employees are attracted to the "feel" of a co-working environment. Co-working can be a part of a company's human resources workplace planning which offers employees flexibility to work from outside the traditional, "corporate" office and in a desirable location. With the heightened focus on employee experience in a highly competitive job market, co-working can be a tool in attracting and retaining talent.
- **Cost Savings:** Even at a higher cost per square foot, flexible office space can help reduce overall commercial real estate costs in the long run. With a small, but growing proportion of a global portfolio in co-working, the remaining long-term, traditional leases can be tighter since organizations don't need to allow for as much expansion space that is not utilized or is underutilized for the first several years of the lease term. Co-working allows for the rest of the portfolio to be right-sized.
- **Innovation:** Specific teams or departments can be located in co-working facilities in order to develop a separate culture. These innovation labs can be a strategic tool for collaboration and creativity and/or can be designed to encourage employees to connect with other businesses outside of their organizations that may be future partners or customers.
- **Subleasing:** Corporate occupiers have partnered with real estate services firms or co-working providers to manage and monetize unused space by turning it into co-working space. This can be a creative alternative to leaving a location underutilized or subletting to a single tenant with a traditional sublease structure.

The demand for flexibility is not going to decline, especially considering the not-yet-fully known long-term implications of the COVID pandemic disruption.

Location of Co-working Facilities

Analysis indicates the majority of co-working spaces are located either in the heart of the Central Business District or the CBD fringe, with specific locations for the creative industries positioned furthest away from the CBD. In those cases, co-working operators are utilizing premium grade buildings.[69]

In other cases, commercial landlords may consider this as an opportunity to transform difficult-to-lease premises into co-working vibrant hubs. Instead of negotiating rental discounts with individual tenants, landlords are able to lease these spaces to co-working operators who bring credibility to buildings. As a result, co-working spaces can be attractive to landlords with underperforming or underutilized assets located in less desirable areas as they allow landlords to improve office space performance.[70]

Landlords

Historically with the preference to lease spaces to large-scale corporations and professional service firms, landlords were cautious in welcoming co-working operators into their buildings.

[69] European Real Estate Society - Chris Eves, Dulani Halvitigala, Hera Antoniades, Co-working Space v. The Traditional Office Space: Challenges and Opportunities in Sydney, 2018.

[70] European Real Estate Society - Chris Eves, Dulani Halvitigala, Hera Antoniades, Co-working Space v. The Traditional Office Space: Challenges and Opportunities in Sydney, 2018.

A co-working model can be considered an amenity to a building, and attract people and other tenants. Yet, while traditional office space is incorporating elements of the co-working environment, many landlords are not embracing it completely. States one office market expert: "Don't underestimate how concerned the landlords are about the tenant profile, because once a building has a reputation, it's hard to change. You want to set the tone early on. So the question is, do you want those co-working operators to set the tone of the building?"[71]

While an economic downturn may reduce the demand for co-working among freelancers, entrepreneurs, and small businesses, it also will likely cause large occupiers to think even more seriously about the need for flexibility in their office portfolios.[72]

[71] BOMA BC Leasing Guide: Commercial Real Estate Office Space - Peter Mitham, Shared Space - Co-working providers are changing how tenants lease space, 2018.
[72] Cushman Wakefield, CO-WORKING and Flexible Office Space, 2018.

Appendix E: Office Space Design

Well-designed office environments can offer workplace productivity benefits because of the opportunities they create for interaction and knowledge exchange, but research has highlighted noise, distraction and loss of privacy as significant productivity negatives associated with open plan layouts.[73] More recently, the significant impacts associated with COVID and the desire for physical separation to prevent contagions and the increase in online meetings have spurred further changes to office designs.

Space Design Trends

The design of office space continues to evolve. Layouts from decades ago with spacious private enclosed offices and large boardrooms, were replaced by cubicles and then open space layouts fitting more and more people into a tighter space. This extreme office space rationing was driven by cost saving initiatives. However, such designs were not generally desirable by employees, and in some cases leading to increased employee turnover, outweighing the savings in accommodation costs (note: for most office businesses, labour may be about 80% of their total costs, and space accommodations under 5%).

COVID has demonstrated that while some work can be done from anywhere, other types of work is best done at the office. For employees who are usually mobile, be it often travelling or working from home, a dedicated office space may be an unnecessary 'luxury', while employees who do concentrated work require quiet rooms. Business leaders increasingly recognize that people may have one job, but with multiple roles and tasks, may need different types of spaces / places.

The previous trend towards open concept office and maximum space efficiencies are now decidedly reversed with COVID, with the need for physical separation of workers in order to reduce the spread of communicable disease. Small workstations have been replaced by larger ones as well as more space for collaborative team activities. With fewer employees at work in person, physical separation increased and the employee densities decreased. Now that more employees are returning to work, there is a growing need to make the work place safe, comfortable, and attractive, with the definition of those standards evolving.

Workstations and Amount of Space per Worker

The end result is that the amount of space per employee may be pulled in two directions: higher, due to larger workstations and more common spaces, and lower due to desk sharing and fewer employees in the office (assuming the unused floor space can be sub-let). The net effect may be overall mixed or negligible, but how the space is designed and used has changed considerably. The footprint of office space is not actually reduced if a personal workstation is still required for each employee (even if the employee is not there five days a week), plus common areas, etc. Greater flexibility and more options allow people to change locations throughout the day depending on their task or activity. Accordingly, there may not be a change in office space demand directly commensurate with the number of employees, or as much space savings reductions as earlier rounds (pre-COVID) of space re-designs.

[73] Journal of Corporate Real Estate / Sheffield Hallam University - Barry Haynes, Louise Suckley, Nick Nunnington, Workplace productivity and office type: an evaluation of office occupier differences based on age and gender, 2017.

Proactive businesses are developing work place strategies to best meet their needs and those of their employees, both in the current term and into the future. Through assessing the type of work performed, needs of the employees, often informed through targeted interviews and employee surveys, satisfying requirements for both collaborative teamwork and individual quiet work, these strategies inform the amount of space that businesses need, along with design and location considerations.

If employers want to attract employees to the office, an effective and pleasant workspace should be provided – hoteling is not that. In theory, if people only come to work a few days per week and share space, this could mean less demand for office space. However, hot desk / hoteling is not popular with employees. It is widely viewed that COVID has proved hoteling to be largely a failure. Such workplace practices may be in response to the business trying to ration space and reduce costs, such as accommodating a growing workforce or moving to a smaller space that they can more efficiently utilize.

Attempts at hyper efficiency cannot always be achieved because businesses may need extra space in case of expansion. And for a small business, it is difficult to readily reduce the amount of space occupied and leased – depending on building size and floorplate, it may be possible to only do so by a floor at a time, rather than smaller areas.

Booking systems and software may be used to optimize space allocation, however requires advanced room reservations which takes away from opportunities for spontaneity and flexibility. The booking system is most effective if users ensure they cancel room booking when no longer needed, and still allocate some space available for unscheduled meetings, such as small breakouts rooms and individual phone booth stations that do not require advanced booking.

Communication and Interaction

Open-plan office layout is supposed to facilitate communication and interaction between coworkers, promoting workplace satisfaction and team work effectiveness. However, open-plan layouts are more disruptive due to uncontrollable noise and loss of privacy. According to workplace satisfaction surveys, enclosed private offices clearly outperformed open-plan layouts in most aspects of Indoor Environmental Quality, particularly acoustics, privacy, and proximity. Benefits of enhanced 'ease of interaction' were smaller than the penalties of increased noise level and decreased privacy from open-plan configuration.[74]

Some research results contradict the industry-accepted wisdom that open-plan layout enhances communication between colleagues and improves occupants' overall work environmental satisfaction. Moreover, the increase of overall workspace satisfaction due to the positive impact of ease of interaction in open-plan office layouts failed to offset the decrease by

[74] University of Sydney - Jungsoo Kim, Richard de Dear, Workspace satisfaction: The privacy-communication trade-off in open-plan offices, 2013.

negative impacts of noise and privacy. This implies the need for a certain level of privacy and acoustical quality.[75]

Workers in enclosed office spaces are more productive due to privacy and limited distractions, and those in open plan spaces were more productive because of access to informal meeting spaces. The productivity of those in enclosed shared spaces, however, suffered more due to crowding and interruptions, although work interactions and knowledge exchange were enhanced from this close proximity. Internal noise and proximity to colleagues had a similar impact on office occupiers regardless of the type of office. With such contrasting results, there is insufficient evidence to suggest that the productivity benefits of open plan office environments outweigh the productivity penalties, according to this research.[76]

Rather than prompting increasingly vibrant face-to-face collaboration, open architecture appeared to trigger a natural human response to socially withdraw from officemates and interact instead over email and instant message.[77]

Floor Plan Design

Increasingly, architects and designers are designing spaces to do more than simply house innovation-oriented activities. Their goals are also to "create communities," "facilitate collaboration" and "create serendipitous encounters."[78]

Regarding space design, it is recommended to provide:[79]

- A variety of workspaces, with an adequate mix of places supporting communication and collaboration and places supporting concentration and privacy, individually and for groups;
- Separations between open communication areas and working areas;
- Enough acoustic and visual privacy in open environments; sufficient acoustic materials and measures;
- Not too large open spaces, but smaller open zones with a good overview, alternating with enclosed spaces or panels;
- Short distances to places that are frequently needed by employees (e.g. spaces for ad hoc meetings for 2-4 persons);
- Natural materials and light colours and materials;
- Lots of daylight;
- Appropriate it facilities for different types of activities, including filing; and
- Clear behavioural rules to enable proper use of the workplaces.

[75] University of Sydney - Jungsoo Kim, Richard de Dear, Workspace satisfaction: The privacy-communication trade-off in open-plan offices, 2013.
[76] Journal of Corporate Real Estate / Sheffield Hallam University - Barry Haynes, Louise Suckley, Nick Nunnington, "Workplace productivity and office type: an evaluation of office occupier differences based on age and gender", 2017.
[77] Royal Society Publishing - Ethan S. Bernstein, Stephen Turban, The impact of the 'open' workspace on human collaboration, July 2 2018.
[78] Brookings Institution and Project for Public Spaces - Julie Wagner, Dan Watch, Innovation Spaces: The New Design of Work, 2017.
[79] Delft University of Technology - Sandra Brunia, Iris De Been, Theo Van der Voordt, Accommodating new ways of working: lessons from best practices and worst cases, 2016.

Single storey or same floor locations are preferred over multiple storeys as research shows that vertical separation has a more severe effect on separation than horizontal.[80]

Theoretically, providing less space per worker can translate into less total office space to support the same number of people, however this may have other negative consequences. Where possible, the ideal is to ensure every employee has their own dedicated desk, even if they're not in the office every day. It provides them with certainty of their work location, a place for their belongings, and a form of appreciation. Where this is not possible, employees may have to share work stations, which could be done at an office-wide, departmental, or team level with either unassigned work stations or scheduling of workers on specific days. This may optimize the accommodation efficiency, but limit interactions to only employees who overlap, rather than everyone.

Implementation

When leaders communicate the value of the new office space beforehand, proactively help workers acclimatize, and give employees leeway to adapt the space, workers are more enthusiastic about the change, have a better sense of how they should use it, and feel more place identity. Survey data reveals that workers who believed the space was designed to foster creativity, increase collaboration, enhance flexibility, and promote communication had more place identity.[81]

Rather than arguing over 'open' vs. 'closed' spaces, practitioners focus on creating the best working environment to support the needs of the specific organization, which is also evolving. The idea that 'one size fits all' when it comes to work environments is dead: "The workplace design industry is filled with over-simplified conversations about open vs. closed plan offices."[82]

Potential Backlash

Companies may be starting to see that squeezing more employees into less space can be counterproductive. At a panel about open space design, one executive stated: "The initial swing was too far. People are coming back and adding a little more space."[83] There is a backlash against the one-size-fits-all mindset, and focus on corporate efficiencies that pack more workers into less space.[84] As employee salaries account for the greatest expenses in a business, the penalty resulting from displaced employees is very likely to be more expensive than providing extra workstations.[85]

Prior to the COVID pandemic, open space / open concept office design was widely implemented, based on the multiple goals of encouraging employee collaboration and using space more efficiently. However, there is also increasing recognition that open concept may not be appropriate for all types of businesses or employees, especially where focused and

[80] Brookings Institution and Project for Public Spaces - Julie Wagner, Dan Watch, Innovation Spaces: The New Design of Work, 2017.
[81] Harvard Business Review - Brandi Pearce, Pamela Hinds, How to Make Sure People Won't Hate Your New Open Office Plan, January 2018.
[82] Work Design Magazine - Bob Fox, 2018 Workplace Trend Predictions, February 15 2018.
[83] ULI Urban Land - Patrick J. Kiger, "Workplaces May Not Shrink Further, but They May Gain Flexibility", May 3 2018.
[84] New York Times - Steve Lohr, "Don't Get Too Comfortable at That Desk", October 6 2017.
[85] 9 University of Sydney - Jungsoo Kima, Christhina Candidoa, Leena Thomas, Richard de Dear, "Desk ownership in the workplace: The effect of non-territorial working on employee workplace satisfaction, perceived productivity and health", 2016.

contemplative work is required, and that how the space is designed and programmed is also important. For a variety of different types of activities, workers need a variety of spaces; ranging from a desk, a private or quiet space, a phone booth for calls, meeting rooms, flex spaces, plus on-site amenities.

There is the risk from the business' perspective of overstating the benefit of open space at the loss of work quality environment, which may lead to higher turnover if poorly implemented. The focus is now more on providing the right types of spaces for employees, and using the space differently, rather than trying to use less space.

Also, open space can actually be expensive to provide, as the outfitting and improvements can be significant, and the requirements for building systems, such as HVAC, higher. Open concept with higher employee densities requires better building systems, commonly found in newer buildings and not old ones with sub-standard systems. Changing employee densities may also impact the amount of parking required.

Office Space per Employee

According to numerous sources,[86] in the years prior to COVID there was an ongoing trend towards less office space per employee. Increasingly, workers were moved from private enclosed offices to open workstations. Also, for additional efforts at space efficiency, some companies adopted open floor plans in which employees do not have permanently designated space; through hotelling and remote working they use unassigned office space / desks as needed. With reduced private office space, usually more and larger meeting areas and rooms are required ('collaborative space'). This arrangement, along with more efficient office space planning / design, modern furniture, equipment, technology and other features, allow for less average office space per worker. However, some academics note that stated targets by office space planners are overly ambitious or assume a stable workforce, which is not always the case.[87]

Office space per worker differs by industry sector as well as occupation. Businesses with higher levels of staffing changes and turnover can be harder to plan for, while businesses with a more homogeneous and stable workforce are easier to plan. Office space planning can be challenged by the growth rate of businesses, and can have 'shadow space' – space leased but not occupied to accommodate changes in space needs for the business as the number of employees change. Optimal office space decisions are harder for longer-term leases in which the amount of office space is fixed while business demands can vary reflecting changing economic and business cycles. Longer term leases prevent businesses from readily downsizing space until the lease expires, and thus are generally more likely to have excess capacity and lower utilization rates. This is further challenged by the fact that workforces are diverse and not all office space is the same and substitutable.[88] The risk of having too little office space must be weighed against the cost of having too much.

[86] CoreNet Global Research - Facilities Management News, Office Space per worker to drop to 100 sq ft or below for many companies within five years, March 2 2012.
[87] University of San Diego - Norman Miller, Estimating Office Space per Worker, Draft May 1 2012.
[88] University of San Diego - Norman Miller, Estimating Office Space per Worker, Draft May 1 2012.

Newer office space that is built-to-suit is more efficient than older space that has changed occupants (second generation tenants), and larger buildings tend to be more efficient than smaller ones. Thus when businesses move from an older accommodation to a new one, they typically require less total space, especially when operations are consolidated. Generally, more expensive office real estate markets are likely to press businesses to use space more efficiently, compared to lower cost markets.

Space Utilization by Sector

According to an American research report, office space per worker peaked near 370 sq ft at the end of 2009, a year or so after the great recession. In the years that followed, leases finally expired and firms were able to downsize space ('shadow inventories') that was no longer needed.[89] A similar pattern may occur associated with the COVID pandemic and subsequent years.

According to CBRE for Canada in 2012[90], the average amount of office space (net leasable floor space) per employee by sub-sector was as follows:

- Call Centres 100 sq ft
- Tech 120 sq ft
- Architecture & Engineering 170 sq ft
- Finance 170 sq ft
- Law Enforcement 200 sq ft
- Social Services 200 sq ft
- Biotech & Science 220 sq ft
- Legal 340 sq ft

Trends and Considerations

Firms retaining a multi-level hierarchy of management, with private dedicated office space configuration as a signal of rank will find it harder to use space efficiently.[91]Other factors beyond the number of employees influence space demand including, but not limited to, workspace utilization levels, relative rent levels and cycles, tenant type, occupant employee turnover, firm growth rates and culture.[92] Temporary office space, using conference rooms, co-working facilities, or letting employees work at home, may alleviate some pressure when a firm reaches capacity, but temporary space alternatives are fairly expensive compared with long-term leased space.[93]

One issue for landlords faced with high density office tenants is the need for greater parking per 1,000 sq ft of floor space. While traditional models of parking supply suggest three to four cars per 1,000 sq ft, this figure will likely need to be increased when space per worker is down to 150 sq ft or less.[94] However in a more urban location with transit, this number may differ.

[89] University of San Diego - Norman Miller, Estimating Office Space per Worker, Draft May 1 2012.
[90] Source: CBRE Research Department – Vancouver, 2012.
[91] University of San Diego - Norman Miller, Workplace trends in office space: implications for future office demand, 2014.
[92] University of San Diego - Norman Miller, Workplace trends in office space: implications for future office demand, 2014.
[93] University of San Diego - Norman Miller, Changing Trends in Office Space Requirements: Implications for Future Office Demand, 2013.
[94] University of San Diego - Norman Miller, Workplace trends in office space: implications for future office demand, 2014.

As noted by one academic in multiple publications:

- The long-term observer of corporate real estate planners has perpetually heard discussions on how to do more with less space and bring down real estate occupancy costs.[95]
- Few firms will ever be able to hit their target allocations of space per worker. The reasons are quite straightforward. Firms must anticipate growth and turnover, time to fill positions, and the types of spaces that are required. Seldom can any firm forecast growth rates or unexpected shrinkages of workers so accurately that this alone results in some over-consumption of space relative to average needs.[96]
- Based on reduced space usage, the demise of the office market has been exaggerated, and a continuation of space demand in excess of the targets espoused by some large corporations and space planners is more likely to be seen.[97]
- Overall, we should expect a greater spread of square feet per worker figures over the next several years, as some firms reduce footprints significantly while others maintain current practices with private dedicated space.[98]
- Ultimately, landlords are not selling space but rather productivity, which will command rental premiums.[99]

[95] University of San Diego - Norman Miller, Changing Trends in Office Space Requirements: Implications for Future Office Demand, 2013.
[96] University of San Diego - Norman Miller, Estimating Office Space per Worker, Draft May 1 2012.
[97] University of San Diego, Real Estate Issues - Norman Miller, Downsizing and Workplace Trends in the Office Market, 2013.
[98] University of San Diego - Norman Miller, Workplace trends in office space: implications for future office demand, 2014.
[99] University of San Diego, Real Estate Issues - Norman Miller, Downsizing and Workplace Trends in the Office Market, 2013.

Appendix F: Supplemental Office Inventory Data Tables

Geography	Metro Core / Surrey Centre	Regional City Centre	Municipal Town Centre	Not in Urban Centre	Total
Vancouver/UBC	38,300,000	-	200,000	4,500,000	**43,000,000**
Burnaby/New West	-	4,100,000	1,900,000	7,500,000	**13,500,000**
Surrey/White Rock	3,400,000	-	2,000,000	3,800,000	**9,200,000**
Richmond	-	1,700,000	-	3,100,000	**4,800,000**
North Shore	-	1,800,000	300,000	1,200,000	**3,300,000**
Langleys	-	600,000	-	1,700,000	**2,300,000**
Northeast Sector	-	400,000	400,000	500,000	**1,300,000**
Ridge/Meadows	-	300,000	-	-	**300,000**
Delta	-	-	-	200,000	**200,000**
Total	**41,700,000**	**8,900,000**	**4,800,000**	**22,500,000**	**77,900,000**

Sub-Region	Within 800m of Rapid Transit Station	Within 400m of FTN Bus Service Only	Not Near FTN Service	Total
Vancouver/UBC	36,700,000	5,700,000	600,000	**43,000,000**
Burnaby/New West	8,100,000	4,100,000	1,300,000	**13,500,000**
Surrey/White Rock	2,500,000	4,400,000	2,300,000	**9,200,000**
Richmond	1,800,000	1,900,000	1,200,000	**4,900,000**
North Shore	900,000	1,800,000	600,000	**3,300,000**
Langleys	-	200,000	2,200,000	**2,400,000**
Northeast Sector	800,000	300,000	200,000	**1,300,000**
Ridge/Meadows	-	300,000	-	**300,000**
Delta	-	100,000	100,000	**200,000**
Total	**50,800,000**	**18,800,000**	**8,500,000**	**78,100,000**

Geography	Within 800m of Rapid Transit	Within 400m of FTN Bus Service	Not Near FTN Service	Total
Metro Core	34,500,000	3,700,000	200,000	**38,400,000**
Surrey Metro Centre	2,500,000	900,000	-	**3,400,000**
Regional City Centre	7,000,000	1,400,000	500,000	**8,900,000**
Municipal Town Centre	2,200,000	2,500,000	100,000	**4,800,000**
Not in Urban Centre	4,600,000	10,300,000	7,600,000	**22,500,000**
Total	**50,800,000**	**18,800,000**	**8,400,000**	**78,000,000**

Urban Centre Type	Number	*Distribution*		Sq Ft	*Distribution*	Avg. Size	Average Size
Metro Core	514	*38%*		38,300,000	*49%*	74,500	74,513.62
Surrey Metro Centre	35	*3%*		3,400,000	*4%*	97,100	97,143
Regional City Centre	173	*13%*		8,900,000	*11%*	51,400	51,445
Municipal Town Centre	106	*8%*		4,800,000	*6%*	45,300	45,283
Not in Urban Centre	510	*38%*		22,600,000	*29%*	44,300	44,314
Total	**1338**	***100%***		**78,000,000**	***100%***	**58,300**	**58,296**

Sub-Region	Before 1950	1950 to 1959	1960 to 1969	1970 to 1979	1980 to 1989	1990 to 1999	2000 to 2009	2010 to 2019	2020 to 2022	Total
Vancouver/UBC	3,370,000	1,290,000	2,760,000	8,560,000	8,190,000	5,950,000	4,840,000	4,870,000	3,140,000	42,970,000
Burnaby/New West	130,000	310,000	210,000	1,710,000	3,490,000	3,860,000	1,960,000	1,420,000	370,000	13,460,000
Surrey/White Rock	-	20,000	150,000	670,000	920,000	2,150,000	1,920,000	2,940,000	400,000	9,170,000
Richmond	-	-	50,000	540,000	1,700,000	1,340,000	810,000	160,000	230,000	4,830,000
North Shore	60,000	60,000	120,000	650,000	1,070,000	430,000	520,000	400,000	10,000	3,320,000
Langleys	-	-	20,000	120,000	90,000	460,000	750,000	690,000	300,000	2,430,000
Northeast Sector	-	-	30,000	270,000	210,000	200,000	220,000	370,000	-	1,300,000
Ridge/Meadows	-	-	-	70,000	50,000	-	160,000	-	-	280,000
Delta	-	-	-	30,000	80,000	50,000	-	80,000	-	240,000
Total	**3,560,000**	**1,680,000**	**3,340,000**	**12,620,000**	**15,800,000**	**14,440,000**	**11,180,000**	**10,930,000**	**4,450,000**	**78,000,000**

Municipality	Number	*Distribution*		Sq Ft	*Distribution*	Avg. Size
City of Burnaby	162	*12%*		11,280,000	*14%*	69,600
City of Coquitlam	29	*2%*		800,000	*1%*	27,600
City of Delta	10	*1%*		240,000	*0%*	24,000
City of Langley	10	*1%*		220,000	*0%*	22,000
City of Maple Ridge	6	*0%*		270,000	*0%*	45,000
City of New Westminster	52	*4%*		2,190,000	*3%*	42,100
City of North Vancouver	59	*4%*		2,310,000	*3%*	39,200
City of Pitt Meadows	1	*0%*		10,000	*0%*	10,000
City of Port Coquitlam	9	*1%*		220,000	*0%*	24,400
City of Port Moody	4	*0%*		280,000	*0%*	70,000
City of Richmond	96	*7%*		4,840,000	*6%*	50,400
City of Surrey	177	*13%*		9,080,000	*12%*	51,300
City of Vancouver	617	*46%*		42,770,000	*55%*	69,300
City of White Rock	6	*0%*		110,000	*0%*	18,300
District of North Vancouver	18	*1%*		570,000	*1%*	31,700
District of West Vancouver	19	*1%*		450,000	*1%*	23,700
Township of Langley	56	*4%*		2,190,000	*3%*	39,100
UBC/UEL	7	*1%*		200,000	*0%*	28,600
Total	**1338**	***100%***		**78,030,000**	***100%***	**58,300**

Geography	General Urban	Industrial	Mixed Emp	Total	*% In General Urban*
City of Burnaby	5,390,000	5,790,000	100,000	11,280,000	*48%*
City of Coquitlam	740,000	50,000	-	800,000	*93%*
City of Delta	240,000	-	-	240,000	*100%*
City of Langley	220,000	-	-	220,000	*100%*
City of Maple Ridge	270,000	-	-	270,000	*100%*
City of New Westminster	2,170,000	-	10,000	2,190,000	*99%*
City of North Vancouver	2,000,000	310,000	-	2,310,000	*87%*
City of Pitt Meadows	10,000	-	-	10,000	*100%*
City of Port Coquitlam	200,000	-	20,000	220,000	*91%*
City of Port Moody	280,000	-	-	280,000	*100%*
City of Richmond	1,900,000	2,880,000	60,000	4,840,000	*39%*
City of Surrey	6,470,000	2,290,000	320,000	9,080,000	*71%*
City of Vancouver	37,780,000	2,870,000	2,120,000	42,770,000	*88%*
City of White Rock	110,000	-	-	110,000	*100%*
District of North Vancouver	570,000	-	-	570,000	*100%*
District of West Vancouver	450,000	-	-	450,000	*100%*
Township of Langley	830,000	1,310,000	50,000	2,190,000	*38%*
UBC/UEL	200,000	-	-	200,000	*100%*
Total	**59,830,000**	**15,500,000**	**2,680,000**	**78,030,000**	***77%***

Geography	Office Sq Ft	# Buildings	Avg Building Size
City of Burnaby	**11,275,000**	**162**	**70,000**
Metrotown	3,134,000	30	104,000
Brentwood MTC	1,218,000	14	87,000
Edmonds MTC	578,000	7	83,000
Lougheed Burnaby MTC	70,000	2	35,000
Not in Urban Centre	6,276,000	109	58,000
City of Coquitlam	**797,000**	**29**	**27,000**
Coquitlam City Centre	399,000	11	36,000
Lougheed Coquitlam MTC	17,000	1	17,000
Not in Urban Centre	381,000	17	22,000
City of Delta	**243,000**	**10**	**24,000**
Ladner MTC	12,000	1	12,000
Not in Urban Centre	231,000	9	26,000
City of Langley	**221,000**	**10**	**22,000**
Langley City Centre (in Langley City)	221,000	10	22,000
City of Maple Ridge	**266,000**	**6**	**44,000**
Maple Ridge City Centre	266,000	6	44,000
City of New Westminster	**2,185,000**	**52**	**42,000**
New Westminster City Centre	957,000	24	40,000
Not in Urban Centre	1,228,000	28	44,000
City of North Vancouver	**2,306,000**	**59**	**39,000**
Lonsdale	1,792,000	44	41,000
Not in Urban Centre	515,000	15	34,000
City of Pitt Meadows	**11,000**	**1**	**11,000**
Pitt Meadows MTC	11,000	1	11,000
City of Port Coquitlam	**219,000**	**9**	**24,000**
Port Coquitlam MTC	102,000	5	20,000
Not in Urban Centre	116,000	4	29,000
City of Port Moody	**284,000**	**4**	**71,000**
Inlet Centre MTC	284,000	4	71,000
City of Richmond	**4,839,000**	**96**	**50,000**
Richmond City Centre	1,699,000	36	47,000
Not in Urban Centre	3,140,000	60	52,000
City of Surrey	**9,081,000**	**177**	**51,000**
Surrey Metro Centre	3,392,000	35	97,000
Guildford MTC	966,000	22	44,000
Newton MTC	360,000	13	28,000
Fleetwood MTC	298,000	5	60,000
South Surrey MTC (Semiahmoo)	232,000	7	33,000
Cloverdale MTC	65,000	3	22,000
Not in Urban Centre	3,768,000	92	41,000
City of Vancouver	**42,774,000**	**617**	**69,000**
Metro Core	38,326,000	514	75,000
Oakridge MTC	183,000	3	61,000
Not in Urban Centre	4,265,000	100	43,000
City of White Rock	**107,000**	**6**	**18,000**
White Rock MTC	39,000	2	20,000
Not in Urban Centre	67,000	4	17,000
District of North Vancouver	**569,000**	**18**	**32,000**
Lynn Valley MTC	82,000	2	41,000
Not in Urban Centre	487,000	16	30,000
District of West Vancouver	**454,000**	**19**	**24,000**
Ambleside MTC	267,000	12	22,000
Not in Urban Centre	187,000	7	27,000
Township of Langley	**2,192,000**	**56**	**39,000**
Langley City Centre (in Langley Twp)	420,000	12	35,000
Willoughby MTC	49,000	2	25,000
Not in Urban Centre	1,723,000	42	41,000
UBC/UEL	**199,000**	**7**	**28,000**
Not in Urban Centre	199,000	7	28,000
Total	**78,022,000**	**1,338**	**58,000**

Geography	General Urban	Mixed Employment	Industrial	Total
City of Burnaby	**5,387,000**	**5,786,000**	**103,000**	**11,275,000**
Metrotown	3,134,000	-	-	3,134,000
Brentwood MTC	1,218,000	-	-	1,218,000
Edmonds MTC	578,000	-	-	578,000
Lougheed Burnaby MTC	70,000	-	-	70,000
Not in Urban Centre	387,000	5,786,000	103,000	6,276,000
City of Coquitlam	**743,000**	**54,000**	**-**	**797,000**
Coquitlam City Centre	399,000	-	-	399,000
Lougheed Coquitlam MTC	17,000	-	-	17,000
Not in Urban Centre	327,000	54,000	-	381,000
City of Delta	**243,000**	**-**	**-**	**243,000**
Ladner MTC	12,000	-	-	12,000
Not in Urban Centre	231,000	-	-	231,000
City of Langley	**221,000**	**-**	**-**	**221,000**
Langley City Centre (in Langley City)	221,000	-	-	221,000
City of Maple Ridge	**266,000**	**-**	**-**	**266,000**
Maple Ridge City Centre	266,000	-	-	266,000
City of New Westminster	**2,175,000**	**-**	**10,000**	**2,185,000**
New Westminster City Centre	957,000	-	-	957,000
Not in Urban Centre	1,218,000	-	10,000	1,228,000
City of North Vancouver	**1,996,000**	**310,000**	**-**	**2,306,000**
Lonsdale	1,792,000	-	-	1,792,000
Not in Urban Centre	205,000	310,000	-	515,000
City of Pitt Meadows	**11,000**	**-**	**-**	**11,000**
Pitt Meadows MTC	11,000	-	-	11,000
City of Port Coquitlam	**202,000**	**-**	**17,000**	**219,000**
Port Coquitlam MTC	102,000	-	-	102,000
Not in Urban Centre	99,000	-	17,000	116,000
City of Port Moody	**284,000**	**-**	**-**	**284,000**
Inlet Centre MTC	284,000	-	-	284,000
City of Richmond	**1,899,000**	**2,876,000**	**65,000**	**4,839,000**
Richmond City Centre	1,699,000	-	-	1,699,000
Not in Urban Centre	199,000	2,876,000	65,000	3,140,000
City of Surrey	**6,465,000**	**2,295,000**	**321,000**	**9,081,000**
Surrey Metro Centre	3,392,000	-	-	3,392,000
Guildford MTC	966,000	-	-	966,000
Newton MTC	342,000	-	18,000	360,000
Fleetwood MTC	88,000	210,000	-	298,000
South Surrey MTC (Semiahmoo)	232,000	-	-	232,000
Cloverdale MTC	31,000	-	34,000	65,000
Not in Urban Centre	1,415,000	2,084,000	269,000	3,768,000
City of Vancouver	**37,782,000**	**2,868,000**	**2,124,000**	**42,774,000**
Metro Core	35,401,000	1,017,000	1,908,000	38,326,000
Oakridge MTC	183,000	-	-	183,000
Not in Urban Centre	2,198,000	1,851,000	216,000	4,265,000
City of White Rock	**107,000**	**-**	**-**	**107,000**
White Rock MTC	39,000	-	-	39,000
Not in Urban Centre	67,000	-	-	67,000
District of North Vancouver	**569,000**	**-**	**-**	**569,000**
Lynn Valley MTC	82,000	-	-	82,000
Not in Urban Centre	487,000	-	-	487,000
District of West Vancouver	**454,000**	**-**	**-**	**454,000**
Ambleside MTC	267,000	-	-	267,000
Not in Urban Centre	187,000	-	-	187,000
Township of Langley	**825,000**	**1,313,000**	**53,000**	**2,192,000**
Langley City Centre (in Langley Twp)	420,000	-	-	420,000
Willoughby MTC	49,000	-	-	49,000
Not in Urban Centre	357,000	1,313,000	53,000	1,723,000
UBC/UEL	**199,000**	**-**	**-**	**199,000**
Not in Urban Centre	199,000	-	-	199,000
Total	**59,827,000**	**15,501,000**	**2,693,000**	**78,021,000**

Geography	Within 800m of Rapid Transit	Within 400m of FTN Bus Service Only	Not Near FTN Service	Total
City of Burnaby	**6,630,000**	**3,410,000**	**1,240,000**	**11,280,000**
Metrotown	3,130,000	-	-	3,130,000
Brentwood MTC	1,220,000	-	-	1,220,000
Edmonds MTC	450,000	120,000	10,000	580,000
Lougheed Burnaby MTC	70,000	-	-	70,000
Not in Urban Centre	1,760,000	3,290,000	1,230,000	6,280,000
City of Coquitlam	**440,000**	**170,000**	**180,000**	**790,000**
Coquitlam City Centre	400,000	-	-	400,000
Lougheed Coquitlam MTC	-	20,000	-	20,000
Not in Urban Centre	40,000	160,000	180,000	380,000
City of Delta	**-**	**140,000**	**100,000**	**240,000**
Ladner MTC	-	-	10,000	10,000
Not in Urban Centre	-	140,000	90,000	230,000
City of Langley	**-**	**220,000**	**-**	**220,000**
Langley City Centre (in Langley City)	-	220,000	-	220,000
City of Maple Ridge	**-**	**270,000**	**-**	**270,000**
Maple Ridge City Centre	-	270,000	-	270,000
City of New Westminster	**1,500,000**	**660,000**	**30,000**	**2,190,000**
New Westminster City Centre	960,000	-	-	960,000
Not in Urban Centre	540,000	660,000	30,000	1,230,000
City of North Vancouver	**900,000**	**1,120,000**	**290,000**	**2,310,000**
Lonsdale	880,000	910,000	-	1,790,000
Not in Urban Centre	20,000	210,000	290,000	520,000
City of Pitt Meadows	**-**	**10,000**	**-**	**10,000**
Pitt Meadows MTC	-	10,000	-	10,000
City of Port Coquitlam	**60,000**	**130,000**	**30,000**	**220,000**
Port Coquitlam MTC	-	100,000	-	100,000
Not in Urban Centre	60,000	20,000	30,000	110,000
City of Port Moody	**280,000**	**-**	**-**	**280,000**
Inlet Centre MTC	280,000	-	-	280,000
City of Richmond	**1,770,000**	**1,900,000**	**1,170,000**	**4,840,000**
Richmond City Centre	1,610,000	-	90,000	1,700,000
Not in Urban Centre	160,000	1,900,000	1,090,000	3,150,000
City of Surrey	**2,510,000**	**4,280,000**	**2,290,000**	**9,080,000**
Surrey Metro Centre	2,510,000	880,000	-	3,390,000
Guildford MTC	-	970,000	-	970,000
Newton MTC	-	360,000	-	360,000
Fleetwood MTC	-	300,000	-	300,000
South Surrey MTC (Semiahmoo)	-	230,000	-	230,000
Cloverdale MTC	-	-	60,000	60,000
Not in Urban Centre	-	1,540,000	2,220,000	3,760,000
City of Vancouver	**36,710,000**	**5,470,000**	**600,000**	**42,780,000**
Metro Core	34,470,000	3,690,000	160,000	38,320,000
Oakridge MTC	180,000	-	-	180,000
Not in Urban Centre	2,050,000	1,780,000	440,000	4,270,000
City of White Rock	**-**	**110,000**	**-**	**110,000**
White Rock MTC	-	40,000	-	40,000
Not in Urban Centre	-	70,000	-	70,000
District of North Vancouver	**-**	**290,000**	**280,000**	**570,000**
Lynn Valley MTC	-	80,000	-	80,000
Not in Urban Centre	-	210,000	280,000	490,000
District of West Vancouver	**-**	**440,000**	**20,000**	**460,000**
Ambleside MTC	-	270,000	-	270,000
Not in Urban Centre	-	170,000	20,000	190,000
Township of Langley	**-**	**-**	**2,190,000**	**2,190,000**
Langley City Centre (in Langley Twp)	-	-	420,000	420,000
Willoughby MTC	-	-	50,000	50,000
Not in Urban Centre	-	-	1,720,000	1,720,000
UBC/UEL	**-**	**200,000**	**-**	**200,000**
Not in Urban Centre	-	200,000	-	200,000
Total	**50,795,000**	**18,820,000**	**8,420,000**	**78,035,000**


metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION

2022 Office Development Inventory and Report

Eric Aderneck, RPP, MPL, BCOM, DULE

Senior Planner, Regional Planning and Housing Services

PURPOSE OF THE INVENTORY AND REPORT

- Explore factors that influence regional-scale office development and tenant occupancy decisions
- Identify challenges and opportunities for office potential in the region's Urban Centres
- Identify key issues affecting office space to better inform plans and policies
- Update the office building inventory to year-end 2022

FINDINGS - DIFFERENT PERSPECTIVES

- Municipalities want to attract office investment to Urban Centres
- Developers want buildings that fulfill market demand
- Businesses want space that meets their needs
- Employees want attractive work spaces

FINDINGS - MARKET DEVELOPMENTS

- Office space is concentrated in the Metro Core, but the current office building cycle is ending
- In other Urban Centres, demand is mixed and new space is limited
- Limited demand for office development with poor transit service and amenities

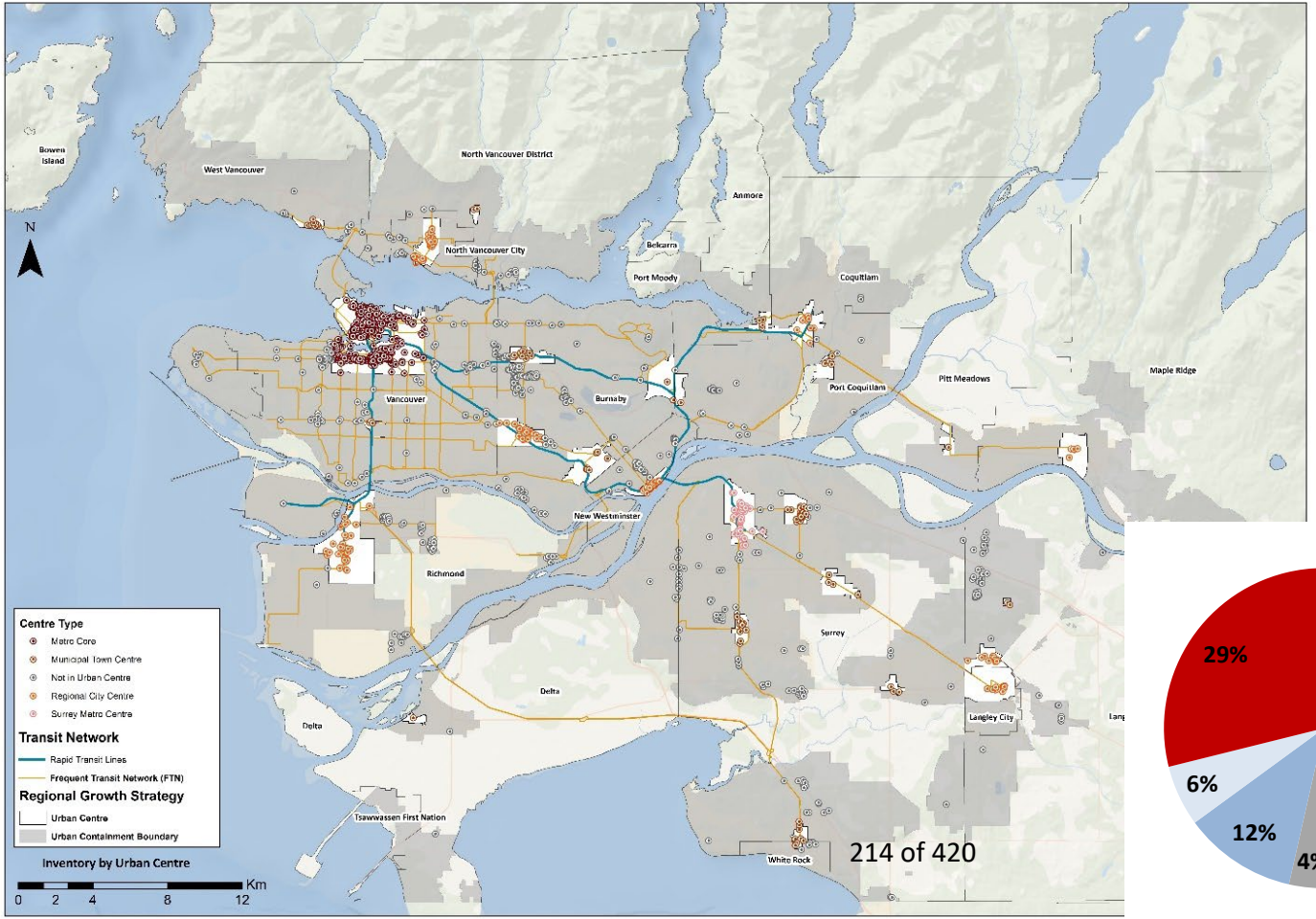
FINDINGS - TENANT PREFERENCES

- Tenants increasingly prioritize rapid transit and urban amenities
- Importance of employers being able to attract and retain skilled workers
- Businesses vary; not all wish to locate in Urban Centres
- Impacts of pandemic and remote work is leading to changes in office design and use patterns

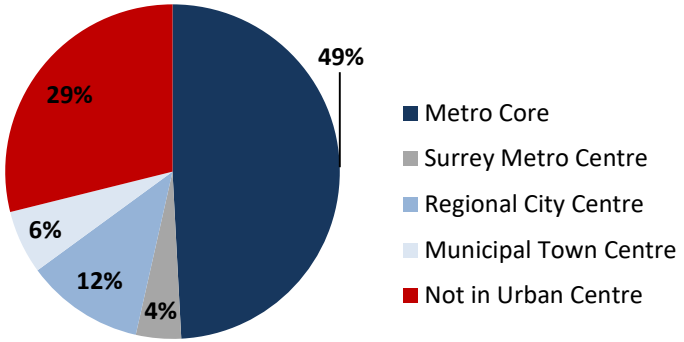
OFFICE BUILDING INVENTORY

- Approximately 78 million sq ft of office space, in 1,338 buildings of more than 10,000 sq ft
- Approximately 50-75 million sq ft reported by brokerage firms (excluding smaller and non-market buildings)

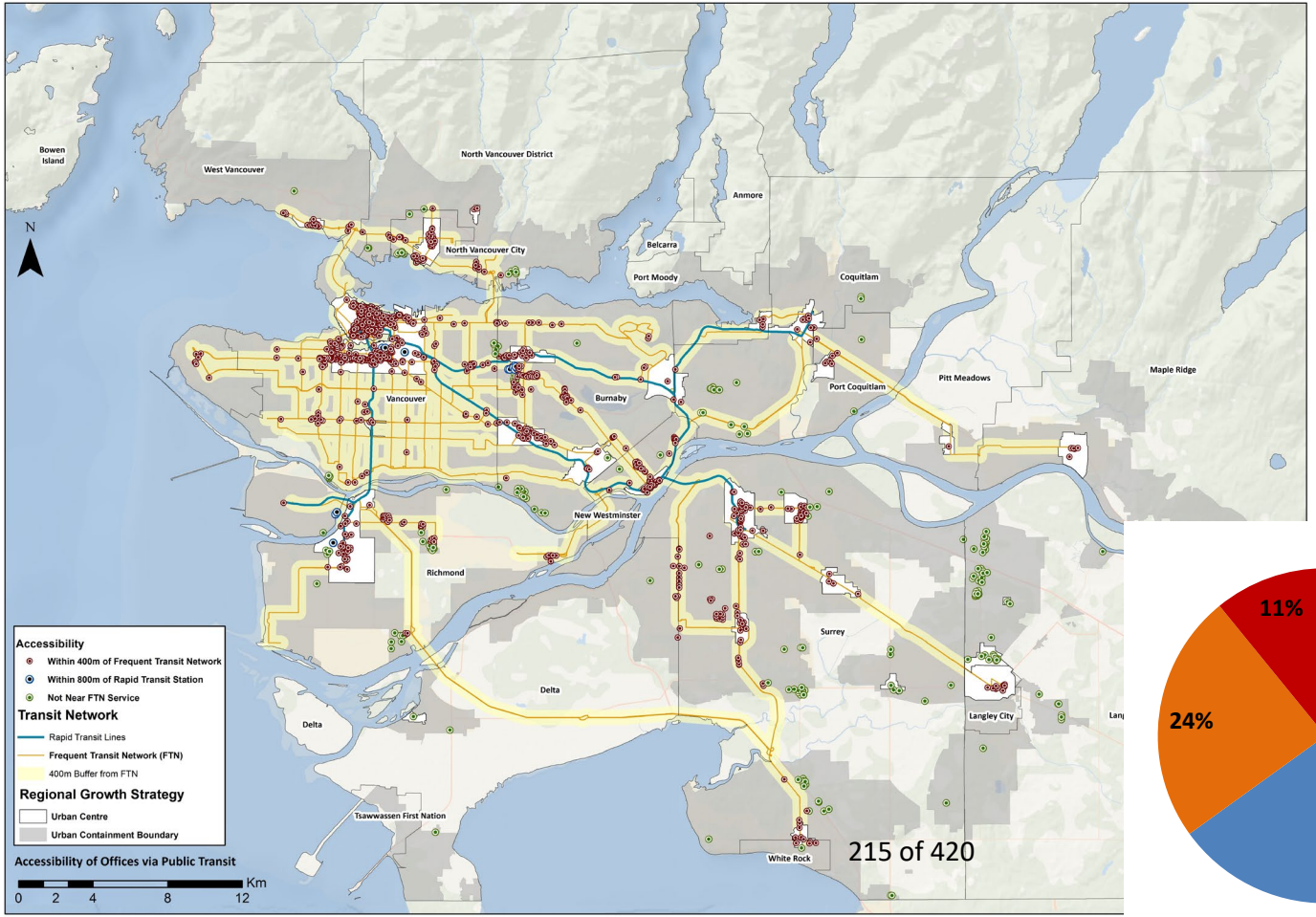
INVENTORY BY URBAN CENTRE TYPE



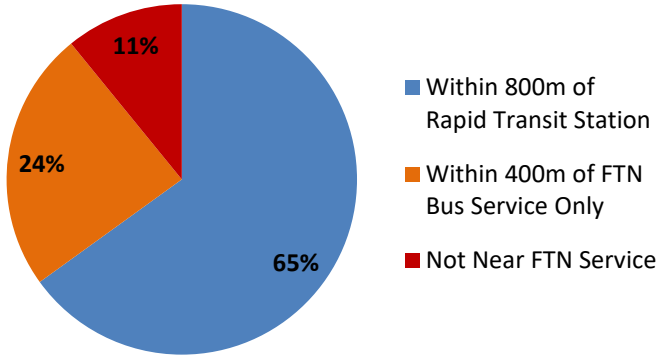
- 71% in Centres
- 49% in Vancouver Metro Core
- 6% in Municipal Town Centres
- 29% not in Centres



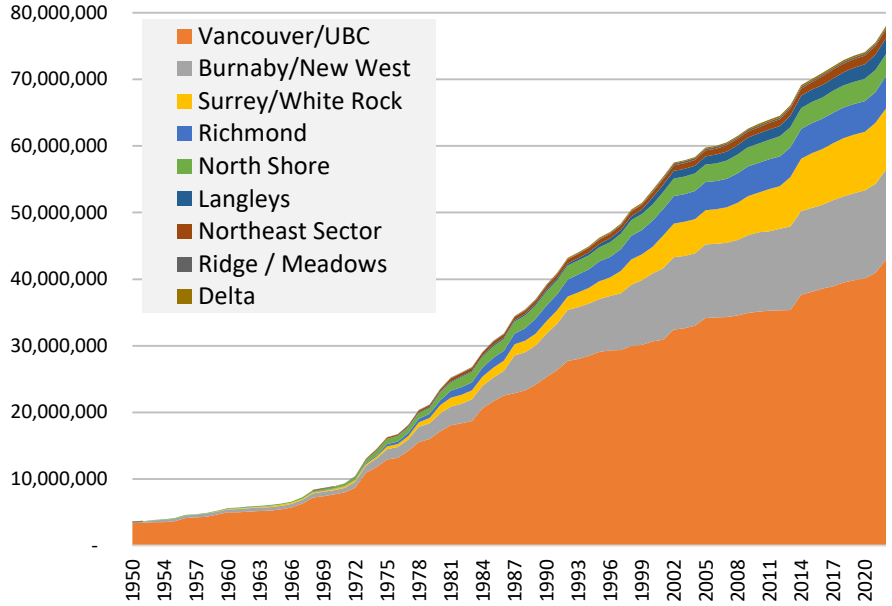
INVENTORY BY TRANSIT SERVICE

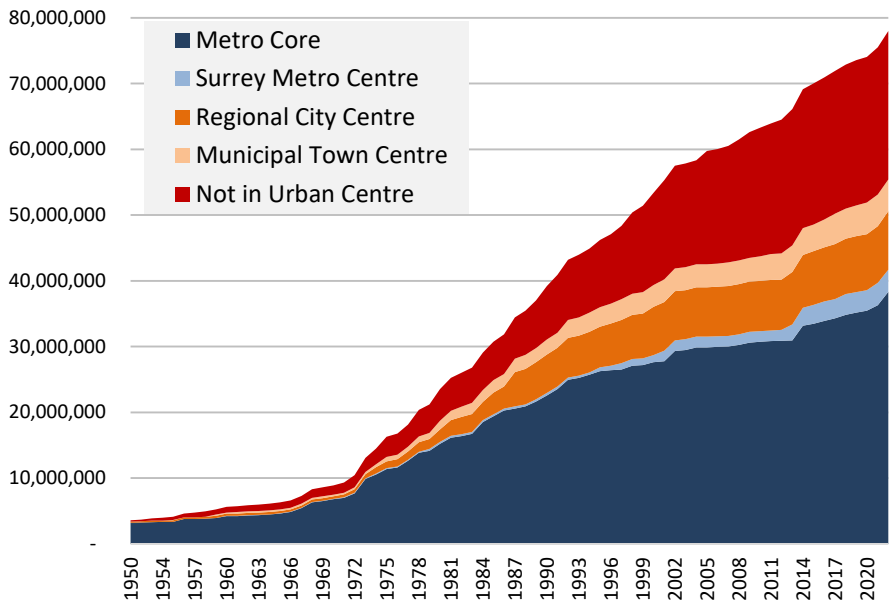


- 65% within 800 m of a rapid transit station
- 24% within 400 m of FTN bus only
- 11% located beyond FTN service



GROWTH BY SUB-REGION AND URBAN CENTRE





PRIORITY ACTIONS

- Development Approval Process
- Land Use Planning
- Zoning Definitions
- Tenant Improvement Permits
- Municipal Incentives
- Research

Thank you

metrovancouver

To: Regional Planning Committee

From: Carla Stewart, Senior Planner, Regional Planning and Housing Services

Date: April 19, 2023 Meeting Date: May 12, 2023

Subject: **Agricultural Ecosystem Services in Metro Vancouver**

RECOMMENDATION

That the MVRD Board direct staff to prepare a white paper considering the feasibility of the recommendations contained in the Scoping Ecosystem Services on Agricultural Land within Metro Vancouver study, as presented in the report dated April 19, 2023, titled "Agricultural Ecosystem Services in Metro Vancouver".

EXECUTIVE SUMMARY

A recently completed study commissioned by Metro Vancouver, titled *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver*, describes the many benefits provided by ecosystem services within the region's agricultural areas including supporting resilience to climate change impacts, supporting the production of local food, and contributing to the wider livability of the region. The study also identifies approaches and provides recommendations to establish stable, long-term regulatory and financial support for the continued use of ecosystem services on agricultural land.

PURPOSE

To convey to the MVRD Board the results from the *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver* study completed by Upland Agriculture Consulting Ltd. and to describe the next steps in advancing the use of ecosystem services on agricultural land throughout the region (Attachment).

BACKGROUND

In 2011, Metro Vancouver completed the *Regional Food System Strategy*, a foundational document that identified the use and benefits of ecosystem services as key components in achieving a sustainable, resilient and healthy regional food system (Reference). Since that time, continuing to support and expand the use of ecosystem services on agricultural land has been identified and supported in many other plans and strategies including *Metro 2050* and the draft *Climate 2050 Agriculture Roadmap*.

The MVRD Board approved funding to support examining the benefits and potential uses of ecosystem services in agricultural lands in the region, and in October 2021, Upland Agricultural Consultants Ltd. was retained to complete a two-phase *Scoping Agricultural Ecosystem Services within Metro Vancouver* study to: identify the locations of the types of ecosystems present on agricultural land in the region; determine the overall services and benefits these areas provide; and recommend policies, regulations and financial mechanisms that can be used to expand the long-term viability of using agricultural land for these services. The Phase 1 results were shared with the

Agricultural Advisory Committee in September 2022 with the intent to share the completed study once available. Phase 2 results were completed in December 2022 with the final report being submitted by the consultant in January 2023. The Agricultural Advisory Committee reviewed the final report at their April 20, 2023 meeting and indicated support for the recommendations contained in the study.

ECOSYSTEM SERVICES ON AGRICULTURAL LAND

Ecosystem services are defined as natural assets that serve to benefit both people and wildlife, such as clean air and water, healthy riparian (fish-supporting stream) systems, healthy soils, and appropriate habitat for species at risk. Ecosystem services are also key components to building land-based, nature-based climate adaptation and mitigation solutions. The purpose of examining in more detail the presence and role of ecosystem services on agricultural lands in this region is to better understand how these natural areas support agricultural resilience, long-term food production and the overall livability of residents in the region. While there is a significant amount of research and practice that supports the use of ecosystem services in agricultural areas, a baseline of the benefits and capabilities of ecosystems on agricultural land in Metro Vancouver needed to be established in order to support ongoing work.

Phase 1 Results

Data collection and analysis conducted during Phase 1 of the study focused on literature and jurisdictional reviews and analyzing maps using multiple datasets from Metro Vancouver, the Province, Fraser Basin Council and the Watershed Salmon Society. This work identified the following:

- There are numerous programs and initiatives that have developed as support mechanisms for the agriculture sector over the past decade but they are largely managed by non-profit organizations and provide nominal incentives to farmers to enhance ecosystem services on their lands.
- The Agricultural Land Reserve comprises approximately 20% of the total area of Metro Vancouver, which includes over 40% of Metro Vancouver's total sensitive ecosystems, representing approximately 60% of wetlands and 40% of riparian areas within the region.
- Metro Vancouver's Sensitive Ecosystem Inventory data does not capture other types of ecosystems that also provide significant beneficial services to farms such as agricultural ditches, hedgerows and vegetative buffers.
- Benefits to agricultural operations vary according to ecosystem types but can generally be grouped into eight classifications including: water quality, water quantity, nutrient cycling, soil development, carbon storage, erosion control, habitat and biodiversity, and pollination.
- Best management practices are useful tools to support effective levels of restoration, conservation and maintenance and can be applied individually to improve production practices, improve farm yields, and overall increase the health and resilience of farm operations.

Phase 2 Results
Beyond identifying the types and benefits of ecosystem services in the region, the Study also focuses on identifying approaches for the long-term investment in, and support of, the use of ecosystem services. This can occur through several mechanisms including:

- *Policy* – Regional Growth Strategy, official community plans, agricultural and climate adaptation strategies.
- *Regulation* – zoning bylaws, development permit areas.
- *Financial Assistance* – fees, parcel tax, property transfer tax, property value tax.

With these mechanisms in mind, the Study identifies two approaches that Metro Vancouver can use simultaneously to initiate and support the long-term use of ecosystem services on agricultural lands:

Approach #1: Collaborate with local governments and the Province on policies and regulations that support ecosystem services on agricultural land. This involves developing a comprehensive regional approach for documenting and creating policy and implementation measures required for the long-term sustainability of ecosystem services.

Approach #2: Establish as regional conservation fund to support programs that steward ecosystem services on agricultural land. This involves developing a regional funding mechanism to provide financial incentives to the farming community to invest in ecosystem services protection and enhancement.

Each approach relies on the other for full effectiveness but each also requires a separate and robust review to determine appropriateness and feasibility. Regional polling may also be needed to understand how important ecosystem services are to the wider community to determine if or how willing residents would be to financially support a long-term payment plan for an ecosystem services protection program.

STUDY RECOMENDATIONS
The *Scoping Agricultural Ecosystem Services within Metro Vancouver* study provides five recommendations for moving forward with a long-term strategy to support the use of ecosystem services on agricultural land in the region:

1. Collaborate internally and externally to further explore and build a regional conservation fund that includes payment for ecosystem services on agricultural land;
2. Conduct polling across Metro Vancouver to gauge willingness and support to pay for ecosystem services on agricultural land;
3. Conduct in-depth mapping of ecosystem services on agricultural land in Metro Vancouver;
4. Estimate the financial value of ecosystem services on agricultural land in Metro Vancouver; and

5. Review and access options to align with the ongoing work to establish a Regional Green Infrastructure Network to further support ecosystem services on agricultural land.

Metro Vancouver Staff Analysis

The recommendations and next steps identified in the *Scoping Agricultural Ecosystem Services within Metro Vancouver* study reveal that, despite the work that has been undertaken to-date, a more comprehensive and consistent approach is needed to effectively and efficiently support the long-term use of ecosystem services on agricultural land across the region.

Staff support the Study recommendations for a number of reasons:

- Existing funding programs are inconsistent and unreliable and depend on non-profit organizations having sufficient capacity to apply for and manage funding that may be available on an ad-hoc bases. A region-wide payment for ecosystem services program would allow for a consistent and stable funding model with shared investment by and benefit to all Metro Vancouver residents;
- Restoring, maintaining and setting-aside natural areas located on farmland adds costs to agricultural operations that are often not financially manageable on a long-term basis. Payment for ecosystem services to participating farmers acknowledges these costs and provides the ability for farmers to continue to not use these lands for active agricultural production;
- Conducting region-wide polling will provide an opportunity for Metro Vancouver to determine the support among residents for a payment for ecosystem services program;
- The current Sensitive Ecosystem Inventory does not include other ecosystem types on agricultural land, such as hedgerows and agricultural buffers, that also contribute to ecosystem services. Preparing an in-depth map of the services that are provided will give a better understanding of which areas provide the highest benefit, and which areas may require interventions to increase benefit;
- Natural assets valuations are important to contribute to the discussion of payment for ecosystem services so that a complete picture is available to include in the discussion; and
- Aligning with existing work creates opportunities to increase internal efficiencies, take advantage of existing engagement opportunities, and create co-benefits for funding applications.

NEXT STEPS

The recommendations from the *Scoping Agricultural Ecosystem Services within Metro Vancouver* study require further review and analysis to determine feasibility, and a scope of work and budget for future work. As such, staff are recommending that a white paper be prepared that includes a thorough analysis of all five of the Study's recommendations. The white paper will be vetted and reviewed by the Agricultural Advisory Committee, Ministry of Agriculture, Agricultural Land Commission, and Regional Planning Advisory Committee prior to being forwarded to the Regional Planning Committee and MVRD Board for consideration. The intent of the white paper will be to further explore the feasibility of each of the Study's recommendations with an aim to advance the

utilization of a regional payment for ecosystem services program to leverage, encourage, and support the long-term utilization of ecosystem services on agricultural land within the Metro Vancouver region.

ALTERNATIVES

1. That the MVRD Board direct staff to prepare a white paper considering the feasibility of the recommendations contained in the Scoping Ecosystem Services on Agricultural Land within Metro Vancouver study as presented in the report dated April 19, 2023, titled "Agricultural Ecosystem Services in Metro Vancouver".
2. That the MVRD Board receive for information the report dated April 19, 2023, titled "Agricultural Ecosystem Services in Metro Vancouver" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The funds for the *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver* study were split over the Board-approved 2021 and 2022 Regional Planning budgets. Any potential financial implications associated with payment or compensation for the protection of ecosystem services would need to be determined through further analysis and consideration.

CONCLUSION

A recently completed study commissioned by Metro Vancouver, titled *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver*, describes the many benefits provided by ecosystem services within the region's agricultural areas, identifies approaches and provides recommendations to establish stable, long-term regulatory and financial support for the continued use of ecosystem services on agricultural land. After reviewing all existing programs and the long-term investment tools available to support ecosystem services on agricultural land, the study concludes by identifying that investing in healthy ecosystems on agricultural lands is a collective action that would not only benefit agricultural producers but also the region as a whole.

Attachment

Scoping Agricultural Ecosystem Services within Metro Vancouver study

References

Regional Food System Strategy

56234358

Scoping Ecosystem Services on Agricultural Land in Metro Vancouver

upland
agricultural consulting

Acknowledgements

This project was completed by Upland Agricultural Consulting with assistance from Dave Zehnder, for Metro Vancouver Regional District in 2022.

Metro Vancouver is situated on the ancestral, traditional and unceded territories of the shared territories of many Indigenous peoples, including ten local First Nations: qićəy̓ (Katzie), qʷɑ:nˀ ƛ̓ əṅ (Kwantlen), kʷikʷəƛ̓ əm (Kwikwetlem), máthxwi (Mˀ atsqui), xʷməθkʷəyəm (Musqueam), qiqéyt (Qaˀ yqayt), seˀmyaˀme (Semiahmoo), Sḵwx̱wú7mesh Úxwumixw (Squamish), scəwaθən məsteyəxʷ (Tsawwassen), səˀ líl̓wətaʔɬ (Tsleil-Waututh). These First Nations have lived in the area for thousands of years, working with natural systems to shape the land and food systems.

Cover Photo: Pacific Great Blue Heron actively foraging in a grassland set-aside field in West Delta. Credit: Delta Farmland & Wildlife Trust.

Executive Summary

When agricultural producers are supported in the care and management of ecosystems on agricultural land, the whole region benefits. The rationale for conserving and enhancing ecosystem services on agricultural land within Metro Vancouver is compelling. Agricultural lands host several ecosystem types from forests to wetlands to riparian areas; all with the ability to provide ecosystem services that can benefit the region and agricultural producers, particularly by building resilience within the face of climate change.

Financially supporting ecosystem services on agricultural land can be viewed as reallocating resources to manage and invest in ecosystems for the following benefits:

- Improved regional food security.
- Partnerships with First Nations to grow projects regarding Indigenous food systems.
- Preservation of natural assets and green infrastructure.
- Job creation for the food agriculture sector, and spin-off enterprises.
- Increased agri-tourism opportunities.
- New education and learning programs.

Investing in healthy ecosystems on agricultural lands can also be viewed as a type of 'collective insurance' since heathy ecosystems mitigate costs and damages to local governments associated with extreme weather events (e.g., floods and droughts) that will occur more frequently due to climate change. Understanding the economic value that healthy ecosystems can provide to minimize damages to infrastructure is crucial for decision-making when allocating resources to the management of natural assets and green infrastructure. Restoring and conserving ecosystems on a regional basis increases collective resiliency to disturbances, such as climate change, and can provide benefits to all citizens and sectors of Metro Vancouver for current and future generations.

Metro Vancouver undertook this *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver* study with the following two objectives:

- To understand the benefits provided by ecosystem services within agricultural areas to resiliency, food production and the livability of the wider region, and,
- To identify and recommend policy, regulatory or financial actions and mechanisms that can be taken to expand the long-term viability of supporting ecosystem services on agricultural land.

Farmland within the Agricultural Land Reserve (ALR) makes up approximately 20% of the land base within Metro Vancouver Regional District (MVRD). The potential of these agricultural lands to support ES to the region has been recognized by MVRD in several planning and policy documents. For example in the *Regional Food System Strategy*, *Ecological Health Framework*, the *Climate 2050 Roadmap for Agriculture (DRAFT)*, and *Metro 2050 (DRAFT),* among many other policy documents.

Ecosystem Services on Agricultural Lands

> Over 40% of Metro Vancouver's total sensitive ecosystems are in the Agricultural Land Reserve.
>
> This includes approximately 60% of wetlands and 40% of riparian areas.

The type and amount of ecosystem services provided by agricultural land depends on agricultural practices and the ecosystems present. The results from this project's mapping exercise found that the ALR within Metro Vancouver hosts a diversity of ecosystems including forests, riparian areas, and wetlands. Within the Metro Vancouver regional core, the ALR hosts over 40% (14,459 ha) of Metro Vancouver's total sensitive ecosystems.[1] Approximately 60% (4,167 ha) of wetlands and 40% (3,318 ha) of riparian areas occur within the ALR in Metro Vancouver. This points to the importance of the ALR and the need to support agricultural producers in restoring and maintaining ecosystems to provide ES for the region.

Ecosystem services on agricultural lands and associated benefits are summarized in the following table:

Service Type	Benefits
Supporting Services	○ Habitat for many wildlife species and primary between fragmented landscapes. ○ Soil development and water retention.
Regulating Services	○ Riparian areas and wetlands slow down water movement and soil lost to erosion during floods. ○ Water storage helps to recharge groundwater, increasing and prolonging water availability for crops and irrigation. ○ Increased vegetation draws carbon dioxide out of the air. ○ Nutrient loading into watercourses from manure and fertilizer run-off is filtered by vegetation, which improves water quality. ○ Better drainage reduces ponding in fields and improves livestock health by reducing saturated pastures. ○ Beneficial insects such as lady bugs and bees improve pollination.
Provisioning Services	○ Forests and farm fields provide food and wood for residents and wildlife. ○ Riparian areas provide food, nutrients and clean water to all in-stream and downstream fish habitats.
Cultural Services	○ Healthy ecosystems increase the resiliency of farms for on-going access to local food. ○ Traditional food and medicine values for Indigenous communities are supported by healthy riparian ecosystems. ○ Residents benefit from trails, recreation, bird and animal watching opportunities in agricultural areas. ○ Healthy ecosystems contribute to clean air and clean waters, which benefits the health of all residents.

[1] The regional core is the more urbanized southern part of the region and excludes the large parks (e.g. North Shore Mountains) and estuaries under Provincial management, watersheds and other higher elevation areas. The regional core is most relevant to policy and planning and is where municipal decisions and actions will have the most impact.

Many of the ecosystem services on agricultural land can help to reduce some of the impacts from extreme weather events that are exacerbated by climate change. For example, during a flood, wetlands can store excess water flowing from farm fields, and a healthy riparian area can retain soil and reduce erosion of stream banks. During droughts, riparian areas provide a cool microclimate for fish, animals and insects.

While the benefits of restoring and conserving healthy ecosystems on agricultural land outweigh the disadvantages, it is acknowledged that drawbacks can arise. For example, a healthy riparian buffer may reduce the area available for planting crops. Healthy forest stands may increase grazing pressure from deer and elk, and an increase in beavers removing trees and building dams can cause localized flooding.[2] Some of these disadvantages can be mitigated by installing wildlife fencing or beaver guards, but there are still financial costs associated with this infrastructure.

Current Programs and Support for Ecosystem Services on Agricultural Land

Over the past decade, numerous programs and initiatives have developed in the region that support enhancing ecosystem services on agricultural lands. Most programs are undertaken by non-profit organizations with support from local municipalities, MVRD, and provincial and federal governments. Notable programs include Delta Farmland & Wildlife Trust, Langley Ecosystem Services Initiatives program, and Farmland Advantage. Most successful ecosystem services programs on farmland provide payments to farmers and/or landowners for ecosystem restoration and maintenance activities.

Assigning monetary value to ecosystem services is challenging. As part of the approach to assign values to ecosystem services, qualitative surveys can be used to understand how important ecosystem services are to the community and how much residents would be willing to pay. Recent findings from surveys in the City of Delta and the Township of Langley included indications that:

1. Respondents understood the important role that farmland plays in protecting and stewarding the environment, and
2. Respondents are willing to financially support the stewardship of ecosystem services on agricultural lands.

Approaches for Long-term Support of Ecosystem Services on Agricultural Land

Policy, financial and regulatory mechanisms were considered as part of this study, including:

- Policy: Official Community Plans, RGSs, and other local government plans and strategies.
- Regulatory: Zoning and land use bylaws, Statutory Right of Ways, and covenants on title.
- Financial: Fees, parcel tax, property transfer tax, and property value tax to fund stewardship of agricultural ES.

[2] George W. Powell. (2015). Agriculture and Ecological Services: Recommendations for Support Programming in British Columbia.

Two approaches emerged for Metro Vancouver to further explore for long-term support of ecosystem services on agricultural lands.

Approach #1: Collaborate with local governments and the province on policies and regulations that support ES on agricultural land.

- MVRD, along with most member municipalities, have expressed support for ecosystem services on farmland in planning documents and through various zoning and land use bylaws. However, there is no comprehensive regional approach for documenting and creating policy related to ecosystem services on agricultural lands, and additional efforts to implement existing policy statements are required for the long-term sustainability of ecosystem services on agricultural lands.

Approach #2: Establish a regional conservation fund to support programs that steward ecosystem services on agricultural land.

- A conservation fund is a local government service that is funded through a dedicated tax or fee, held and overseen by local government, and earmarked for the specific purpose of undertaking priority conservation projects throughout the region. Initiatives that support ecosystem services on agricultural lands can be established and operationalized through conservation funds. Several regional districts across the province have implemented conservation funds including the Regional District of East Kootenay, Regional District of Central Kootenay, Regional District of North Okanagan, and the Regional District Okanagan Similkameen. These funds provide support to local non-profit organizations for conservation and restoration projects that have led to healthier ecosystems.

It is acknowledged that each approach would require a separate robust review to determine appropriateness and feasibility.

Recommendations

The report provides 5 recommendations for Metro Vancouver, each of which is detailed in the table on the following page:

1. Collaborate internally and externally to further explore and build a regional conservation fund (or other appropriate funding mechanism) that includes payment for ecosystem services on agricultural land.
2. Conduct polling across Metro Vancouver to gauge support and willingness to pay for ecosystem services on agricultural land.
3. Conduct in-depth mapping of ecosystem services on agricultural land in Metro Vancouver.
4. Estimate the financial value of ecosystem services on agricultural land in Metro Vancouver.
5. Review and assess options to align with ongoing work to establish a Regional Green Infrastructure Network to support ecosystem services on agricultural land.

Recommendation	Rationale	Recommended Timeline
1. Collaborate internally and externally to further explore and build a regional conservation fund that includes payment for ecosystem services on agricultural land.	Internally, MVRD staff working on increasing resilience of the regional agricultural sector and the Regional Green Infrastructure Network can look for opportunities to align objectives with a conservation fund. Externally, staff can continue to collaboration with the Fraser Delta Farmland Protection and Stewardship Working Group. Engagement with Indigenous communities is also recommended.	Ongoing
2. Conduct polling across Metro Vancouver to gauge support and willingness to pay for ecosystem services on agricultural land.	Region-wide polling would assist MVRD decision-makers in understanding if residents support a regional conservation fund, and what types of projects residents would prioritize for improving the health of ecosystems.	Within 1 year
3. Conduct in-depth mapping of ecosystem services on agricultural land in Metro Vancouver.	Areas with the highest opportunity to focus efforts for stewardship of ecosystem services on agricultural lands should be identified. This mapping will inform ecosystem valuation calculations and can be aligned with Regional Green Infrastructure Network mapping.[3]	Within 1 -2 years
4. Estimate the financial value of ecosystem services on agricultural land in Metro Vancouver.	A detailed estimate of the economic value of ecosystem services on agricultural lands in Metro Vancouver would greatly assist decision-makers and the public in understanding the benefit to society from agricultural land stewardship. This will also assist in determining appropriate funding amounts for a regional conservation fund and what ecosystems should be prioritized for support.	Within 1-2 years
5. Review and assess options to align with the ongoing work to establish a Regional Green Infrastructure Network to support ecosystem services on agricultural land.	A Regional Green Infrastructure Network would acknowledge and identify all areas with significant ecosystem services in the region, including on agricultural land. The RGIN could be used to signify policy objectives for those lands, clarify decision-making requirements, and potentially minimize non-agricultural development.	Within 2 -3 years.

Recent plans and strategies adopted by Metro Vancouver recognize the importance of healthy ecosystems for a livable region and articulate that agriculture can play an important role in this respect. Several programs have been successful in incentivizing farmers to conserve and restore ecosystems in return for modest financial compensation; however, an overarching regional approach is missing. MVRD has an opportunity to provide a leadership role in connecting existing programs and leveraging regional initiatives to support payment for ecosystem services program for agricultural lands through the establishment of a regional conservation fund.

[3] Staff communication, Metro Vancouver. 2022. Update on Advancing the Regional Green Infrastructure Network.

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Definitions

Agricultural Lands	For the purposes of this report, the term 'agricultural lands' denotes lands with the Agricultural Land Reserve (ALR) as well as lands outside the ALR that are capable of supporting agriculture, whether they are being actively farmed at present time or not. The focus of the scope of this report is on agricultural lands when discussing ecosystem services broadly, and the ALR when analyzing land within Metro Vancouver specifically.
Ecosystems	Ecosystems are the dynamic complex set of relationships between plant, animal, and micro-organism communities and their non-living environment interacting as a functional unit.[4]
Ecosystem Services	Ecosystem services are the many ways that humans benefit from and depend on healthy functioning ecosystems. This dependency extends from essential support for life (e.g., because ecosystems produce oxygen and food) to security (e.g., by mitigating extreme weather events) and quality of life (e.g., by supporting psychological well-being).[5] Examples of ecosystem services include, but are not limited to, habitat for wildlife and Species at Risk from tree stands and hedgerows between fields, healthy riparian areas along streams for salmon habitat and flood mitigation, healthy soils that retain nutrients and carbon, and the production of food.
Healthy Ecosystems	Ecosystems that are healthy have the ability to maintain their plant and animal structure and functions (e.g. nutrient cycling, water cycling, etc.) over time and in the face of stressors.[6]

[4] Convention on Biological Diversity. Article 2. Terms of Use: https://www.cbd.int/convention/articles/?a=cbd-02
[5] Value of Nature to Canadians Study Taskforce. (2017). Completing and Using Ecosystem Service Assessment for Decision-Making: An Interdisciplinary Toolkit for Managers and Analysts. Ottawa, ON: Federal, Provincial, and Territorial Governments of Canada.
[6] Costanza, R., & Mageau, M. (1999). What is a healthy ecosystem?. Aquatic ecology, 33(1), 105-115.

Acronyms

AEP	Annual Exceedance Probability
ALR	Agricultural Land Reserve
BCCAF	BC Climate Agri-Solutions Fund
BMPs	Beneficial Management Practices
DFWT	Delta Farmland & Wildlife Trust
DPA	Development Permit Area
EAP	Ecological Accounting Process
ES	Ecosystem Services
ha	Hectares
MV	Metro Vancouver
MVRD	Metro Vancouver Regional District
PES	Payment for Ecosystem Services
RGIN	Regional Green Infrastructure Network
SEI	Sensitive Ecosystem Inventory
SROW	Statutory Right of Way
TEV	Total Economic Value
ToL	Township of Langley

1.0 Introduction

Amidst a rapidly changing climate and increasing urban pressures it is important to understand the value of ecosystem services on agricultural lands and how to support and enhance their continued benefits to society. Ecosystem services (ES) are the benefits that humans and society obtain from healthy ecosystems and their natural processes. Such services include flood mitigation, carbon sequestration, robust salmon populations, and clean air. Restoring and conserving ecosystems on a regional basis increases our collective resiliency to disturbances, such as climate change, and can provide benefits to all citizens and sectors of Metro Vancouver for current and future generations.

Figure 1. Planting native species to stabilize riverbank on agricultural land.[1]

Farmland within the Agricultural Land Reserve (ALR) makes up approximately 20% of the land base within the Metro Vancouver Regional District (MVRD) and its member municipalities. The potential of these agricultural lands to support ES to the region has been recognized by MVRD in several planning and policy documents. For example in the *Regional Food System Strategy*, *Ecological Health Framework*, the *Climate 2050 Roadmap for Agriculture (DRAFT)*, and *Metro 2050 (DRAFT),* among many other policy documents. However, further inquiry is needed to identify the breadth of possibilities and mechanisms that MVRD can use to support ecosystem services on agricultural lands over the long term.

MVRD undertook this *Scoping Ecosystem Services on Agricultural Land within Metro Vancouver* study with the following two objectives:

- To understand the benefits provided by ES within agricultural areas to resiliency, food production and the livability of the wider region, and,
- To identify and recommend policy, regulatory or financial actions and mechanisms that can be taken to expand the long-term viability of supporting agricultural ES.

This study identifies ecosystems on agricultural lands, outlines the value of ES to the region and provides recommendations for next steps in the long-term support for ES on agricultural lands.

2.0 Project Methodology

2.1 Phases 1 and 2

This study was separated into two phases. Phase 1 was completed from October 2021 to July 2022. A focused background, literature and jurisdictional document review, and mapping analysis was completed to investigate and describe the following topics:

- The impetus and support for agricultural ES within MVRD policies and plans;
- Current programs and initiatives within the region that are supporting ecosystem services on agricultural lands;
- The ecosystems and ES present on agricultural lands within the region;
- The benefits provided by ES on agricultural lands to the agricultural sector, general public, and to enhancing the overall health of regional ecosystems and increasing resilience to climate change impacts;
- Beneficial management practices (BMPs) to ensure effective restoration, conservation and maintenance of ES on agricultural lands; and,
- A mapping exercise to identify areas of the ALR within MV that have high opportunity for the provisioning of ES.

Phase Two, was completed between July 2022 and January 2023. A further secondary document and review was conducted into existing research on the value of ES on agricultural lands, and residents' willingness to pay for ES on agricultural lands in the region. Research and analysis was conducted to identify and understand the policy, regulatory and financial actions and mechanisms available to support long-term stewardship of ES on agricultural land. How these various approaches could work within the MV context, and a comparison of the two most feasible approaches was completed. Recommendations for next steps to further stewardship of ecosystem services on agricultural lands are outlined.

2.2 Limitations

Metro Vancouver is situated on the ancestral, traditional and unceded territories of the shared territories of many Indigenous peoples, including ten local First Nations: qićəy̓ (Katzie), qʷɑ:nˀ ƛ̓ əṅ (Kwantlen), kʷikʷəƛ̓ əm (Kwikwetlem), máthxwi (Mˀ atsqui), xʷməθkʷəyəm (Musqueam), qiqéyt (Qaˀ yqayt), seˀmyaˀme (Semiahmoo), Sḵwx̱wú7mesh Úxwumixw (Squamish), scəwaθən məsteyəxʷ (Tsawwassen), səˀ líl̓wətaʔɬ̓ (Tsleil-Waututh). These First Nations have lived in the area for thousands of years, working with natural systems to shape the land and food systems. Engagement with First Nation communities did not occur as a part of this study, because the focus of this work was on an assessment landscape level ecosystem services and policy options, rather than on management options for specific parcels of land. However, future phases of work could and should include research and collaboration into the intersection of ecosystem services on agricultural lands and Indigenous land stewardship. This is also reflected in the recommendations.

3.0 MVRD Policy Foundation for Ecosystem Services on Agricultural Land

Metro Vancouver Regional District has adopted several frameworks, plans and strategies which identify opportunities to support agricultural ES and aim to conserve and enhance natural ecosystems. Four key documents are further described below: the *Regional Food System Strategy*, *Ecological Health Framework*, the *Climate 2050 Roadmap for Agriculture (DRAFT)*, and *Metro 2050 (DRAFT).*

The *Regional Food System Strategy,* adopted in 2011*,* is a foundational document that outlines goals, strategies and actions for achieving the vision of a regional food system that takes a "collaborative approach to a sustainable, resilient and healthy food system that will contribute to the well-being of all residents and the economic prosperity of the region while conserving ecological legacy." Several of the strategies in this document include support for farmers in implementing beneficial practices for ecosystem services to improve ecosystem health.[7]

In 2018, MVRD endorsed the *Ecological Health Framework* which underscores MVRD's role in supporting ecological health while setting out a clear vision, along with guiding principles, goals and strategies for actively advancing ecological health in the region. The *Ecological Health Framework* envisions MV as a "beautiful, healthy, and resilient environment for current and future generations." To achieve this vision there are three main goals, 1) building ecological resilience and minimizing impacts, 2) protecting natural areas and conserving ecosystem services, and 3) nurturing nature within communities.[8]

The *Climate 2050 Roadmap for Agriculture (DRAFT)* (2021) outlines several goals and strategies for the agriculture sector in MV to assist the region in becoming carbon neutral by 2050. Many of these strategies include supporting ecosystem services on agricultural lands to achieve net-zero emissions and a resilient local food system. The strategies that align most directly with this project are[9]:

- Strategy 1.6: Protect Agricultural Land for Ecosystem Services: Metro Vancouver will examine the use of ecosystem services as a benefit to the regional agricultural sector including what programs are most beneficial to farmers financially and what methods are most effective in securing land for ecosystem services and for ensuring the long-term health and resiliency of farming operations.
- Strategy 3.2: Support and Expand Ecosystem Services: Work with the BC Government, member jurisdictions, the farming community and other regional partners such as Farmland Advantage to determine how much agricultural land is available and appropriate to be used for ecosystem services, how individual farms can benefit from the restoration and protection of these lands (including riparian areas) on their farms, and how farmers and land owners can be compensated for keeping these lands set aside for ecosystem services. Metro Vancouver will provide regionally-appropriate guidance on the valuation methodologies, tools and decision-making frameworks needed to identify, preserve,

[7] Metro Vancouver. 2011. Regional Food System Strategy.
[8] Metro Vancouver. 2018. Ecological Health Framework.
[9] Metro Vancouver. 2021. Report to Climate Action Committee: Draft Climate 2050 Agriculture Roadmap.

restore, and, where necessary, expand natural ecosystems on agricultural land and will examine the benefits of connecting these areas within a regional Green Infrastructure Network.

In 2022, *Metro 2050 (DRAFT)*, the Regional Growth Strategy, was released and identifies the importance of protecting agricultural lands for the ongoing production of fresh and local food which contributes to a secure food supply and economic resilience, and recognizes the value of ecosystem services on agricultural lands (Goal 2, Strategy 2.3).[10] *Metro 2050 (DRAFT)* acknowledges the vulnerability of agriculture to impacts from climate change and supports policies that promote the adoption of farm practices to improve the health of on-farm ecosystems, which increases the region's capacity to adapt to and mitigate effects from climate change.

Numerous other MVRD documents also speak to the importance of robust ES for a liveable region through strategic management of public spaces such as regional, municipal parks, greenway corridors, and agricultural lands (Table 1). MVRD also has numerous regulations to support waste management, air quality control, climate change adaptation and mitigation and sustainable land use development to protect and enhance ecosystem services.

Table 1 Examples of Metro Vancouver Plans and Strategies with objectives to support healthy ecosystems.

DATE	DOCUMENT TITLE
2022	Metro 2050 (Draft)
2022	Climate 2050 Agriculture Roadmap (Draft)
2022	Regional Parks Plan
2021	Clean Air Plan
2020	Regional Greenways 2050
2019	Climate 2050 Strategic Framework
2018	Ecological Health Framework
2016	Regional Parks Plan
2016	Regional Food System Action Plan
2015	Green Infrastructure in Metro Vancouver
2015	Connecting the Dots: Regional Green Infrastructure Network Resource
2014	Sensitive Ecosystem Inventory
2011	Regional Food System Strategy
2011	Metro 2040: Shaping our Future, Regional Growth Strategy
2008	Strategic Directions for Biodiversity Conservation

3.1 Programs and Initiatives Supporting Ecosystem Services on Agricultural Land

Over the past decade, numerous programs and initiatives have developed in the region that support enhancing ES on agricultural lands. The programs have been and are currently undertaken by non-profit organizations with the support from local municipalities, MVRD, and the provincial and federal governments. These programs provide incentives and support to farmers to enhance

[10] Metro Vancouver. 2022. Metro 2050.

the ecosystem services on their land, which are not traded in the marketplace but have great public value. The programs identify the ES that can be conserved, restored, enhanced, and maintained and develop plans to preserve them. Implementation may include actions such as regulating water or stream setbacks, using strategic fencing, restoration plantings, creating grassland set asides, and using cover cropping, to name a few. In addition, there is a vast amount of academic research being conducted in the region by several local universities and colleges relating to this topic.

Taking stock of the current projects, programs and initiatives in the region is helpful for MVRD to understand where they could play a role in this area and helps to inform this project's recommendations. Table 2 describes current initiatives in the region that are most closely aligned with supporting ES on agricultural lands. However, this is not an exhaustive list as there are countless non-profit organizations as well as provincial and federal programs that may overlap and have connection with the objectives of supporting ES on agricultural land.

Table 2 Examples of programs within Metro Vancouver supporting ES on agricultural lands.

Project Name	Organization	Description
BC Climate Agri-Solutions Fund	Investment Agriculture Foundation of BC	The BC Climate Agri-Solutions Fund (BCCAF) provides funding to help farmers tackle climate change by adopting BMPs that store carbon and reduce GHGs, specifically nitrogen management, cover cropping, and rotational grazing.
Environmental Farm Plan: Beneficial Management Practices	Investment Agriculture Foundation of BC	Funded by the Canadian Agricultural Partnership (CAP) Program, the Environmental Farm Plan Program's (EFP) objective is to provide farm and ranch operators with the means to identify agri-environmental risks and opportunities. Farms with EFPs may be eligible to apply for cost-shared incentives through the BMP program. There are BMPs which support farms to act on ecosystem services such as building soil health, increasing water retention, enhancing biodiversity, and sequestering carbon.
Farmland Advantage	Investment Agriculture Foundation of BC	Farmland Advantage is a BC-based Payment for Ecosystem Services (PES) program that provides financial compensation to farmers and ranchers to protect and enhance ecosystem services. The program identifies sensitive ecosystems in agricultural areas and then works with producers and Indigenous communities to restore degraded land. Since 2021, the program has worked within Metro Vancouver with farmers in the Bertrand Creek watershed and the Little Campbell River watershed.
Langley Ecosystem Services Initiative	Langley Sustainable Agriculture Foundation	This program ran as a pilot project from 2015 – 2019 with farmers in the Bertrand Creek watershed. This was a PES program that paid agricultural producers to use practices that resulted in an increase in ecological integrity. It was a farmer-led initiative and has since been folded into the Farmland Advantage program.
Stewardship Programs	Delta Farmland & Wildlife Trust	This program helps steward over 1,416 ha (3,500 acres) of wildlife habitat on farmland through co-operative arrangements with local farmers. Programs include: grassland set-asides, winter cover crops, and forage enhancement. This includes cost sharing payments to local farmers to help lessen the financial burden for farms to take land out of production for conservation purposes.

4.0 Ecosystems Services on Agricultural Lands in Metro Vancouver

Agricultural lands present a unique opportunity for the long-term provision of ES due to the development restrictions placed through the *Agricultural Land Commission Act* and the *Agricultural Land Reserve Regulation*. Almost 20% of the land within MV is designated as ALR, a portion of which is often left in a more natural state (such as watercourses, wetlands, and forests). This natural state is conducive to implementing BMPs that can conserve, restore and maintain ES. Additionally, in recent years, the potential of certain management practices on agricultural lands to assist in mitigating and adapting to climate change has become clearer, and academic and field research is being conducted to determine the most effective BMPs for sequestering carbon and reducing greenhouse gas emissions on farmland.

Identifying which ecosystems are present in the ALR within MV through mapping helps to determine where the greatest opportunities are for supporting ES. The Sensitive Ecosystem Inventory (SEI) mapping, conducted for MVRD in 2014 and updated in 2020, was used to inform the types and locations of ecosystems in the ALR (Table 3 below and Figure 2 next page). The SEI provides information for the locations of 'sensitive' and 'modified' ecosystems. Sensitive ecosystems are at-risk or are ecologically fragile in the context of the provincial landscape because of the diversity of species they support.[11] A 'modified' ecosystem is younger and more human-modified but still has ecological value and is important to biodiversity. The results of this project's mapping exercise indicated that the ALR within MV hosts a diversity of ecosystems such as forests, riparian areas and wetlands. Within the MV regional core, the ALR hosts over 40% of major ecosystem types (Table 3)[12] including approximately 60% of wetlands and 40% of riparian areas. This points to the high level of opportunity to leverage existing funding and support producers in restoring and maintaining these ecosystems to provide ES for the region.

Table 3 Top five ecosystems within the ALR in Metro Vancouver as classified by the SEI.[13]

	Ecosystem	*Total ha within Regional Core*	*Total ha within ALR*	*Percentage of ALR ha within Regional Core*
1	Forests	15,432	5,334	35%
2	Wetlands	6,900	4,167	60%
3	Riparian	7,937	3,318	42%
4	Old Fields[14]	2,134	1,418	66%
5	Freshwater	565	222	39%
	Total	**32,968**	**14,459**	**44%**

[11] Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report
[12] The regional core is the more urbanized southern part of the region and excludes the large parks (e.g. North Shore Mountains) and estuaries under Provincial management, watersheds and other higher elevation areas. The regional core is most relevant to policy and planning and is where municipal decisions and actions will have the most impact.
[13] Numbers includes sensitive and modified ecosystems. Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report; and. J. Clark. 2020. Metro Vancouver. Update of the Metro Vancouver Sensitive Ecosystem Inventory (2009 – 2014).
[14] Old field ecosystems are agricultural lands that were formerly cultivated or grazed but have since been abandoned and have well-developed herbaceous vegetation, some shrubs and potentially a few young trees. They may revert back to active agriculture over time based on the producer's management decisions.

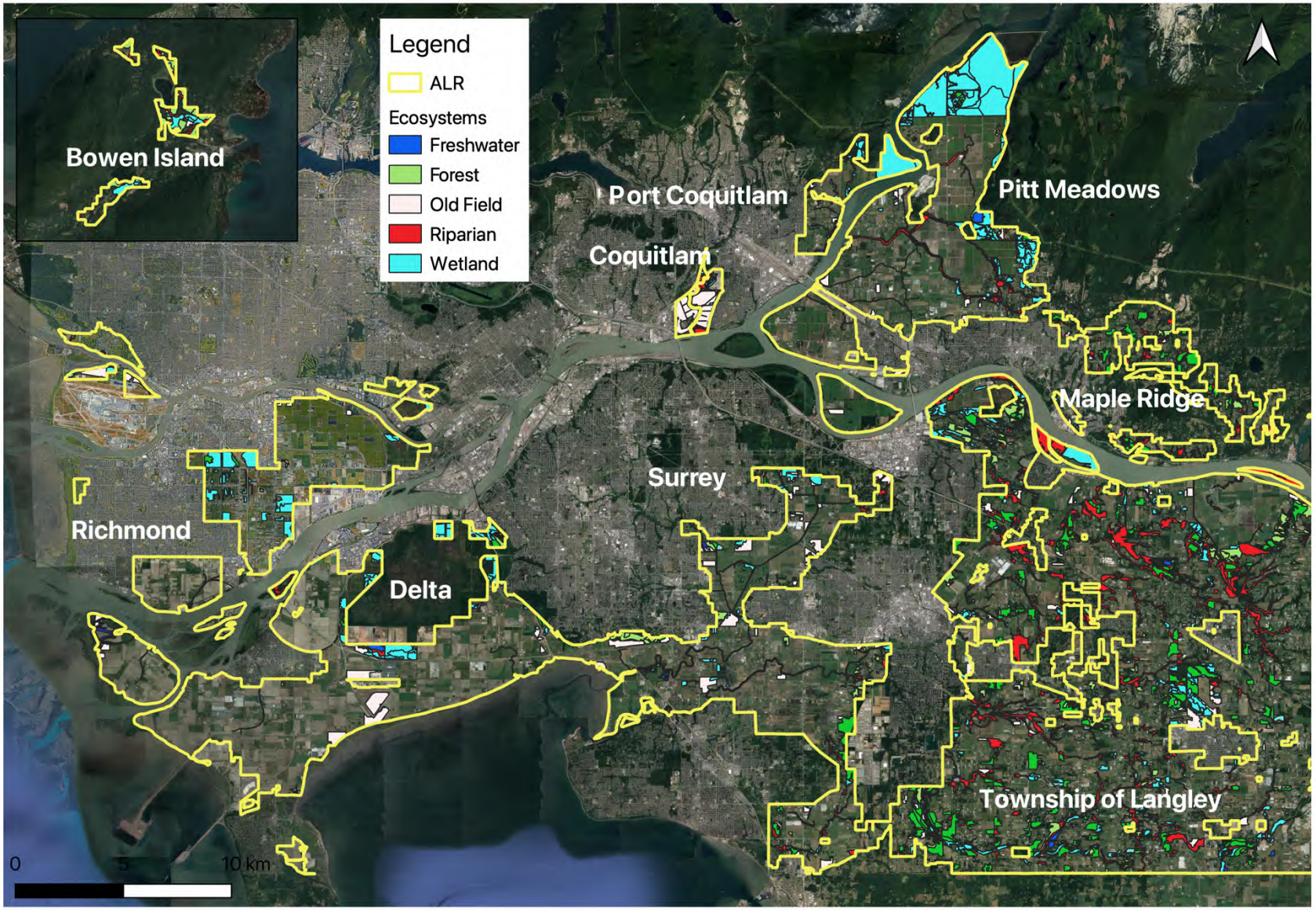

Figure 2 Top 5 ecosystems identified in the SEI within the ALR in Metro Vancouver.

4.1 Categories of Ecosystem Services

A list of the ecosystem services provided by agricultural land within MV is presented in Table 4. There are four key categories of ES:[15] [16]

1. **Supporting**: These are services necessary for ecosystem health and are the foundation for other services.
2. **Regulating**: Services that ecosystems provide by acting as regulators of ecosystem processes.
3. **Provisioning**: The products and materials provided by ecosystems.
4. **Cultural**: The non-material benefits of ecosystem that relate more directly to livability for the regions' residents and visitors.

Table 4 Examples of ecosystem services provided by agricultural land in Metro Vancouver.

	Supporting				*Regulating*					*Provisioning*			*Cultural*		
Ecosystem	Soil Health	Plant Growth	Biodiversity	Nutrient Cycling	Shading	Water Quality & Quantity	Carbon Storage	Clean Air	Pollination	Food & Fish	Fresh Water	Wood	Human Health	Recreation	Tourism & Beauty
Forest	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Riparian	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wetland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Freshwater			✓			✓				✓	✓		✓	✓	✓
Old Fields & Hedgerows	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓

Ecosystem services provided by healthy ecosystems on farmland benefit the wider region and society and agricultural producers. The subsequent sections describe these beneficial ecosystem services for each ecosystem present in the ALR. Examples of BMPs that can be implemented on agricultural lands to support healthy ecosystems are also outlined.

[15] Millennium Ecosystem Assessment. 2003)=. Ecosystems and Human Well-being: A Framework for Assessment.

[16] There are several international frameworks that have been developed for categorizing ES such as, the Millennium Ecosystem Assessment (2003), the Economics of Ecosystems and Biodiversity (2010); and the Common International Classification of Ecosystem Services (2016). The ES described in all three frameworks remain consistent and descriptions of ES are interchangeable between methodologies. To stay consistent with previous MV reports, this study uses the categories outlined in the MV Ecological Health Framework, which follow the Millennium Ecosystem Assessment Framework most closely.

4.2 Forest Ecosystem Services and Agricultural BMPs

There are a range of forest types and associated tree stand ages within the ALR in MV that provide a wide array of ES. There are mature forests which have trees that are over 80 years old, immature forests that are between 30-80 years old, and young forests that are less than 30 years old.[17] There are a diversity of forest stands and tree species in the region ranging from conifers, broadleaf and mixed species. Table 5 describes examples of ES provided by forests.

Table 5 Examples of ecosystem services provided by forests within the ALR in Metro Vancouver.[18]

Services	Description
Supporting *(soil development, nutrient cycling, photosynthesis, habitat, biodiversity)*	○ Forests are important habitat areas for many wildlife species, increasing animal and plant biodiversity, and serve as connections between ecosystems in a highly fragmented landscape. ○ The presence of vegetation with deep roots and biomass for increased decomposition assists in soil development and erosion control.
Regulating *(shading, water quantity, water quality, carbon storage, clean air, pollination)*	○ Vegetation increases filtration of water as it moves through the forest and increases water storage by slowing down the water which allows for greater water infiltration as it moves over the soil. ○ Trees and shrubs provide shading which helps to reduce temperatures nearby and contributes to clean air through photosynthesis. ○ The increase in plant biodiversity provides habitat for beneficial insects like pollinators. ○ During droughts, the water stored in soils by the forests is slowly released, providing water to adjacent ecosystems. ○ Forests draw carbon dioxide out of the air and stores it both above and below the ground.
Provisioning *(food, fish, fresh water, wood)*	○ Trees and native plant species within forests can provide food and wood. ○ Water storage and filtration benefit fish stock health.
Cultural *(human health, recreation, tourism, beauty)*	○ Healthy forests can increase the resiliency of farms for on-going access to local food. ○ Traditional food and medicine values for First Nation communities are supported. ○ Humans can benefit from trails, recreation, bird and animal watching opportunities. ○ Humans gain aesthetic value from forest landscapes. ○ Forests contribute to clean air and clean waters, which benefits the health of nearby residents.

[17] Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report.
[18] Sources include: Del Meidinger, Josephine Clark, & David Adamoski. (2014). Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report.; Felipe-Lucia, M. R., Soliveres, S., Penone, C., Manning, P., van der Plas, F., Boch, S., ... & Allan, E. 2018. Multiple forest attributes underpin the supply of multiple ecosystem services. Nature communications, 9(1), 1-11.;Gallay, I., Olah, B., Gallayová, Z., & Lepeška, T. 2021. Monetary Valuation of Flood Protection Ecosystem Service Based on Hydrological Modelling and Avoided Damage Costs. An Example from the Čierny Hron River Basin, Slovakia. Water, 13(2), 198.

4.2.1 Ecosystems Services Provided by Forests to Agriculture

Restoring, maintaining and conserving forest ecosystems on agricultural lands also provides benefits to agriculture. Table 6 describes examples of specific ES provided by forests that benefit agriculture.

Table 6 Examples of the benefits to agriculture from ecosystem services provided by forests and tree stands.

Ecosystem Services	Benefit to Agriculture
Water Quality	○ Forested areas filter water and reduce nutrient loading from manure run-off into watercourses, which improves water quality and provides cleaner water for irrigation or livestock watering.
Water Quantity	○ Water stored in forest ecosystems helps to recharge groundwater which can increase and prolong water availability for crops and irrigation. ○ Better drainage and flood control reduces in-field ponding and water-saturated soils. This can also improve livestock herd health by reducing foot rot in saturated pastures caused by poor drainage.
Nutrient Cycling	○ Forest ecosystems help to keep nutrients cycling through the soil, increasing availability for nearby crops.
Soil Development	○ Increased vegetation helps to retain soils through stable roots and build soils through increased biomass decomposition.
Carbon Storage	○ Forests and trees on agricultural lands where bare land was previously, increases soil carbon.
Erosion Control	○ Forests and tree on agricultural lands hold soils with their root systems and reduce soil erosion from wind and rain events.
Habitat and Biodiversity	○ Beneficial insects such as lady bugs, ground beetles, parasitoid wasps, syrphid flies and native bees improve pollination and can help reduce pest pressure on crops. ○ An increase in trees and shrubs can provide shade for livestock and can protect crops from strong winds.
Pollination	○ Better crop yields from native pollinators and honeybees that are using the ecosystems as habitats.

4.2.2 Agricultural BMPs for Forest Ecosystems

Examples of agricultural BMPs that enhance ecosystem services in forests and woodland areas include[19]:

- Planting locally adapted species, favouring native species.
- Managing the timing and intensity of livestock use of forested pastures and tree/shrub stands in native pastures to avoid heavy browsing and maintain healthy shrub/tree populations.
- Identifying existing forest stands for protection from cutting and deadwood removal.

[19] BC Ministry of Agriculture, Food and Fisheries. 2016. Developing a Riparian Management Plan Version 2.0. (Excerpts taken from the Riparian Management Field Workbook & Biodiversity Guide).

- Protecting nests built by large birds, such as raptors and herons by establishing vegetation buffers and minimizing activities near the nests.
- Establishing or maintaining non-timber forest products such as berries, nuts, mushrooms, vines, specialty trees, and shrubs.
- Leaving large rotting or hollow logs for habitat.
- Creating habitat and improving nutrient cycling by leaving branches, tree tops, cull logs, and log portions at felling sites, when possible.
- Replanting or allowing natural regeneration to (re)connect wooded areas on the farm.
- Integrating management of trees and livestock pasture (silvopasture).
- Conserving wildlife trees, rock piles, and other wildlife habitat features.
- Undertaking forest operations when soils are dry or frozen to minimize soil and root disturbance.
- Avoiding tree felling during breeding seasons of known wildlife species.
- Removing and controlling other invasive species and implementing other BMPs related to invasive species that have already been developed for MV.[20]

4.3 Wetland, Riparian, and Freshwater Ecosystem Services and Agricultural BMPs

The wetland, riparian and freshwater ecosystems within Metro Vancouver's agricultural lands are of particular importance as the health of these ecosystems heavily influence freshwater resources, landscapes, and species of significance, such as salmon.

- Wetland ecosystems are found where soils are saturated by water for enough time that the excess water and resulting low oxygen levels influence the vegetation and soil. They encompass a range of plant communities that include western red cedar/skunk cabbage swamps, cattail marshes, and peat moss dominated bogs.[21]

- Riparian ecosystems are associated with and influenced by freshwater. They generally occur along rivers, streams, and creeks, and fringes around lakes. These ecosystems are influenced by factors such as erosion, sedimentation, flooding, and/or irrigation due to proximity to the water body.[22]

- Freshwater ecosystems include bodies of water such as lakes and ponds that usually lack floating vegetation. On agricultural lands there may also be freshwater reservoirs that include smaller, modified ponds - even though the natural hydrology of reservoirs is modified, they are still important freshwater habitat.[23]

Most drainage ditches on agricultural lands are not fish-bearing; however, these ditches can be an important part of the region's watercourses as they connect with creeks, streams and rivers

[20] Invasive Species Council of Metro Vancouver has guidance on BMPs, relevant to agricultural lands.
[21] Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report.
[22] Ibid.
[23] Ibid.

therefore influencing the health of those waters. Table 7 (next page) describes ES provided by these ecosystems on agricultural lands.

As the frequency and intensity of drought and flooding events continue to occur in the region, many of the services that these ecosystems provide can help to reduce some of the negative impacts from these events. For example, during a flood event, wetlands can store excess water and a healthy riparian area can retain soil and reduce erosion of stream banks. During droughts, vegetated areas can provide a cool microclimate for animals and insects, and there may be more water available for irrigation during droughts from water stored and slowly released from these ecosystems.

Table 7 Ecosystem services provided by wetlands, riparian areas, and watercourses on agricultural lands.[24]

Services	Description
Supporting *(soil development, nutrient cycling, photosynthesis, habitat, biodiversity)*	○ Healthy riparian areas reduce the loss of land to erosion as established native vegetation often have deep roots which stabilize banks and hold soil together. ○ Reduced erosion means less sediment is transported and keeps fish spawning areas clear of silt, reduces nutrient overloading and increases water quality. ○ Healthy wetland and riparian areas support a high number of native plant and animal species. Connected riparian areas allow fish, birds, mammals, amphibians and other species to move through the landscape.
Regulating *(shading, water quantity, water quality, carbon storage, clean air, pollination)*	○ Healthy wetlands and riparian areas improve flood control along watercourses by storing excess water and moderating the release of that water, reducing damage to adjacent areas during floods. ○ Riparian vegetation moderates water temperature, reduces input of silt and soil and filters and absorbs excess nutrients/contaminants to improve water quality. ○ The canopy of trees and shrubs provide shading of the water, moderating water temperature which is important for success of aquatic species such as fish. ○ Vegetated buffers draw carbon dioxide out of the air and store it both above and below the ground.
Provisioning *(food, fish, fresh water, wood)*	○ Riparian areas provide benefits to salmon and other fish populations as they provide food, nutrients and clean water to all in-stream and downstream fish habitats. This in turn positively impacts the health of salmon stocks for human economic and cultural activities.
Cultural *(human health, recreation, tourism, beauty)*	○ Humans benefit from access to food produced on farms and healthy riparian areas can increase the resiliency of farms for on-going access to local food. ○ Traditional food and medicine values for First Nation communities are supported. ○ Biodiversity in plants and animals can benefit farmers and the general public alike through pest control, increased pollination, allowing for bird watching opportunities, scientific research and nature-based recreation activities. ○ Residents gain aesthetic value from these landscapes.

[24] Sources Include: BC Government. (nd). Riparian Areas.; Perry, L. G., Reynolds, L. V., Beechie, T. J., Collins, M. J., & Shafroth, P. B. 2015. Incorporating climate change projections into riparian restoration planning and design. Ecohydrology, 8(5), 863-879.; Mike Pearson, David Zehnder, & DG Blair. 2018. The Stewardship Centre for British Columbia. Lands Near Water, Riparian Restoration & Enhancement.; Riis, T., Kelly-Quinn, M., Aguiar, F. C., Manolaki, P., Bruno, D., Bejarano, M. D., ... & Dufour, S. 2020. Global overview of ecosystem services provided by riparian vegetation. BioScience, 70(6), 501-514.

4.3.1 Ecosystems Services Provided by Riparian, Wetland, and Freshwater Ecosystems to Agriculture

Restoring, maintaining and conserving wetland, riparian and freshwater ecosystems on agricultural lands provide benefits to agricultural production and the agriculture sector. Table 8 describes specific ES that provided by these ecosystems that benefit agriculture.

Table 8 Examples of the benefits to agriculture from ecosystem services provided by wetlands, riparian areas, and watercourses.

Ecosystem Services	Benefit to Agriculture
Water Quality	○ Riparian areas filter water and reduce nutrient loading from manure run-off into the watercourses, which improves water quality and provides cleaner water for irrigation or livestock watering.
Water Quantity	○ Well managed wetland and watercourses can provide better drainage and flood control which reduces in-field ponding and water-saturated soils. This can also improve livestock herd health by reducing foot rot in saturated pastures. ○ Water is stored in these ecosystems and helps to recharge the groundwater which can increase and prolong water availability for crops and irrigation.
Nutrient Cycling	○ Riparian ecosystems help to keep nutrients in the area and cycling nutrients through the soil, possibly increasing availability for nearby crops.
Carbon Storage	○ Increased vegetation in riparian ecosystems on agricultural lands where bare land was previously, increases soil carbon.
Soil Development	○ Vegetation in riparian and wetland ecosystems helps to retain soils through stable roots and build soils through increased biomass and decomposition.
Erosion Control	○ Vegetative wetlands and riparian areas stabilize stream banks which reduces erosion of agricultural lands.
Habitat and Biodiversity	○ Beneficial insects such as lady bugs, ground beetles, parasitoid wasps, syrphid flies and native bees improve pollination and can help reduce pest pressure on crops.
Pollination	○ Better crop yields from native pollinators and honeybees that are using the ecosystems as habitats.

4.3.2 Agricultural BMPs for Riparian, Wetland, and Freshwater Ecosystems

Riparian Areas

Specific land management practices that protect riparian areas and enhance ES include[25]:

- Avoiding overuse of fertilizers or manure that may be transported into riparian areas.
- Protecting against loss of plant diversity and vitality in riparian areas.
- Protecting against the establishment of invasives species.
- Avoiding practices that artificially alter streamflow.

[25] BC Ministry of Agriculture, Food and Fisheries. 2021. British Columbia Environmental Farm Plan Reference Guide 6th Edition.

In some cases, the condition of the riparian area may require some investment to bring the area up to a healthier or proper functioning condition. Improvement of agricultural riparian areas can occur by implementing the following practices[26],[27]:

- Retaining a wide variety of native plants that are adapted to living in riparian areas.
- Encouraging a diverse mix of plant species and age that:
    - Are adapted to the climate, soil and water conditions;
    - Foster a good rooting system for stream bank stability.
- Developing off-channel watering and/or constructing fencing that controls livestock access to riparian areas and watercourses.
- Improving ground stability with erosion control structures by:
    - Contouring terraces with earthworks and seeding;
    - Stabilizing gullies and watercourses with erosion control matting, silt fencing, seeding;
    - Stabilizing banks through bank shaping, riprap, re-vegetation, and blanketing; and,
    - Protecting riparian trees and shrubs from rodents such as beavers.
- Managing the timing and extent of grazing in riparian areas to protect native species, leaving ample residue/litter, and avoiding creating wet trampled spots (e.g., avoiding overgrazing of forbs and shrubs).
- Constructing or relocating facilities and roads away from riparian areas.
- Where appropriate, using thorny shrubs (e.g., hawthorn) or dense plantings of conifers to deter livestock from using riparian areas.
- Avoiding or minimizing the impact of farm machinery use in or around riparian areas.
- Connecting or reconnecting riparian habitats by leaving an uncultivated corridor and planting native vegetation, a shelterbelt, or a hedgerow between them.
- Removing and controlling invasive species and implementing other BMPs related to invasive species that have already been developed for MV.[28]

Agricultural use of riparian areas can occur when the function of the riparian area is maintained. If livestock are well managed, forages grown in riparian areas can be harvested by grazing such as in riparian pastures. Specialty crops that can be harvested by hand can be grown in riparian areas and can include:

- Floral crops (pussy willow, contorted willow, ferns);
- Medicinal crops (cascara bark, hawthorn leaves and fruit);
- Food crops (fiddleheads, berries, nuts) and conifer boughs for the Christmas market.

[26] BC Ministry of Agriculture, Food and Fisheries. 2021. British Columbia Environmental Farm Plan Reference Guide 6th Edition..
[27] BC Ministry of Agriculture, Food and Fisheries. 2016. Developing a Riparian Management Plan Version 2.0. (Excerpts taken from the Riparian Management Field Workbook & Biodiversity Guide).
[28] Invasive Species Council of Metro Vancouver has guidance on BMPs, relevant to agricultural lands.

Wetland and Freshwater Areas

Examples of BMPs that protect wetland and freshwater areas and enhance ES include[29]:

- Keeping farm equipment above the high water mark.
- Where possible, allowing natural cycles and events to take place (e.g., periodic flooding; fallen trees left in stream to provide habitat).
- Enhancing aquatic habitat by maintaining features that provide habitat complexity, such as large woody debris.
- Avoiding obstructing water flows with crop harvesting debris.
- Allowing selected areas to flood to provide habitat for migratory waterfowl.
- Re-establishing drained wetlands by restoring their original drainage pattern.
- Limiting storm water movement into natural watercourses.
- Constructing artificial wetlands to improve water quality and enhance aquatic habitat.
- Minimizing the risk of trapping fish in seasonally wetted connections to aquatic habitat.
- Appropriately sizing and placing culverts so that fish passage is not impeded.
- Incorporating natural substrates such as gravel in open bottom culverts when constructing fish passage.
- Joining wetland and freshwater habitats by planting native vegetation, a shelterbelt, or a hedgerow between them.
- Removing aquatic invasive species such as yellow flag iris, purple loosestrife, parrot's feather and bullfrogs.[30]
- Removing and controlling other invasive species and implementing other BMPs related to invasive species that have already been developed for MV.[31]

4.4 Old Fields and Hedgerows Ecosystem Services and Agricultural BMPs

Old field ecosystems are agricultural lands that were formerly cultivated or grazed but have since been abandoned and have well-developed herbaceous vegetation, some shrubs and potentially a few young trees. The SEI includes old fields in the ecosystem inventory because this specific range in vegetation types and heights provides a variety of habitat for birds, animals and plants that increase biodiversity.[32] Without management, old fields will eventually become forests. However, there is also the possibility that old fields may be brought back into production, changing the state of vegetation and changing the ES provided by this specific ecosystem. Their important role in ecosystem health is noted based on their current ability to support critical habitat, regardless as to whether or not the use may change over time.

[29] BC Ministry of Agriculture, Food and Fisheries. 2016. Developing a Riparian Management Plan Version 2.0. (Excerpts taken from the Riparian Management Field Workbook & Biodiversity Guide).

[30] Invasive Species Council of Metro Vancouver has guidance on BMPs, relevant to agricultural lands.

[31] Ibid.

[32] Josephine Clark & Del Meidinger. 2020. Metro Vancouver. Update of the Metro Vancouver Sensitive Ecosystem Inventory (2009 -2014).

Hedgerows are an important component of old fields, as well as on actively farmed lands, however they are not specifically measured within the SEI. Obtaining information regarding specific areas covered by hedgerows is difficult because comprehensive mapping has not been completed. Hedgerows can be managed (planted) or un-managed (left to occur naturally) on agricultural lands and act as important habitat for birds and small mammals and vegetative buffers along roads or adjacent to suburban and urban areas.

Table 9 provides examples of how old fields and hedgerows in the ALR provide ecosystem service.

Table 9 Ecosystem services provided by old fields and hedgerows.[33]

Services	Description
Supporting *(soil development, nutrient cycling, photosynthesis, habitat, biodiversity)*	○ Old fields and hedgerows contribute to soil development, nutrient cycling, and provide habitat for insects and small mammals. For example, they can provide refuge for small mammals from predatory birds and be used for nesting for small birds.
Regulating *(shading, water quantity, water quality, carbon storage, clean air, pollination)*	○ There may be some potential for carbon storage if perennial species continue to grow in old fields and hedgerows. ○ Beneficial insects using old fields and hedgerows can increase pollination services.
Provisioning *(food, fish, fresh water, wood)*	○ These ecosystems may have native or wild plants that could provide food.
Cultural *(human health, recreation, tourism, beauty)*	○ Old fields can provide bird and animal watching opportunities. ○ Residents gain aesthetic value from these landscapes.

[33] Sources include: Bert, R., Steven, B., Victoria, N., Paul, P., & Kris, V. 2017. Ecosystem service delivery of agri-environment measures: A synthesis for hedgerows and grass strips on arable land. Agriculture, Ecosystems & Environment, 244, 32-51.; Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report.

4.4.1 Ecosystems Services provided by Old Fields and Hedgerows to Agriculture

Old fields and hedgerow ecosystems can provide varying magnitudes of ES for agriculture, depending on the diversity and age of plants within the ecosystem. Table 10 describes specific ES from old fields and hedgerows that benefit agriculture.

Table 10 Examples of the benefits to agriculture from ecosystem services provided by old fields and hedgerows.

Ecosystem Service	Benefit to Agriculture
Nutrient Cycling	○ Old fields help to keep nutrients in the area and in cycling nutrients through the soil, possibly increasing availability for nearby crops.
Soil Development	○ The vegetation in old fields and hedgerows helps to retain soils through stable roots and builds soils through increased biomass and organic matter decomposition.
Erosion Control	○ Hedgerows on agricultural lands hold soils with their root systems and reduce soil erosion from winds and rain events.
Carbon Storage	○ Increased annual vegetation in these ecosystems on agricultural lands where bare land was previously, increases soil carbon.
Habitat and Biodiversity	○ Beneficial insects such as lady bugs, ground beetles, parasitoid wasps, syrphid flies and native bees improve pollination and can help reduce pest pressure on crops. ○ An increase in trees and shrubs in hedgerows can provide shade for livestock and can protect crops from strong winds.
Pollination	○ Better crop yields from native pollinators and honeybees that are using the ecosystems as habitats.

4.4.2 Agricultural BMPs for Old Fields and Hedgerow Ecosystem Services

Examples of BMPs in old fields and hedgerows areas include[34]:

- Using a variety of grazing management tools, including fencing (permanent and electric), herding, off-site watering, and strategically located salt, minerals, and supplemental feed in order to create a diverse plant community (types, sizes, ages).
- Using rotational grazing practices rather than season-long grazing to achieve rest and recovery of native plants.
- Becoming familiar with the growth cycle of key forage plants in order to better manage grazing.
- Allowing plants an effective rest period in order to establish good vegetative growth prior to grazing.
- Increasing the length and/or width of hedgerows on the farm.
- Implementing juvenile or pre-commercial thinning activities using manual, chemical, and/or mechanized techniques to prevent tree ingrowth.
- Controlling browsing by livestock so that hedgerows remain healthy and vigorous.

[34] BC Ministry of Agriculture, Food and Fisheries. 2016. Developing a Riparian Management Plan Version 2.0. (Excerpts taken from the Riparian Management Field Workbook & Biodiversity Guide).

- Connecting hedgerows, shrublands, and native pastures by planting local native species of forages, shrubs, and trees between them and by leaving an uncultivated corridor or tame pasture between them so natural infilling occurs.
- Deferring grazing in some areas that are used by ground-nesting birds until late in the nesting season.
- Using timed grazing to help control weeds. For example, to control the spread of Canada thistle, graze just before budding to weaken the plants and prevent them from going to seed.
- Removing and controlling invasive species and implementing other BMPs related to invasive species that have already been developed for MV.[35]

4.5 Dynamic Interactions between Agriculture and Ecosystem Services

Many of the benefits of healthy ecosystems to agricultural land have been identified; however, it is important to note the complexities in balancing the stewardship of ecosystems while producing agricultural products. While the benefits of healthy ecosystems on agricultural land outweigh the disadvantages, there can be negative impacts to agricultural productivity that can arise from increases in ES stewardship. For example, a reduction in planting area for ecosystem restoration set-asides, increased grazing pressure from deer and elk drawn to the natural areas, and an increase in beavers removing trees and building dams that can cause flooding.[36]

Agriculture can also have a negative impact on ecosystems (called ecosystem disservices) more generally. Ecosystem disservices from agriculture can include:[37]

- Habitat loss as land is cleared and developed for growing crops,
- Nutrient and chemical run-off into watercourses,
- Greenhouse gas emissions from farm equipment and livestock, and
- Soil loss due to erosion or tilling.

The ecosystem disservices arising from agriculture is highly dependent on the agricultural practices used and the agricultural products grown. There are numerous BMPs available and employed by farmers to address concerns around nutrient and chemical run-off, GHG emissions and soil loss. Increasingly, producers are proving that by employing BMPs and using sustainable and regenerative farming practices, agriculture can contribute positively to healthy ecosystems and climate change mitigation while producing food.

Regenerative agriculture is a holistic land management practice that holds potential to contribute to climate change mitigation by rebuilding soil organic matter and restoring degraded soil biodiversity resulting in carbon drawdown and improvement of the water cycle.[38] Regenerative

[35] Invasive Species Council of Metro Vancouver has guidance on BMPs, relevant to agricultural lands.
[36] George W. Powell. 2015. Agriculture and Ecological Services: Recommendations for Support Programming in British Columbia.
[37] Power, A. G. 2010. Ecosystem services and agriculture: tradeoffs and synergies. Philosophical transactions of the royal society B: biological sciences, 365(1554), 2959-2971.
[38] Metro Vancouver. 2022. Draft Agriculture Climate 2050 Roadmap.

agriculture practices contribute to ecosystem health and include no-till/minimum tillage, application of cover crops, crop rotations, compost, and animal manures, which restore the plant/soil microbiome to promote liberation, transfer, and cycling of essential soil nutrients, and well-managed grazing practices.[39]

Figure 2 outlines the complex interactions between farming, natural ecosystems, and ecosystem services and disservices.[40]

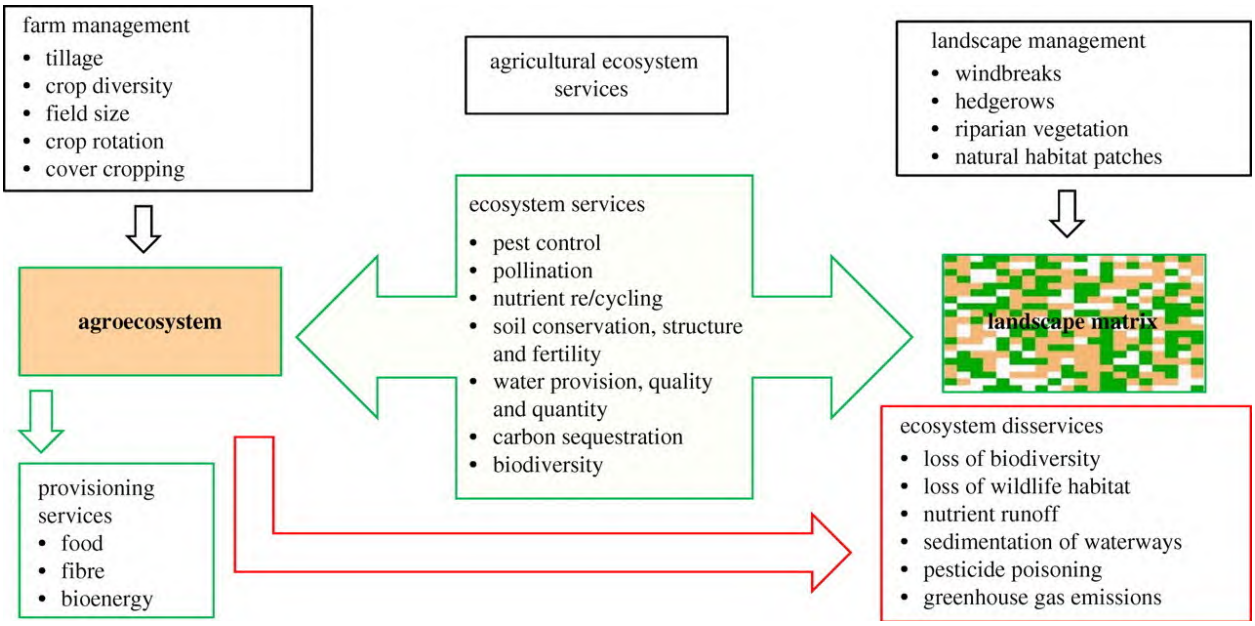

Figure 3 The complex interactions between agriculture and ecosystem services.[41]

[39] Regeneration International. 2017. What is Regenerative Agriculture?.
[40] Power, A. G. 2010. Ecosystem services and agriculture: trade-offs and synergies. Philosophical transactions of the royal society B: biological sciences, 365(1554), 2959-2971.
[41] Ibid.

5.0 Opportunities to Enhance Ecosystem Services on Agricultural Lands within Metro Vancouver

There are numerous opportunities for supporting ecosystem services in agricultural areas. These opportunities can be considered in two ways:

- Enhance and conserve existing natural areas on the farm, such as water-influenced and aquatic ecosystems (e.g. riparian, wetland, freshwater areas) and terrestrial ecosystems (e.g. hedgerows, grasslands and forested areas); and
- Employ sustainable and regenerative farm practices, such as cover cropping, crop rotations, reduced tillage, targeted grazing, and nutrient management, among many others.

For a more in-depth examination of these available opportunities, and given that approximately 60% of wetlands and 40% of riparian areas within the MV regional core occur on the ALR, this section will focus on how ecosystems influence water health by providing targeted analysis and examples.

Ecosystems influencing water health including wetlands, riparian areas and freshwater watercourses (creeks, streams, and fish-bearing agricultural ditches) were deemed the greatest opportunity for ecosystem enhancement on agricultural lands because these ecosystems currently provide, and have the future potential to expand crucial ecosystem services to the Metro Vancouver region such as clean water, fish and wildlife habitat, and flood impact mitigation. The changing climate is expected to cause longer lasting and more frequent droughts in the summer and increased precipitation and flooding events in the fall and winter.[42] If these water-influenced ecosystems are healthy[43], they are more resilient to disturbances and the ecosystem services they provide can help mitigate the effects of extreme flooding and droughts.

Ecosystems on agricultural lands also provide habitat for wildlife and salmon, acting as connections to different habitat types, and can serve as a buffer zone between natural areas and more intensive land uses.[44] There are over one hundred Species at Risk (SAR) within Metro Vancouver and the majority depend on wetland and riparian habitats including the Salish sucker, Nooksack dace, Oregon forest snail, Great Blue Heron and Oregon spotted frog, to name a few.[45] By better understanding the specific opportunities for conservation and restoration of aquatic ecosystems on agricultural lands, BMPs can be encouraged, supported and celebrated with the goal of improving the ecosystem services provided to the entire region.

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[42] Metro Vancouver. n.d. Climate Projections for Metro Vancouver.

[43] Healthy wetland and riparian ecosystems have many of the following characteristics: mature trees, dead standing snags, an understory of native grasses, shrubs and plants, and logs and woody debris on the ground. (Source: Mike Pearson, David Zehnder, & DG Blair. 2018. The Stewardship Centre for British Columbia. Lands Near Water, Riparian Restoration & Enhancement.)

[44] George W. Powell. 2015. Agriculture and Ecological Services: Recommendations for Support Programming in British Columbia.

[45] Biodiversity Conservation Strategy Partnership. 2008. Strategic Directions for Biodiversity Conservation in the Metro Vancouver Region.

5.1 Enhancing Ecosystems on Agricultural Land

Several areas across Metro Vancouver emerged during the mapping process as high opportunity areas for conservation and restoration on agricultural land. To begin the assessment, ALR mapping[46] was used to identify agricultural lands. Next, a mapping layer identifying watercourses (e.g. creeks, streams and agricultural channels), was used to target water-influenced ecosystems such as wetlands and riparian areas. This initial assessment indicated that approximately 1,330 km of watercourses are present in the ALR in Metro Vancouver. ALR land with watercourses was then grouped into the following three categories of areas with potential for:

1. Conserving established ecosystems,
2. Enhancing disconnected watercourses, and,
3. Mitigating flood impacts.

These categories and areas were informed by GIS mapping layers available at the time of analysis (see Appendix A for assumptions and limitations of the mapping process).

5.1.1 Areas with potential for conserving established ecosystems

Conservation of healthy ecosystems is necessary to maintain the ES that are currently provided and ensure future long-term consistent provision of these services. Wetlands, riparian areas, and freshwater assets identified in the MV SEI were used to identify healthy ecosystems as these areas are ecologically significant and relatively unmodified.[47]

In order to explore areas with potential for conserving established ecosystems, the following mapping layers were combined:

- ALR base map,
- Watercourses within the ALR, and,
- Riparian, Wetland, and Freshwater ecosystems as identified by the SEI.

This mapping exercise illustrated there are approximately 7,700 ha of SEI wetland, riparian and freshwater ecosystems in the ALR. Some of these areas are already conserved, through municipal or regional parks in the ALR, such as the Pitt-Addington Marsh in Pitt Meadows. However, there remains thousands of hectares of riparian areas and wetlands on private properties within the ALR that present opportunities for ecosystem conservation and/or restoration. Site specific visits to these areas would be required to determine appropriate restoration and conservation BMPs.

Examples of areas with potential for conserving existing ecosystem services are described in section 5.2. Figure 4 (next page) illustrates the riparian, wetland and freshwater ecosystems identified in the SEI in the ALR within MV with potential for conservation.

[46] Only agricultural land within the ALR were assessed due to the availability of mapping layers. There is a small area of land used for agriculture outside of the ALR within Metro Vancouver, which could also be supported in stewarding agricultural ES.
[47] Del Meidinger, Josephine Clark, & David Adamoski. 2014. Metro Vancouver. Sensitive Ecosystem Inventory, Technical Report.

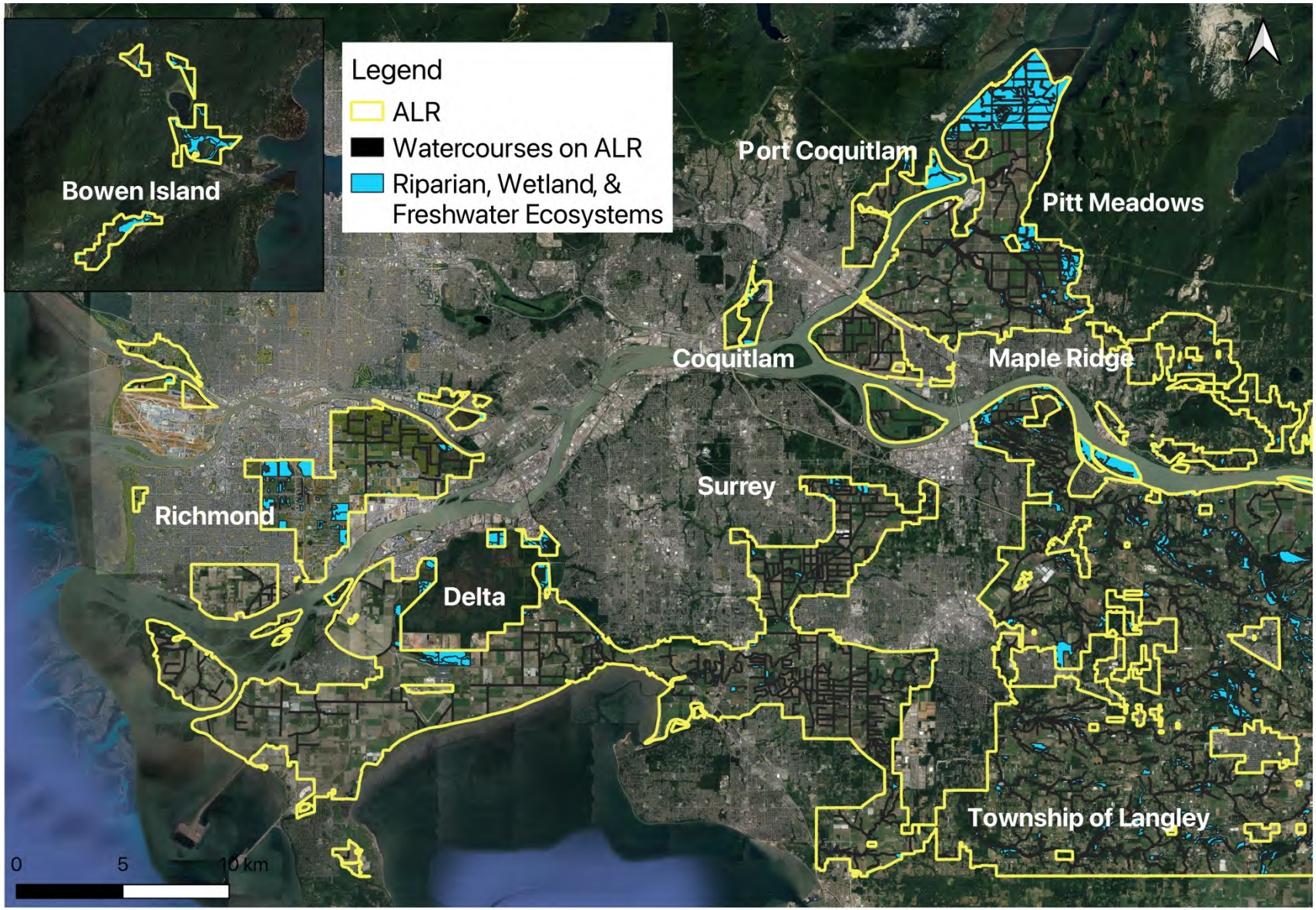

Figure 4 High opportunity areas for ecosystem conservation in the agricultural land reserve.

5.1.2 Areas with potential for ecosystem connectivity

Connecting watercourses within MV watersheds is another opportunity to target areas for restoring ecosystem services. Watercourses that are disconnected, meaning there is obstructive infrastructure (e.g. a pump station) that blocks the flow of water and/or there is a steep gradient of physical break in a water feature, present opportunities for potentially re-connecting riparian areas and watercourses.[48] Connected, healthy watercourses provide a greater level of ecosystem services, such as drainage, when compared to unconnected, fragmented watercourses. These can benefit both the farms within which they are found and the region as a whole.

A study completed in 2020 for Metro Vancouver identified areas of importance for ecosystem connectivity, which include agricultural lands along the southwest coast in Richmond and Delta.[49]

In order to explore examples of areas of opportunities for greater connectivity within the ALR, the following mapping layers were combined:

- ALR basemap,
- Watercourses within the ALR,
- Riparian, Wetland, and Freshwater ecosystems as identified by the SEI,
- Regional parks[50], and,
- Disconnected watercourses (mapping only available for watercourses leading to the Fraser River).

Based on the GIS mapping available, there are approximately 605 km of disconnected watercourses in the ALR within Metro Vancouver that appear to be discharging to the Fraser River. Figure 5 (next page) shows opportunities for areas of increasing or maintaining connectivity of water-influenced ecosystems.

These are the areas where the disconnected watercourses, regional parks and sensitive ecosystems intersect and/or are in proximity to one another. They are particularly prevalent in Pitt Meadows, Richmond, Delta, and north Langley – indicating opportunities for better drainage support. Site specific visits to these areas would be required to determine appropriate BMPs for increasing and/or maintaining ecosystem connectivity on a watercourse-by-watercourse basis. Examples are described in Section 5.2.

[48] A previous analysis to identify the disconnected watercourses leading to the Fraser River was undertaken by Watershed Watch Salmon Society and used in this mapping exercise with permission.

[49] Evaluation of Regional Ecosystem Connectivity, Metro Vancouver. 2020. Diamond Head Consulting.

[50] Areas adjacent to regional parks with natural areas and the SEI areas are examples of opportunities for connecting water-influenced habitats to more intact ecosystems.

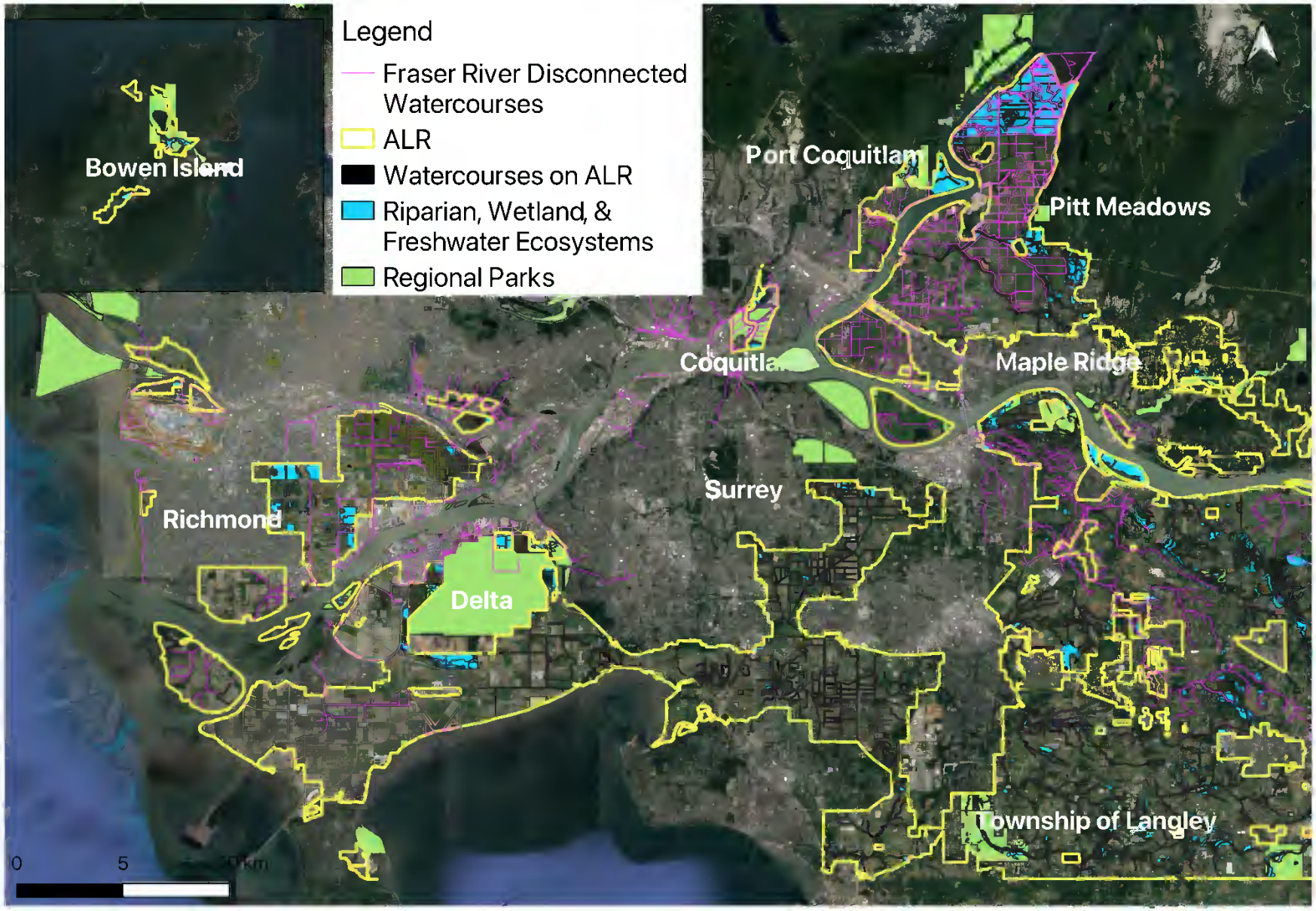

Figure 5 Examples of mapping data that can be used to identify areas with potential for connecting ecosystems.

5.1.3 Areas with potential to mitigate flood impacts

Healthy ecosystems have the potential to manage the flow and storage of water, which can help reduce the magnitude of flood damages in some instances.[51] Conserving and connecting existing aquatic ecosystems and restoring disconnected watercourses can help to manage the flow of water during a flood event. Targeting agricultural lands to restore and conserve ecosystems in flood risk areas can be part of a suite of tools to reduce a flood's impact within the region. To investigate the potential of the ALR to mitigate flood impacts, mapping data for three scenarios were explored[52] using mapping data that already aligns closely with projected impacts for the region due to climate change. Figures 6 and 7 (next pages) identify areas of the ALR that are projected to be impacted by Fraser River freshet flooding. The two flood scenarios estimate flood levels under projected climate change conditions in 2050.[53] The conditions include 0.5-metre sea level rise and changes in peak river flows. The two scenarios are a 1% Annual Exceedance Probability (AEP) flood (i.e. 100 year) or 0.2% AEP (i.e. 500 year) flood on the Fraser River.[54] These scenarios assume that dikes in different locations will overtop, but that no dikes will fully breach. Figure 8 (following pages) identifies a third scenario, whereby the ALR would be impacted by estimated flood levels of a 0.2% AEP (500 year) coastal storm surge flood under present day climate conditions and sea level. Table 11 presents the length of watercourses and area of riparian habitat in the ALR that would be within the flood extent of the three flood scenarios. These large numbers of watercourses and riparian areas illustrate the potential opportunities in the ALR to provide flood mitigation services.

Table 11 Length of watercourses and area of riparian habitat in the ALR impacted by three flood scenarios.

Flood Scenarios	Length of all watercourses within all ALR in MV (km)	Riparian habitat* within the ALR that would be flooded (ha)
2050 Fraser River Freshet 1% AEP (100 year) Flood	374	1,120
2050 Fraser River Freshet 0.2% (500 year) Flood	528	1,580
0.2% (500 year) Coastal Storm Surge Flood	819	2,460

*assumes 15m buffer on either side of watercourse

There are many additional flood scenarios that may occur, for example overland flooding from intense rainfall events and riverine flooding from major rivers (e.g. Alouette, Nicomekl, Serpentine and Little Campbell). In future analyses, these flood scenarios could be mapped to understand the full extent of flood mitigation potential of the ALR. It is likely that almost all of the ALR within MV could be impacted by overland, riverine and/or coastal flooding in the future.

[51] Aguiar, F. C., Manolaki, P., Bruno, D., Bejarano, M. D., ... & Dufour, S. 2020. Global overview of ecosystem services provided by riparian vegetation. BioScience, 70(6), 501-514.

[52] Fraser River Freshet Flood and Coastal Storm Surge Flood mapping layers were provided by the Fraser Basin Council.

[53] Fraser Basil Council. 2019. Flood Modelling and Mapping in BC's Lower Mainland: A Project Primer.

[54] Annual Exceedance Probability (AEP) Refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood that may be calculated to have a 1% chance to occur in any one year is described as 1% AEP. The measure has replaced more traditional time-based expressions of probabilities: 2% = 50-year flood, 1% = 100-year flood, 0.5% = 200-year flood, 0.2% = 500-year flood.

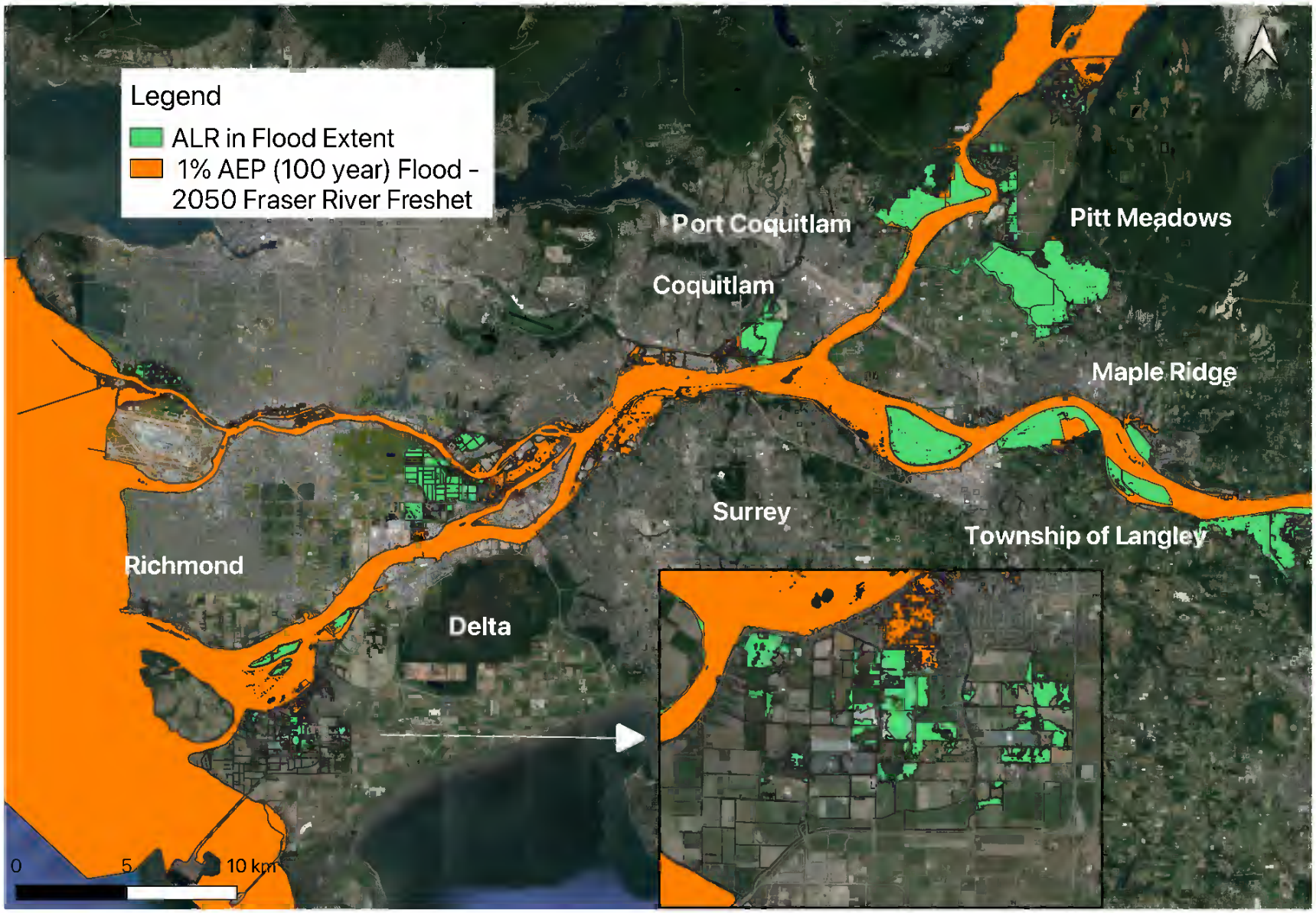

Figure 6 ALR that will be impacted by a 100-year Fraser River freshet flood event.

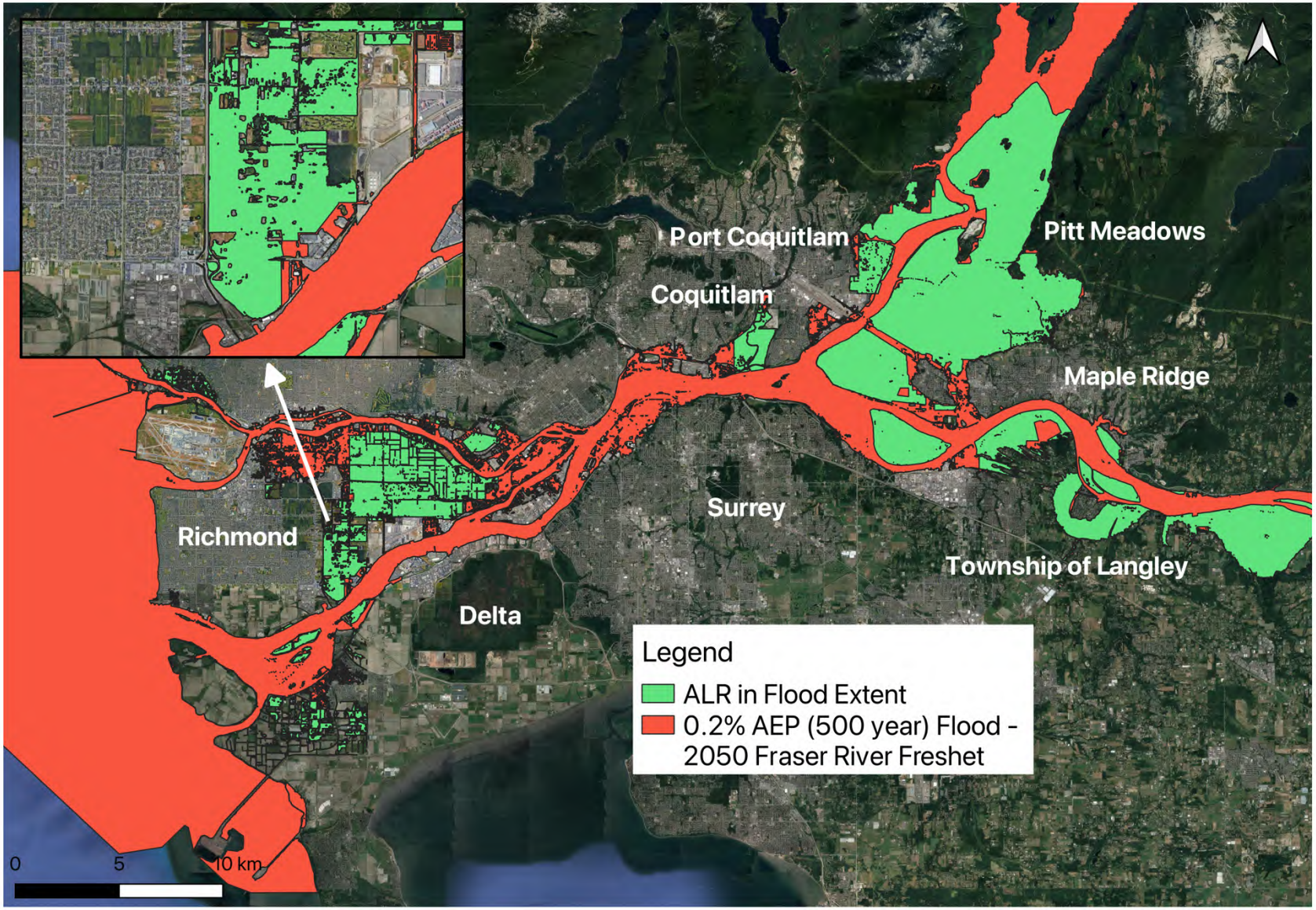

Figure 7 ALR that will be impacted by a 500-year Fraser River freshet flood event.

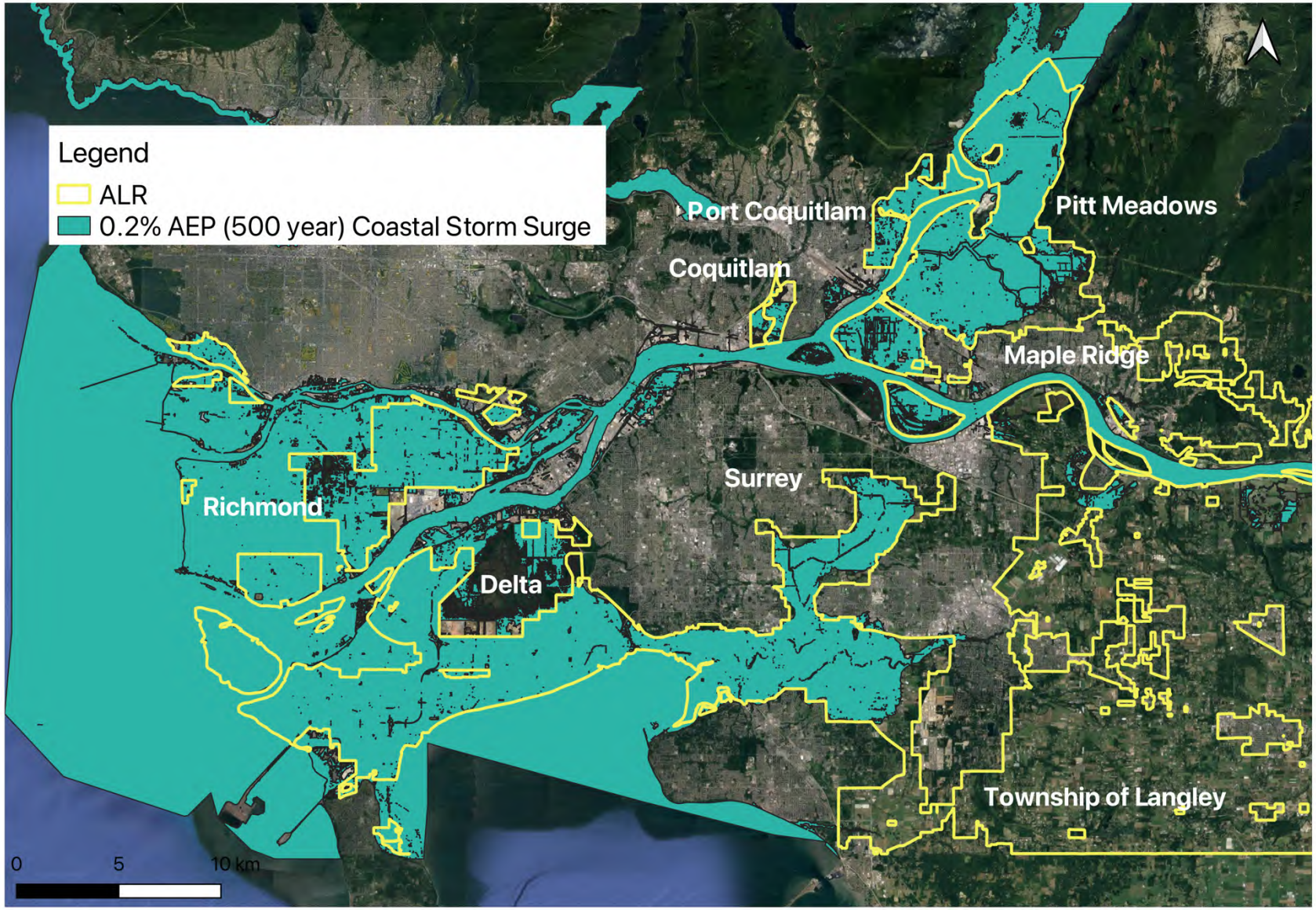

Figure 8 ALR that will be impacted by a 500-year coastal storm surge event.

5.2 Examples of Agricultural Lands Supporting Ecosystem Services

As identified through the mapping exercise and existing programs in the region, the total area and range of ecosystems in MV with opportunities to support ecosystem services within the ALR is vast. A selection were chosen to illustrate the wide-array of possibilities.

5.2.1 Maple Ridge: Riparian Area Conservation & Connectivity

Figure 9 presents an example of how agricultural lands provide corridors of connected habitat along watercourses. This area in Maple Ridge is classified as sensitive within the SEI indicating it is ecologically significant and relatively unmodified, presenting a good opportunity to conserve existing habitat. As illustrated in Figure 9, the vegetated areas along the watercourse in the ALR are connected to a regional park, providing a continuous riparian buffer and forested habitat. Figure 10 (next page) provides an example of the forest and riparian area along this watercourse. Examples of ecosystem services this area provides are: soil development and carbon storage, nutrient cycling, healthy habitat, biodiversity, increased water quality and water quantity (flood mitigation), clean air, and pollination among many others.

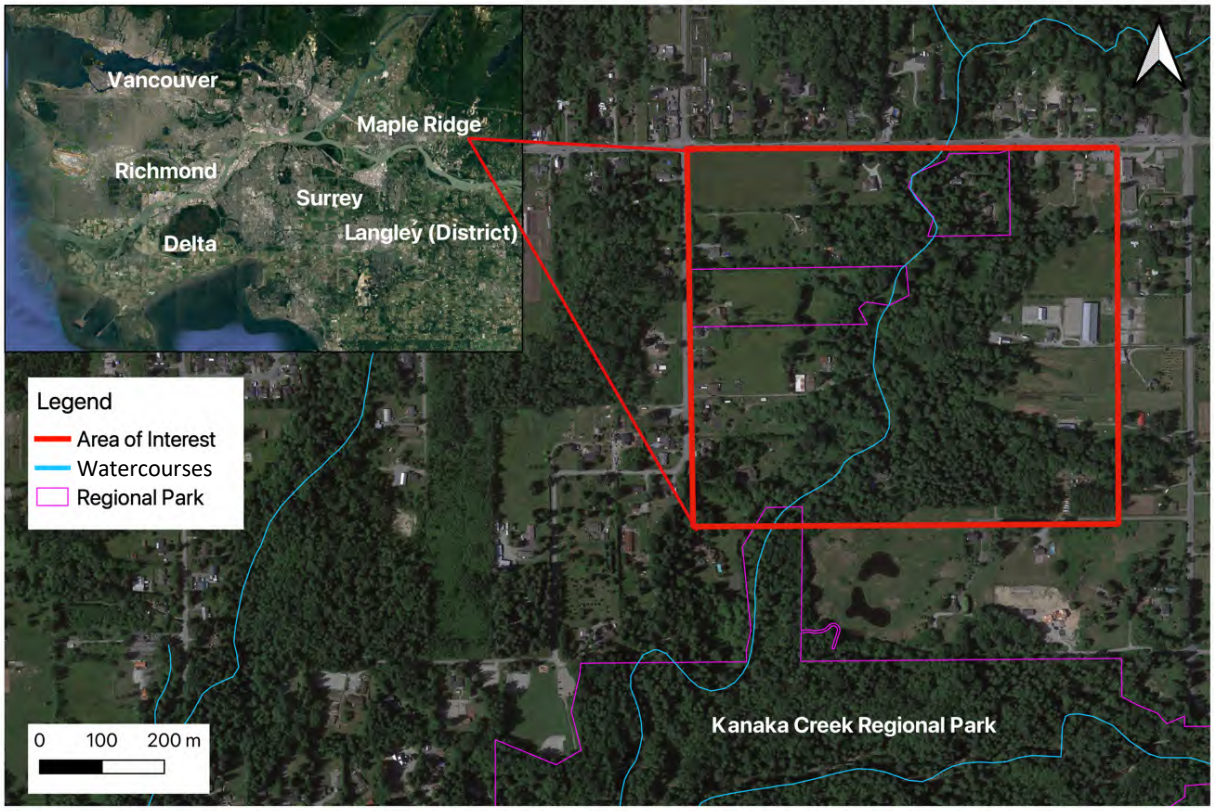

Figure 9 An example in Maple Ridge of an opportunity (red box) to conserve and connect ecosystems.

Figure 10 Example in the ALR of a watercourse with a riparian buffer that provides connectivity.

Examples of BMPs that landowners can employ to conserve this riparian buffer and forest ecosystems include the following:

- Identifying forest stands for protection from cutting and deadwood removal.
- Conserving wildlife trees, rock piles, and other wildlife habitat features.
- Retaining a wide variety of native plants that are adapted to living in riparian areas.
- Coordinating and implementing additional BMPs that have already been developed for MV, such as controlling invasive species.
- Avoiding or minimizing the impact of farm machinery use in or around riparian areas.
- Managing the timing and intensity of livestock use of forested pastures and tree/shrub stands to avoid heavy browsing and maintain healthy shrub/tree populations.

This is one of many areas in the ALR within Metro Vancouver that have healthy ecosystems. Assisting and engaging with landowners to conserve these areas is an opportunity to ensure these ecosystems stay healthy and provide the connectivity required for the robust provision of ecosystem services.

5.2.2 Pitt Meadows: Riparian Area Restoration & Connectivity

The area outlined in Figure 11 is an example of a watercourse within an agricultural area in Pitt Meadows that can be restored and connected to provide flood mitigation and habitat connectivity. The agricultural area is within the flood extent of the 0.2% AEP Fraser River freshet flood and the coastal storm surge, and the watercourse is classified as disconnected, indicating there are some obstructions limiting water passage. Some of this area is also classified at sensitive ecosystems, which provides the opportunity to conserve those ecosystems while connecting the entire watercourse to benefit drainage and restoring the riparian buffer where needed.

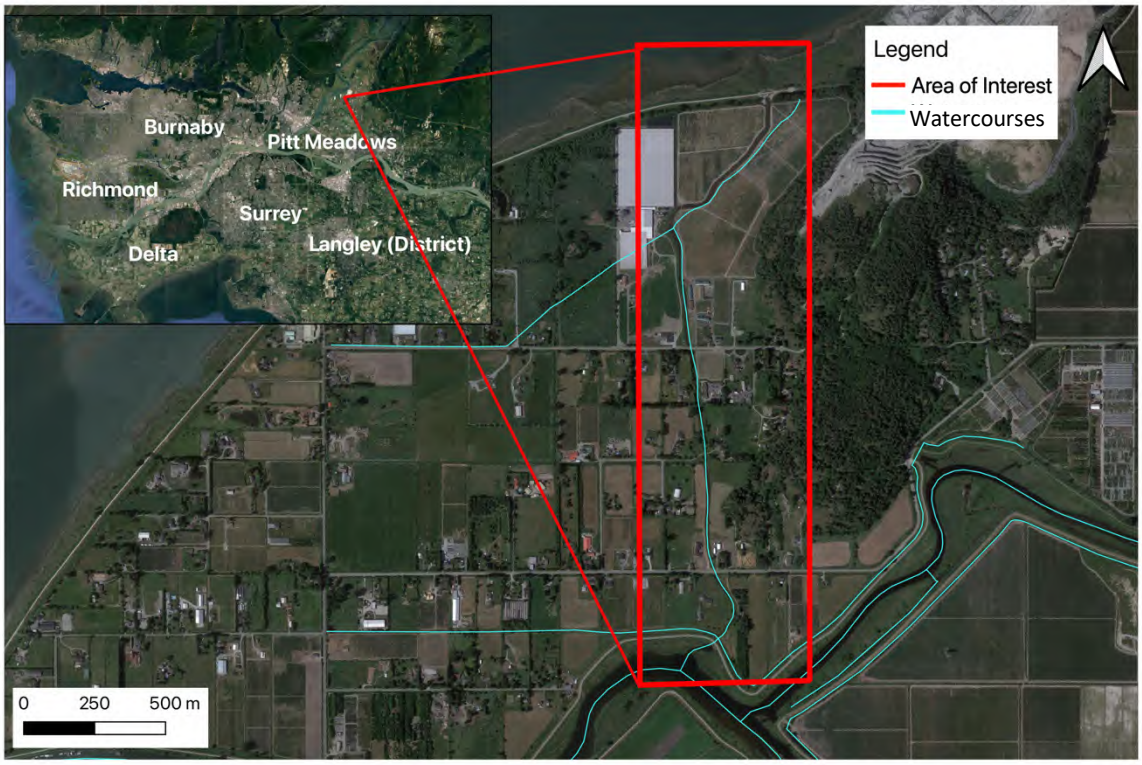

Figure 11 An example in Pitt Meadows of an opportunity (red box) to connect watercourses in flood extents.

Figure 12 (next page) illustrates examples of sites within this area where there are riparian areas with opportunities for restoration to improve drainage, water flow, and ecosystem health. In several places, there is no vegetation adjacent to the stream, or large areas of invasive species such as Himalayan blackberries, and/or no trees established.

Figure 12 Examples of disconnected watercourses that indicate opportunities for riparian restoration.

To increase the ecosystem services in these disconnected watercourses, riparian buffers can be restored with native species and obstructions in the watercourse can be removed. Restoring the vegetative riparian buffer allows for increased water storage, which can slow water movement during a flood event, and removing obstructions can assist with drainage.

Examples of BMPs the landowners can employ to restore the riparian buffer include the following[55]:

- Removing and controlling invasive species and implementing other BMPs related to invasive species that have already been developed for MV.[56]
- Avoiding or minimizing the impact of farm machinery use in or around riparian areas.
- Improving stability with erosion control structures by:
    - Contouring terraces with earthworks and seeding;
    - Stabilizing gullies and watercourses with erosion control matting, silt fencing, seeding;
    - Stabilizing banks through bank shaping, revetment, gabions, riprap, crib walls, re-vegetation, and blanketing; and
    - Protecting riparian trees and shrubs from rodents such as beavers.
- Appropriately sizing and placing culverts so that water movement is not impeded.
- Avoiding practices that artificially alter streamflow.

This is one of many areas in the ALR within Metro Vancouver that provides an opportunity to restore and connect watercourses to help manage flood impacts, increase habitat for wildlife, and improve drainage.

5.2.3 Township of Langley: Riparian Area Restoration & Conservation

Several agricultural producers in the Township of Langley participated in the Township's Ecosystem Services Initiative program from 2015-2019 and several have continued stewardship of ES in the Farmland Advantage program. Figure 13 and Figure 14 are examples of a property participating in the restoration and conservation of a riparian area over several years of being involved in PES programs. As part of the program, the landowner receives support in identifying BMPs for conserving and restoring the riparian buffer. The Farmland Advantage program assists with costs and coordination of the labour and equipment required to complete the restoration work. The landowner receives modest financial compensation for implementing the BMPs and is under contract to maintain healthy vegetation along the riparian area.

The landowner, in collaboration with local non-profit organizations, has implemented the following:

- Installed fencing along the creek to stop livestock access which has helped to reduce bank erosion and increase water quality.

[55] BC Ministry of Agriculture, Food and Fisheries. 2021. British Columbia Environmental Farm Plan Reference Guide 6th Edition.
[56] Invasive Species Council of Metro Vancouver has guidance on BMPs, relevant to agricultural lands.

- Eradicated Himalayan blackberry and planted native trees and shrubs to reduce erosion and capture sediment and nutrient run-off.
- Rehabilitated the stream channel with plantings and bank stabilization to limit impact of reed canary grass and restore ecosystem function.
- Maintained native plantings to ensure plants are established.

Examples of ecosystem services provided by this riparian area include soil development and carbon storage, nutrient cycling, healthy habitat, biodiversity, increased water quality and water quantity (flood mitigation), clean air, and pollination among many others.

Figure 13 Fencing to protect riparian area from livestock.[57]

[57] Farmland Advantage Program. Photo Credit: Darrel Zbeetnoff.

Figure 14 Recently planted native plants along the riparian area.[58]

5.2.4 Richmond: Grassland Set-Aside Fields

Several farmers in Richmond participate in the *Grassland Set-aside Stewardship Program* managed by the Delta Farmland & Wildlife Trust (DFWT). The program assists and compensates producers for planting grassland habitat on agricultural land and the grassland set-aside fields are left to rest for up to six years. Often farmers enroll in the program to restore degraded land, transition conventional fields into organic production or diversify options for crop rotations.

Fields brought out of production for grassland habitat provide many ecosystem services and benefits to producers including:

- Providing habitat for wildlife such as raptors, wading birds, songbirds, small mammals, and pollinating insects,
- Supporting high densities of the Townsend's Vole, a small native mammal, that is prey for a variety of raptors and wading birds,

[58] Ibid.

- Providing roosting habitat for ground-perching raptors, such as the Northern Harrier and Short-eared Owl, and
- Improving soil fertility including improved soil structure, reduced soil compaction, increased soil organic matter, and improved nutrient cycling.

Figure 15 Grassland set-aside field in Richmond.

5.2.5 Delta: Winter Cover Cropping

Winter cover cropping is a BMP that several farmers within the City of Delta employ, with the assistance of the DFWT *Winter Cover Crop Stewardship Program*. This program helps farmers establish vegetative cover on their fields after the harvest of their cash crop in late summer/early fall. A cost-share is offered to participating farmers to incentivize this sustainable practice.

Winter cover crops provide an array of ecosystem services and benefits to producers including:[59]

- Providing feeding habitat for herbivorous waterfowl and shorebirds,
- Providing food and habitat for soil microorganisms,
- Protecting the soil from erosion due to heavy winter rain,
- Scavenging excess nutrients such as nitrogen before they leach from the soil,
- Increasing soil organic matter,
- Reducing soil compaction,
- Improving water infiltration,
- Suppressing weeds, and,
- Increasing yields of cash crops.

[59] Delta Farmland & Wildlife Trust. Winter Cover Crop Stewardship Program.

Figure 16 Snow Geese grazing on a winter cover crop planted on farmland in Delta.[60]

6.0 Valuing and Supporting Ecosystems Services on Agricultural Land

Economic value is associated with products grown and sold from agricultural land, and to the land itself from a real estate perspective. However, other non-farming activities, such as stewarding healthy ecosystems, are rarely valued financially. Assigning monetary value to ecosystem services is a difficult task as they can neither be bought nor sold. However, numerous methods over the past decades have emerged in an attempt to measure their value. This include developing valuation frameworks, assessing public support, and evaluating services as green infrastructure assets. These are explored in the following sections.

[60] Bradbeer, David & Halpin, Luke. 2012. Managing cereal grasses as waterfowl lure crops: investigating planting dates and waterfowl feeding ecology. Delta Farmland & Wildlife Trust.

6.1 Valuation Frameworks for Ecosystem Services

Several reports have attempted to estimate the monetary value of ES provided by agricultural lands in MV.

- Using 2005 dollar values, a study found that the value of agricultural lands was $698 per ha for climate regulation (or stored carbon) and $422 per ha for recreation/tourism benefits.[61] In addition to the land used for crops, agricultural lands often have hedgerows, wetlands and/or forest stands which also store carbon and provide other ES benefits.
- A 2009 study conducted for MV concluded that the present value of public amenity benefits and ES provided by each ha of farmland in MV in 2007 was estimated to be $143,000 per ha.[62] This is about 10 times greater than the market value of farm products themselves, which were valued at $14,200 per ha. Amenity benefits associated with farmland that were identified in the report included access to local food, greenspace, lifestyle and viewscapes while ES included wildlife and fish habitat, and groundwater recharge.
- More recently, a 2020 study, provided estimates for grasslands that are set aside and hedgerow programs that are managed by the DFWT. The 220 ha of farmland under the grassland set aside program were estimated to provide annual ES value of $584,943, which is $2,660 per ha.[63] This includes ES provided by the grasslands such as improvements to air quality, water regulation, erosion control, soil formation, waste treatment, biological control, recreation and aesthetics, pollination services, public value/wildlife habitat, carbon storage and carbon sequestration. For the 3 ha of hedgerows, an annual average ES value of $4,053 was derived ($1,350 per ha), and there was a total contribution to public value for habitat of $3,885.[64]

These reports provide examples of the value of agricultural lands beyond food production. It is difficult to estimate the ES value of all agricultural lands in MV, but considering there are approximately 5,334 ha of forests, 3,318 ha of riparian areas and 4,167 ha of wetlands within the ALR, this amounts to vast economic benefits to the region from these ecosystems on agricultural lands. There are also several other benefits and opportunities that arise with the long-term stewardship of ES on agricultural lands such as improving partnerships with Indigenous communities to collaborate on traditional food system projects and developing research projects in partnership with local colleges and universities.

A new study to estimate the ES values contributed within the context of MV agricultural land would assist decision-makers and the public in understanding the benefit to society from the stewardship of agricultural lands.

[61] Wilson, Sara J. 2010. Natural Capital in BC's Lower Mainland: Valuing the Benefits from Nature. David Suzuki Foundation.
[62] Robbins, M., Olewiler, N., and M. Robinson. 2009. An Estimate of the Public Amenity Benefits and Ecological Goods provided by Farmland in Metro Vancouver.
[63] Kerr, Gillian. 2020. Ecosystem Services Assessment of Delta Farmland & Wildlife Trust Stewardship Programs.
[64] Ibid.

Case Study:
Valuing Bertrand Creek

In 2022, a study was completed in the Township of Langley that used the Ecological Accounting Process (EAP) to calculate the value of ecosystem services provided by Bertrand Creek. The EAP accounting system includes values from BC Assessment and Farm Credit Canada to determine the value of the protection and maintenance of the natural asset to the public. The EAP can be integrated into a Local Government Finance Strategy for sustainable infrastructure funding. In the ToL the EAP for Bertrand Creek was completed to describe and quantify the stream system's financial, social and ecological values. The study found that the value of Bertrand Creek is $1,550 per km and requires an annual management and maintenance value of $290,000 per year. Polling has shown that the residents of ToL are willing to pay a parcel tax fee for projects that improve ecosystem health on farmland. The value of Bertrand Creek calculated through the EAP process can help provide the baseline funding value required for a Payment for Ecosystem Services program for the watershed.

Figure 17 (next page) describes a framework, called the Total Economic Value (TEV), which is helpful in understanding the value of ES. The TEV framework indicates that agricultural lands are an important component of healthy regional ecosystems and have even greater potential to benefit the region if farm practices that increase the health of ecosystems are supported and incentivized.

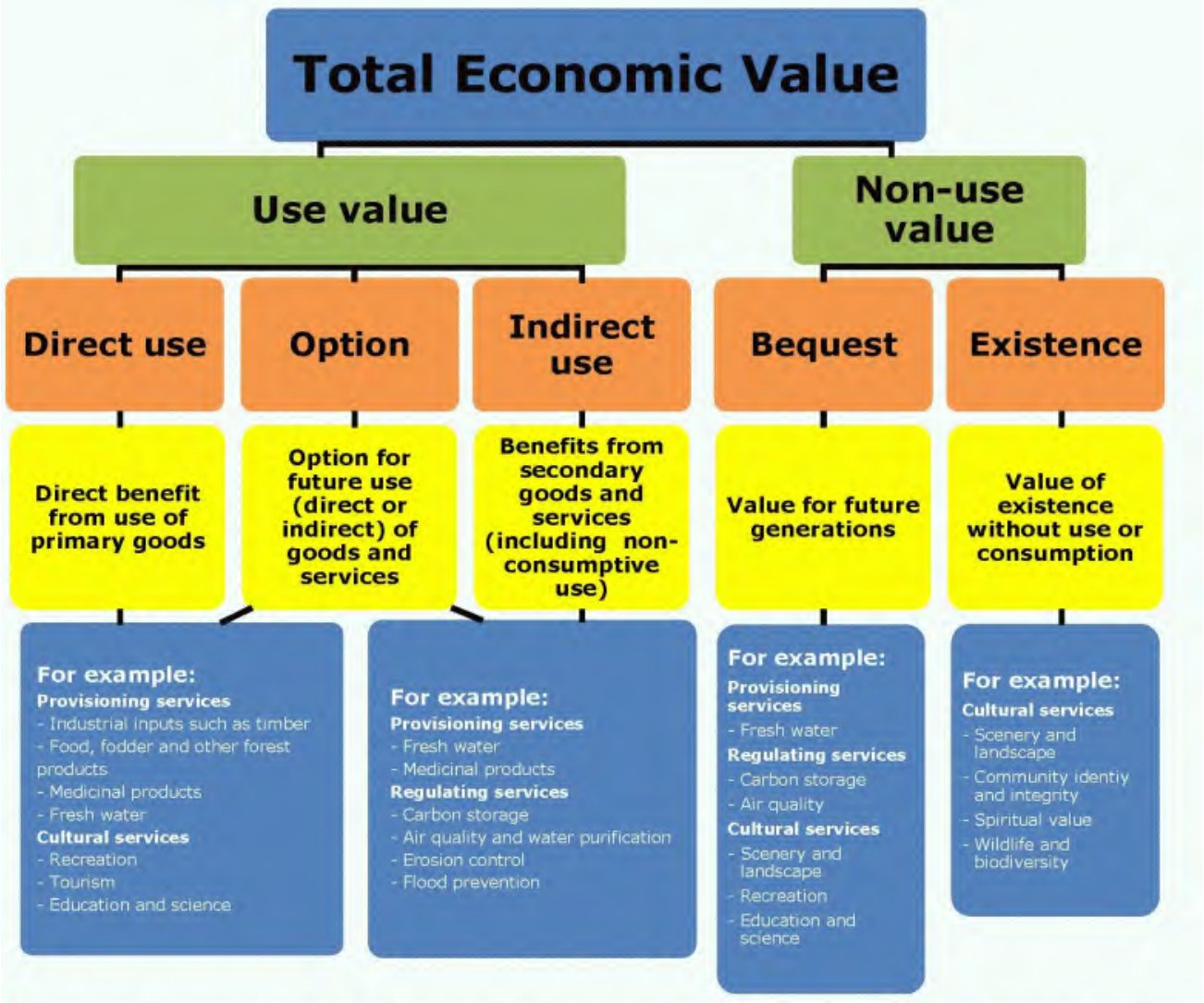

Figure 17 Description of the Total Economic Value Framework for valuing ecosystem services.[65]

[65] Statistics Canada.2013. Total Economic Value Framework.

6.2 Public Support for Stewardship of Ecosystem Services

As part of the approach to assign values to ES, qualitative surveys can be used to understand how important ES are to the community and how much residents would be willing to pay to support ES. Several recent studies and surveys have been conducted within MV that ask respondents to rank the importance of ES derived from agricultural land, and what, if any, monetary value they would be willing to contribute to a program that financially compensates agricultural producers for stewarding ES. Table 12 (next page) provides a summary of each study. The overall findings across all three studies were that:

1. Respondents understood the important role that farmland plays in protecting and stewarding the environment, and
2. Respondents are willing to financially support the stewardship of ES on agricultural lands.

In the broadest definition, the 'payment' in a payment for ecosystem services program can be viewed as a landowner contract designed to provide or maintain ecosystem services through the implementation of BMPs. For example, payments can be based on protecting a single ecosystem service (e.g. the mass of carbon sequestered) or a multitude of ecosystem services (e.g. maintaining riparian buffers that enhance wildlife habitat, soil conservation and control runoff).[66] PES programs can take many forms; however, most include some form of direct payments in exchange for a long term landowner agreement (e.g., a contract). Direct payment can be provided to the landowner or to local partners (e.g., restoration organizations) to implement and maintain the BMPs.

Direct payments may include:

- Cost-share programs, where the funder and farmer provide money (or in-kind labour), to implement or maintain BMPs. For example, the Provincial Environmental Farm Plan BMP program, which funds the implementation of winter cover crops to reduce exposed agricultural soils during winter.
- Compensation to offset opportunity costs from production lost to conservation or preservation. For example, DFWT program in which farmers are compensated for not cultivating an area of their land for several years and the land is planted with native grassland species.

[66] George W. Powell. 2015. Agriculture and Ecological Services: Recommendations for Support Programming in British Columbia.

Table 12 Recent polling results about the importance and willingness to pay for ecosystem services on agricultural lands.

Study Name	Delta Agriculture Plan Update Survey	Biodiversity Conservation Survey as part of the Birds and Biodiversity Conservation Strategy	Langley Ecological Services Initiative Community Survey
Date	2021	2019	2018
Municipality	City of Delta	City of Delta	Township of Langley
Organization	City of Delta	City of Delta	Langley Sustainable Agriculture Foundation
Objective(s)	To obtain feedback on issues, challenges, and opportunities as experienced by community members regarding the agriculture sector.	To determine local and community values and attitudes towards issues related to land, water, wildlife, agricultural lands, and heritage landscapes.	To determine the public acceptance of a sustainable funding method for a long term ecological services program in the Township of Langley.
Type	Online Survey	Phone Survey	Phone Survey
Responses	568	600	200
Findings	*I would be willing to pay higher taxes or fees to support ecosystem health on farmland* received an average agreement rating of 6.0/10. •80% responded yes to the question: *Do you support initiatives that work with farmers to protect natural areas?* • For the question: *How much would you be willing to pay more in taxes or fees per year to support ecosystem health on farmland?:* • 20% of respondents were willing to pay $0.50 – 4.99/year • 53% of respondents were willing to pay $5 -10/year • 9% were willing to pay more than $10/year • 12% of respondents were not willing to pay	• "Farmland supports birds and wildlife" received an average agreement rating of 8.9/10. • Among the 565 residents that travel on roads adjacent to farmer's fields in Delta, 69% indicate it is very important to them to conserve Delta's working agricultural landscape. • *I would be willing to pay higher taxes to protect the environment* received an average agreement rating of 6.1/10.	• 77% of respondents indicated support for the Langley Ecological Services Initiative (a PES project) with ecological protection, sustainability of farms and protection of ALR viewed as the key benefits. • 68% said they support compensating or making payments to farmers so they can take actions that protect and enhance natural areas on their farms. 18% did not support and 14% had no opinion. • All residents were asked what amount they believed would be a reasonable parcel tax on each property to provide sustainable funding for the initiative: • 44%, indicated an amount in the range of $10 to $20 • 26% indicated less than $10, and • 23% said no additional tax.

6.3 Linking Ecosystem Services, Green Infrastructure and Natural Assets on Agricultural Land

Local governments across the province, country and world are looking to green infrastructure and natural assets as a tool to adapt to climate change. Green infrastructure and natural assets are often defined in similar ways - they are the stock of natural resources or ecosystems (e.g., wetlands, forests, streams) that are relied upon, managed, or could be managed by a local government for the provision of one or more services to a community. They provide critical services and functions to communities both on their own and as part of infrastructure systems with engineered assets, including: soil quality and stability; flood protection; drainage and rainwater attenuation; water treatment and storage; recharge of aquifers, rivers and creeks; recreation; climate regulation; habitat and biodiversity; air quality regulation; and health and well-being.[67] Often green infrastructure includes 'bioengineered' approaches such as bioswales, rain gardens, green roofs, and others.[68] Increasingly there is growing evidence that through the management of natural assets, local governments can decrease capital, operations, and maintenance costs; increase levels of service; and, enhance their ability to adapt to climate change – all while protecting or enhancing the ES that natural assets bring to communities.[69]

Agricultural lands represent 20% of Metro Vancouver's land base, therefore these lands are home to a large part of the natural asset and green infrastructure network. Well managed agricultural lands can provide food along with ES to increase overall regional resiliency to climate change. There is an opportunity in MV in the planning and management of natural assets and green infrastructure to encourage, promote and incentivise increased stewardship of agricultural lands. This opportunity is identified in a research and planning project being undertaken by MVRD to advance a green infrastructure network across the region.[70] The primary objective of this Regional Green Infrastructure Network (RGIN) initiative is the protection of ecological connectivity and maximizing ES co-benefits. Agricultural lands are identified as important hubs for connectivity and providing ES, and compensation to farmers is mentioned. Other jurisdictions with MV have also conducted planning projects and strategies around the importance of supporting natural assets. For example the City of Surrey already has a green infrastructure network initiative established. While agricultural lands are recognized in regional and municipal planning projects as crucial to the resilience of natural assets, additional support is required to incentivize long-term stewardship of agricultural land and increase public awareness of the value of ES on agricultural land. Several options for support are describe in the next section.

[67] Asset Management BC. 2019. Integrating Natural Assets into Asset Management.
[68] Diamond Head Consulting, Ecoplan International, and Calypso Design. 2015. Connecting the Dots: Regional Green Infrastructure Network Resource Guide.
[69] Asset Management BC. 2019. Integrating Natural Assets into Asset Management.
[70] Staff communication, Metro Vancouver. 2022. Update on Advancing the Regional Green Infrastructure Network.

7.0 Approaches for Ecosystem Services Support on Agricultural Land

Policy, financial and regulatory mechanisms were researched and considered as approaches for supporting long-term agricultural ES within Metro Vancouver agricultural land. The approaches considered were:

- Policy: Official Community Plans, RGSs, and other local government plans and strategies.
- Regulatory: Zoning and land use bylaws, Statutory Right of Ways (SROWs), and covenants on title.
- Financial: Fees, parcels tax, property transfer tax, and property value tax to fund stewardship of ES on agricultural land.

The approaches were evaluated based on the following criteria:

- Effort of implementation,
- Timeframe to implement,
- Regional control and consistency, and
- Impact on the long-term stewardship of ecosystem services.

Based on the above criteria, the regulatory approaches of SROWs and covenants on title were deemed too improbable and time-consuming to implement on a regional scale over thousands of private properties due to costs, existing legislation, enforcement capacity, and the high cost of land in MV.

Provincial legislation limits local government authority to control activities within the ALR. The *Agricultural Land Commission Act* requires all local government bylaws to be consistent with the Act's mandate to protect farmland, however there is nothing with the ALC Act or regulations to suggest that restoration and maintenance of ecosystem services would not be supported. The *Farm Practices Protection (Right to Farm) Act* prohibits local government regulation from interfering with normal farm practices. Restricting agricultural uses on land within the ALR for ecological purposes must be done with caution so as not to limit the ability to farm the entire parcel. Covenants on agricultural land that stipulate certain stewardship activities, such as restoration and maintenance of 15 meters of vegetation next to streams, may be legal but would be challenging to monitor. These regulatory options would also require increased enforcement and compliance capacity within Metro Vancouver, and collaboration with member jurisdictions , to monitor any legal agreements on private lands.

Two approaches emerged as more appropriate for MV to initiate to support long-term ES benefits on agricultural land.

1. Support ES on agricultural land through policies and regulation in collaboration with local governments and the ALC.
2. Establish a regional conservation fund (or other appropriate funding mechanism) to support programs that steward PES programs on agricultural land.

These two approaches are described in more detail below. They do not preclude the ability for other projects, programs, or initiatives with similar ES objectives to operate alongside these approaches.

7.1 Supporting Stewardship of Ecosystem Services in the ALR through Policy, Zoning and Bylaws

As previously described, a significant portion of natural assets and green infrastructure in MV is in the ALR. This presents an opportunity, through policies and regulations, to encourage the stewardship of ES on agricultural land. Member municipalities and the MVRD already have the Regional Growth Strategy (RGS), OCPs, agricultural plans, climate change plans and other policy documents that support several aspects of agricultural stewardship such as encouraging soil conservation practices, wildlife friendly agricultural practices and acknowledgment of the potential for agricultural land to increase wildlife habitat and biodiversity and help the region adapt to and mitigate climate change.

In addition to policy statements, local governments have regulatory tools at their disposal such as zoning and land use bylaws, that can be used to support the ALR and its benefit as green infrastructure. However, at a regional district level, there are fewer options available as compared to the municipal level (see Table 13, next page). Local governments can use their zoning and Development Permit Area (DPA) guidelines to regulate the location of buildings and ancillary activities such as parking, and commercial uses, in favour of green infrastructure values.[71] Several municipalities already have DPAs related to environmental protection, streamside/watercourse protection, and farmland protection. However, the DPAs are not regionally consistent which can lead to different outcomes for the health of ecosystems on agricultural lands.

As previously mentioned, MVRD is working on a project to develop a Regional Green Infrastructure Network (RGIN). There is a strong opportunity to align the RGIN with agricultural lands to support ecosystem services. The RGIN is expected to acknowledge and identify all areas in the region with significant ES, including areas within the ALR. Once complete, while stopping short of regulating land use, the RGIN could be used to signify policy objectives, clarify decision-making requirements, and potentially minimize ALR applications for exclusion or non-farm use as it signals support for maintaining agricultural ES.

Overall, policies are important to create the foundation of support for ES on agricultural land. MVRD along with most member municipalities have expressed support in planning documents and though various zoning and land use bylaws. However, there is no comprehensive regional approach for documenting and creating policy for ES on agricultural land, and additional implementation efforts to follow through on the policy statements is required.

[71] University of Victoria, Environmental Law Centre. 2021. Green Bylaws Toolkit for Protecting and Enhancing the Natural Environment and Green Infrastructure.

Table 13 Differences in environmental protection authority for municipalities and regional districts.[72]

ENVIRONMENTAL PROTECTION AUTHORITY	MUNICIPAL	REGIONAL DISTRICT
Regional Growth Strategies	*Local Government Act* Part 13	*Local Government Act* Part 13
Official Community Plans (including Local Area & Watershed Plans)	*Local Government Act* ss.471-475, 477, 478, 510 (OCP) *Community Charter* s.69 (drainage)	*Local Government Act* ss.471-475, 477, 478, 510 (OCP) *Local Government Act* ss.306-307, 312 (drainage)
Zoning Density Bonus/Amenity Zoning Parking Runoff Control & Impermeable Surfaces	*Local Government Act* s.479 *Local Government Act* s.482 *Local Government Act* s.525 *Local Government Act* s.523	*Local Government Act* s.479 *Local Government Act* s.482 *Local Government Act* s.525 *Local Government Act* s.523
Development Permit Areas	*Local Government Act* ss.488-491	*Local Government Act* ss.488-491
Riparian Tax Exemption	*Community Charter* s.225	*Local Government Act* ss.394-395
Impact Assessment Development Approval Information Areas Development Process	*Local Government Act* ss.484-487 *Local Government Act* s.460	*Local Government Act* ss.484-487 *Local Government Act* s.460
Watercourse Protection Bylaw	*Community Charter* ss.8(3)(j), 9(3)(a) & 15 *Spheres of Concurrent Jurisdiction - Environment and Wildlife Regulation* s.2(1)(a)	
Rainwater Management Bylaw	*Local Government Act* s.523 (impermeable surfaces) *Community Charter* s.69 (drainage)	*Local Government Act* s.523 (impermeable surfaces) *Local Government Act* ss.306-307, 312 (drainage)
Landscaping Bylaw	*Local Government Act* s.527 *Community Charter* s.15	*Local Government Act* s.527
Tree Protection Bylaw	*Community Charter* ss.8(3)(c), 15 & 50	*Local Government Act* s.500
Soil Removal & Deposit Bylaw	*Community Charter* ss. 8(3)(m), 9(1)(e) & 15	*Local Government Act* s.327
Pesticide Use Bylaw	*Community Charter* ss.8(3)(j), 9(3)(a) & 15 *Spheres of Concurrent Jurisdiction - Environment and Wildlife Regulation* s.2(1)(b)(ii)	
Invasive Species Bylaw	*Community Charter* ss.8(3)(j), 8(3)(k), 9(3)(a) & 15 *Spheres of Concurrent Jurisdiction - Environment and Wildlife Regulation* s.2(1)(b)(iii) (control and eradication)	
Security	*Community Charter* ss.8(8)(c), 17 & 19 *Local Government Act* s.502	*Local Government Act* s.502
Subdivision Servicing Bylaw	*Local Government Act* s.506 *Land Title Act* ss.83, 86	*Local Government Act* s.506 *Land Title Act* ss. 83, 86
Development Cost Charges Bylaw	*Local Government Act* s.559-565	*Local Government Act* s.559-565

[72] University of Victoria, Environmental Law Centre. 2021. Green Bylaws Toolkit for Protecting and Enhancing the Natural Environment and Green Infrastructure.

7.2 Regional Conservation Fund for Supporting Ecosystem Services on Agricultural Land

The second approach considered in detail is the establishment of a regional conservation fund to support programs that steward ES on agricultural land. A conservation fund is a local government service that is funded through a dedicated tax or fee, held and overseen by local government, and earmarked for the specific purpose of undertaking projects that support environmental conservation and community sustainability. Conservation funds can be initiated by local governments or by non-governmental organizations, but often require partnership with municipal, regional and First Nation governments to implement fund procurement (for example through the adoption of a bylaw) and to oversee administration and management of how fund monies are spent. Several regional districts across the province have implemented conservation funds including the Regional District of East Kootenay, Regional District of Central Kootenay, Regional District of North Okanagan, and the Regional District Okanagan Similkameen. These funds provide support to local non-profit organizations for conservation and restoration projects that have led to healthier ecosystems.

For a regional conservation fund in MVRD, conservation and restoration of ecosystem services could be a strong component of the fund priorities, but other broader objectives for the region could also be included to allow for greater impact to improving ecosystem health and benefits to the region. For example, projects that align with the objectives of the RGIN could also be supported by a local conservation fund. The objective of a fund must be clear to the public, have strong public acceptability, and have limits on fees procured from the public. Based on the recent polling and surveys in the region (described in section 6.2), residents in Delta and ToL are willing to pay for projects that result in stewardship of ES on agricultural land, however more detailed region-wide polling is warranted.

The following section provides more details on potential financing approaches for a conservation fund. Appendix B provides in-depth details and examples of how a conservation fund could be structured and implemented in Metro Vancouver, along with examples of other regional conservation funds. Conducting region-wide public opinion surveys would be important in determining if there is region-wide support for a local conservation fund, in addition to discussions with MVRD and member municipality elected officials and First Nations.

What types of projects could be funded and what impacts would the projects have?

Example 1: Compensation for Winter Cover Cropping

The DFWT has a winter cover cropping program that offers a $123-173/ha cost-share for farmers. In MV, there are approximately 3,640 ha of annual vegetable crops grown that could be suitable for implementing cover crops once the cash crops are harvested (Source: 2016 Agricultural Land Use Inventory). Assisting producers across the region to plant cover crops would cost approximately $540,000 (assuming a cost-share of $148/acre for 3,640 ha). Collecting $1 per year from every household in MVRD would raise approximately one million dollars for a fund (2021 Census reported 1,043,315 Total Private Households in Metro Vancouver). That money could then be used to assist producers in cover crop plantings. The benefits of cover cropping to the MV region include soil building; carbon sequestration; reduction in erosion, soil and water retention during floods; and forage for wildlife (such as migratory birds in the Fraser River Delta).

Example 2: Compensation for Riparian Habitat Restoration

Since 2021, five farms in the Little Campbell River watershed within the City of Surrey have participated in the Farmland Advantage program to restore and enhance riparian areas on their properties. On these farms, invasive species such as blackberries and reed canary grass were removed and replaced with native species. Beaver guards were also installed to help secure the survival of young trees in the riparian zone. Farmland Advantage receives federal and provincial funding to provide limited funding to cover the cost of materials and labour to undertake ecosystem restoration work and pays the farmer $1,500 per year to maintain the restored area. A Metro Vancouver conservation fund could provide funding to programs such as Farmland Advantage, which then leverage other funding sources to maximize the number of contracts with agricultural landowners throughout the region.

7.2.1 Conservation Fund Financing Options

Potential options for financing a regional conservation fund are discussed below. If MVRD were to pursue a conservation fund for the region, discussions with municipal and regional staff and a legal team would be required to determine an appropriate mechanism for collecting monies for a fund.[73]

Property Value Tax

Local governments calculate property taxes on the basis of the assessed or net taxable value of land and improvements (e.g. house, garage), unless exempted, and on the local government tax rate.[74] Property value tax can also be calculated on land only or on improvements only. Most local governments calculate property taxes using the variable tax rate system where tax rates are based on an amount per $1,000 of assessed property value (e.g., $0.10 per $1,000 of assessed property value). Tax rates vary for different property classes of land such as agricultural, residential, industrial, and commercial, so if the tax rate stays the same but property values rise, the local government's property tax revenue rises.

Parcel Tax

Regional districts and municipalities can apply a parcel tax to properties that receive a particular service. A parcel tax can be imposed in one of three different ways: on the basis of the same amount for each parcel of land; on the taxable area of a parcel; or on the taxable frontage of the parcel. For conservation funds, a single amount for each parcel is the appropriate method to use.[75] Under this method, the service establishment bylaw states the maximum dollar amount that can be taxed or requestioned each year and that amount is divided equally across the taxable parcels in the service area. A parcel tax does not rise as property values increase. The maximum amount that can be taxed each year remains the same over time unless the bylaw includes a provision that the maximum is determined by so many dollars or cents per $1,000 of taxable assessed value in the service area. The local government must create a parcel tax roll to impose a parcel tax. The roll lists the parcels to be charged and includes the name and address of the owners of each parcel. Once the local government completes the parcel tax roll, they must make it available for public inspection. The local government must form a review panel to consider any complaints about the roll and to authenticate it.

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[73] Taxation for regional district residents is different than for municipalities. In accordance with the *Local Government Act* (RSBC 2015 c.1), regional districts do not have the authority to issue property tax notices to residents and businesses, nor collect taxation directly from residents. In most regions of the province, municipalities collect the regional district taxes directly from citizens within their boundaries. As such, regional districts do not set property tax rates (often referred to as mill rates) for the annual tax requisitions they require to fund the numerous services and capital projects they steward on behalf of the community. Instead, municipalities (cities, towns, villages, etc.) do this for those regional district services their communities participate in and the provincial Surveyor of Taxes does this for ratepayers living in all rural areas outside of the boundaries of a municipality (e.g. electoral areas). Regional districts can present a requisition of funds from municipalities. The annual operating budget of local governments determines what the tax rates (mill rate) will be.

[74] South Okanagan-Similkameen Conservation Program. (2022). Local Conservation Funds in British Columbia: A Guide for Local Governments and Community Organizations (3rd ed.). Penticton, B.C.

[75] Ibid.

Fees

Both municipalities and regional districts may recover costs on a fee-for-service basis provided the fee is associated with an already established service. For example, instead of imposing a tax on property, a fee could be collected from each household as part of a local government water service (e.g., for a rainwater management program) or from park facility users (e.g., for ecosystem restoration within parks).[76] Within MV municipalities, property taxes include levies (fees) for the following institutions:

1. School tax (BC Government)
2. Metro Vancouver Regional District
3. Municipal Finance Authority
4. BC Assessment
5. TransLink

Property Transfer Tax

Property Transfer Tax is primarily collected when a property is purchased but there may be other instances of transactions when this tax is collected, such as forfeiture or foreclosure.[77] The property transfer tax is based on the fair market value of the property (land and improvements) on the day it was registered with the Land Title Office. Transfer tax rates are determined based on the value of the property and if the purchaser is a foreign national. The property transfer tax rate is:

- 1% of the fair market value up to and including $200,000
- 2% of the fair market value greater than $200,000 and up to and including $2,000,000
- 3% of the fair market value greater than $2,000,000
- Additional 2% if the property has residential property worth over $3,000,000.

The property transfer tax monies go to the province. MVRD would have to discuss the possibility of a small increase or a small proportion of the existing property transfer tax rate which would be earmarked for use in a MVRD conservation fund. Legal advice would be required to determine if an additional property transfer tax to provide monies to a conservation fund could be added to properties in Metro Vancouver.

[76] South Okanagan-Similkameen Conservation Program. (2022). Local Conservation Funds in British Columbia: A Guide for Local Governments and Community Organizations (3rd ed.). Penticton, B.C.
[77] Government of British Columbia. Accessed December 2022. Property Transfer Tax.

Examples of financial arrangements from other funds

District of West Vancouver: Environmental Reserve Fund
The annual Environmental Levy amounts to $800,000, which is equivalent to 1.00% tax rate increase. Single Family Dwellings pay $65 and Strata pay $29.

Regional District of Okanagan Similkameen:
The annual maximum amount to be requisitioned for the cost of the service is not to exceed the greater of $450,000 or $0.0292 per $1,000 of net taxable value of land and improvements in the Regional District of Okanagan-Similkameen.

Regional District of North Okanagan:
The maximum amount that may be requisitioned annually for the service is not to exceed $102,000 or $0.02 per $1,000 of net taxable value of land and improvements included in the service area, whichever is greater.

Regional District of Central Kootenay:
The maximum amount that may be requisitioned annually for the service shall be $106,500 or the product of $0.062 per $1,000 of taxable assessed value of land and improvements, whichever is greater. This amounts up to $15 per parcel of land annually.

7.3 Comparing Approaches for Supporting Ecosystem Services on Agricultural Land

The following table compares the two approaches for supporting ecosystem services on agricultural land within the MVRD.

Table 14 Comparing approaches for supporting ecosystem services on agricultural land in MV.

	Approach	
	Policy, Zoning and Bylaws	**Regional Conservation Fund**
Effort of implementation	- Engagement with First Nations required - Requires staff time for analysis of what policies, zoning and land use bylaws are working well. - Including agricultural ES in the discussions and objectives of the RGIN could align staff capacity.	- Requires funding and staff time for front-end work to determine public and political acceptability of a new fee/tax for a fund (e.g. through polling and outreach). - Requires MVRD staff capacity to assist in fund development. - Each taxpayer/landowner contribution is likely to be small.
Timeframe to implement	- Likely one to three years, but depends on staff capacity.	- The process of gauging public support for a fund, passing a bylaw to establish the fund, and putting the fund administration into place would likely be at least three years.
Regional Control and Consistency	- Certain policies, zoning and land use bylaws are already in place for some member municipalities and EAs that are supportive of ES, while others would require updates or new policies, zoning or land use bylaws. MVRD has little control over implementation of these approaches in municipalities, so they may not be regionally consistent.	- Ideally all municipalities, electoral areas and First Nation communities would participate in the fund. - Projects funded would benefit the entire region.
Impact on the Long-Term Stewardship of Ecosystem Services	- The impact depends on the strength of the policies, zoning and land use bylaws. These tools can be weakened over time if not kept relevant or political or if public desire to support ES declines. Resources for compliance and enforcement of existing or new policies and regulations can also be a challenge for local governments.	- Relative impact on funding projects to improve/protect ecosystem services on agricultural land throughout the region would be high. - Healthy ecosystems can help avoid damage to infrastructure and mitigate costs of recovery (for example, reducing inundation of flood water by slowing the movement of water across fields to allow for increased infiltration).

8.0 Conclusions and Recommendations

When agricultural producers are supported in the care and management of ecosystems on agricultural land, the whole region benefits. These benefits range from improved water quality, fish habitat, flood protection, carbon sequestration and healthy wildlife populations. One fifth of the land base in MVRD is agricultural land. Ecosystems such as wetlands, riparian areas, watercourses, and forests are common on farms. Currently, there is a patchwork of policy, regulatory and financial mechanisms used to support ES on agricultural land in MV. [78] However, there lacks an overarching regional approach for stewardship of these ES and there are a limited number of incentives available to agricultural producers to provide long-term support for stewarding healthy ecosystems on agricultural land. Recent studies in Delta and ToL have illustrated support for the role that agricultural land plays in protecting and stewarding the environment, and a willingness to pay for the stewardship of ES on agricultural lands.

There exists a need to increase stable, long-term support to foster healthy ecosystems on agricultural land, and to leverage existing payment for ecosystem services programs, which will in turn provide benefits to all residents through food production, healthier watercourses, increased biodiversity, and landscape resiliency. Conservation funds are increasingly being used by regional districts to provide financial support for the long-term stewardship of ecosystems in region across BC and represent an opportunity worth exploring for Metro Vancouver.

Financially supporting ecosystem services on agricultural land can be viewed as reallocating resources to manage lands and providing an investment of taxpayer dollars into the following:

- Improved regional food security.
- Partnerships with First Nations to grow projects regarding Indigenous food systems.
- Preservation of natural assets and green infrastructure.
- Job creation for the food agriculture sector, and spin-off enterprises.
- Stimulation of agricultural support sector businesses (e.g., seed companies, soil amendments).
- Increased agri-tourism opportunities.
- New education and learning programs.

Investing in healthy ecosystems on agricultural lands can also be viewed as a type of 'collective insurance' since heathy ecosystems mitigate costs and damages to local governments associated with extreme weather events (e.g., floods and droughts) that will occur more frequently due to climate change. Understanding the economic value that healthy ecosystems can provide to minimize damages to infrastructure is crucial for decision-making when allocating resources to the management of natural assets and green infrastructure.

To improve the long-term stewardship of ecosystem services on agricultural lands in MV, the following five recommendations are identified (Table 15, next page).

[78] Metro Vancouver. (2020). Agriculture Discussion Paper to support Climate 2050 and the Clean Air Plan.

Table 15 Recommendations and rationale for long-term support of ecosystem services on agricultural lands in Metro Vancouver.

Recommendation	Rationale	Recommended Timeline	Resources Required
1. Collaborate internally and externally to further explore and build a regional conservation fund (or other appropriate funding mechanism) that includes payment for ecosystem services on agricultural land.	Internally, MVRD staff working on the Regional Green Infrastructure Network can look for opportunities to align objectives with a conservation fund. It is recommended that this include engagement with First Nations communities. Externally, staff can continue to collaboration with the Fraser Delta Farmland Protection and Stewardship Working Group, who have been working since 2019 on the concept of establishing a regional conservation fund for ES on agricultural lands.[79]	Ongoing	Staff time, and/or consultant fees.
2. Conduct polling across MV to gauge support and willingness to pay for ecosystem services on agricultural land.	Gauging the interest and support by the public would assist MVRD decision-makers in understanding if residents support a regional conservation fund, and what types of projects residents would prioritize for improving the health of ecosystems. Staff will also need to determine support internally at committee levels, management, and elected officials.	Within 1 year	Staff time to hire polling firm and manage the project. Estimated polling fees of $50,000 – $70,000 to conduct region-wide polling. Some fees may be cost-shared with other organizations or intiatives.
3. Conduct in-depth mapping of ecosystem services on agricultural land in MV	Areas in MV with the highest opportunities to focus efforts for stewardship of ES on agricultural lands should be mapped at a high resolution. This mapping will inform ES valuation calculations and can be aligned with RGIN mapping.[80]	Within 1 -2 years	Staff time to issue RFP, hire consultant and manage the project. Estimated consultant fees of $15,000 – $40,000 to complete the project.

[79] The Fraser Delta Farmland Protection Stewardship Working Group is a collective of representatives from local, provincial and federal governments, and non-profit organizations working together toward a vision where, "Farmland is protected and stewarded to support long-term sustainability and resiliency of farming while optimizing biodiversity in the Fraser River Delta."

[80] Staff communication, Metro Vancouver. 2022. Update on Advancing the Regional Green Infrastructure Network.

Recommendation	Rationale	Recommended Timeline	Resources Required
4. Estimate the financial value of ecosystem services on agricultural land in Metro Vancouver	A detailed estimate of the financial/economic value of ES on agricultural lands in MV would greatly assist decision-makers and the public in understanding the benefit to society from agricultural land stewardship. Understanding the economic value of agricultural ES will also assist in determining appropriate funding amounts for a regional conservation fund and what ecosystems should be prioritized for financial support.	Within 1-2 years	Staff time to issue RFP, hire consultant and manage the project. Estimated consultant fees of $30,000 – $60,000 to complete the project.
5. Review and assess options to align with the ongoing work to establish a Regional Green Infrastructure Network to support ES on agricultural land.	A Regional Green Infrastructure Network would acknowledge and identify a connected network of ecological elements in the region, including on agricultural land, some of which would provide ecosystem services. The RGIN could be used to signify policy objectives for those lands, clarify decision-making requirements, and potentially minimize non-agricultural development.	Within 2 -3 years.	Staff time, and/or consultant fees.

Appendix A: Assumptions & Limitations of Mapping Analysis and Layer Descriptions & Data Sources

Assumptions of Analysis:

- All mapping layers used were from secondary sources, no original mapping data was collected, and the assumption was made that there are no major errors in the mapping layers.
- Assume all watercourses have the potential for providing ecosystem services, to some extent.

Limitations of Data:

- The mapping results provide a good starting point for identifying and quantifying ES in the ALR; however, due to mapping limitations, this mapping exercise could not identify all ecosystems with potential for providing beneficial ES. For example, not all of the agricultural watercourses, hedgerows, or windrows were captured, nor beneficial farming practices such as cover cropping.
- The 'Disconnected Watercourses' layer only captures disconnected watercourses leading to the Fraser River, and not watercourses leading to other major rivers in the region (e.g. the Serpentine River or Nicomekl River).
- Crops and small agricultural ditches/canals can change from year to year, so analysis is a snapshot in time for locations of some smaller watercourses.
- While it was noted that some agricultural ditches were captured in the 'Watercourses' mapping layer, arial images shows additional locations of agricultural ditches that were not captured in the watercourses data layer used.

Table 16 Data Layer Sources and Descriptions.

Layer Name	Description	Source
SEI Wetlands, Riparian Areas and Freshwater ecosystems	Riparian ecosystems are associated with and influenced by freshwater. They generally occur along rivers, streams, and creeks, but for SEI, also include fringes around lakes. These ecosystems are influenced by factors such as erosion, sedimentation, flooding, and/or subterranean irrigation due to proximity to the water body. This Class includes all vegetation developmental stages, i.e., structural stages 1 through 7, but only in a natural or semi-natural state. To calculate the riparian areas buffers of 20 m were used for streams and 50 m were used for rivers and lakes. Wetland ecosystems are found where soils are saturated by water for enough time that the excess water and resulting low oxygen levels influence the vegetation and soil. The water influence is generally seasonal or year-round and occurs either at or above the soil surface or within the root zone of plants. Wetlands are usually found in areas of flat or undulating terrain. They encompass a range of plant communities that includes western red cedar/skunk cabbage swamps, cattail marshes, and peat-moss dominated bogs. The wetland class is for freshwater wetlands.	MV Open Data Catalogue: MV SEI

Layer Name	Description	Source
Watercourses	This layer originates from the Freshwater Atlas Stream Network dataset. It shows stream, creeks, and some agricultural watercourses but likely does not capture all agricultural watercourses (e.g. ditches, canals).	BC Data Catalogue: Freshwater Atlas Stream Network
Disconnected Watercourses	Disconnected watercourses leading to the Fraser River. Disconnection calculated based on stream gradient (12%) and obstructive infrastructure.	Watershed Watch Salmon Society
ALR	The spatial representation for a segment of the boundary of an Agricultural Land Reserve (ALR), which is a parcel of land, based on soil and climate, deemed necessary to be maintained for agricultural use.	BC Data Catalogue: ALC Agricultural Land Reserve Lines
Regional Parks	Boundaries for Metro Vancouver Regional Parks, Ecological Conservancy Areas and Regional Park Reserves.	MV Open Data Catalogue: Metro Vancouver Regional Parks – Park Boundaries
Fraser River Freshet Flood Scenarios under 2050 climate conditions	The two layers estimate flood levels under projected climate change conditions in 2050. The conditions include 0.5-metre sea level rise and changes in peak river flows. The two scenarios are a 1% Annual Exceedance Probability flood (i.e., 100 year) or 0.2% AEP (i.e. 500 year flood) flood on the Fraser River.[81] These scenarios assume that dikes in different locations overtop, but that no dikes breach. These maps originates from the Fraser Basin Council.	Source: Fraser Basin Council
Coastal Storm Surge Flood Scenario	This layer illustrates the estimated flood levels in a 0.2% AEP (500 year) coastal storm surge flood under present day climate conditions and sea level, during a still water ocean state. These maps originates from the Fraser Basin Council.	Source: Fraser Basin Council

[81] Annual Exceedance Probability (AEP) Refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood that may be calculated to have a 1% chance to occur in any one year is described as 1% AEP. The measure has replaced more traditional time-based expressions of probabilities: 2% = 50-year flood, 1% = 100-year flood, 0.5% = 200-year flood, 0.2% = 500-year flood.

Appendix B: Example of a Conservation Fund for Metro Vancouver

Fund Purpose and Priorities

The purpose and priorities of the fund should be determined through polling of residents and by reviewing local government plans, policies and strategies that align with the objectives of supporting agricultural ES and environmental conservation.

Example Purpose: The Metro Vancouver Conservation Fund is a dedicated source of funding for the specific purpose of undertaking agricultural stewardship and environmental conservation projects within MVRD. The projects will improve the natural environment and food security, and ensure long-term sustainability of farms and healthy ecosystems in the region, that support a good quality of life in Metro Vancouver.

Example Priorities:

- Enhancing the sustainability, resilience and viability of local agriculture and food production.
- Protecting clean, abundant water resources.
- Preserving natural places for people to enjoy through recreation.
- Restoring and maintaining important habitats for Species at Risk, fish and wildlife, such as riparian areas through agricultural properties.
- Maintaining and enhancing ecosystem health to be more resilient to the effects of a changing climate, such as floods, fire, and drought, such as restoring riparian areas.
- Upgrading and maintaining key infrastructure such as ditches and dikes.

Example Targets and Issues:

Projects that can demonstrate a reduction of a known threat to an agricultural, ecosystem and/or biodiversity target will be given priority. The focus is on private land, but projects on both Crown and local government land could be considered. The targets are:

- Improving ecosystems on agricultural land,
- Land classified within the Sensitive Ecosystem Inventory,
- Land with high occurrences of invasive species,
- Land in or adjacent to parks and the green infrastructure network,
- Watersheds at important source water protection areas,
- Connectivity for natural areas and wildlife corridors,
- Native fish and wildlife habitat including for species at risk,
- Urban and rural wild-land interface areas, and,
- Land in floodplains or within projected flood extents of riverine and coastal floods.

Governance and Administration Options

The MVRD would be responsible for maintaining the fund including the responsibility of requisitioning funds, financial audits and providing final approval of potential projects. The MVRD would also appoint a Technical Advisory committee to assist in selection of potential projects to

be funded, which will help ensure projects of the highest merit receive funding, while still maintaining the final approval rights.

Example of process:

1. MVRD passes a bylaw that sets the stage for being able to requisition tax funds from municipalities for conservation purposes.
2. MVRD requisitions the funds to member municipalities through annual tax requisition, collects the fund money, selects/approves conservation projects, issues payments, and conducts financial audits of the fund.
3. MVRD can hire internal staff as the fund administrator/coordinator or hire a consultant.
4. Often a 'Technical Advisory Committee' is formed of subject matter experts who evaluate the project applications to the fund, and recommend to MVRD which projects should receive funding. Final approval of projects will be granted at a regular meeting of the MVRD Board of Directors.

Example of governance:

- This is a tax-based fund; therefore, in the decision-making process, taxpayers will be represented through their elected officials.
- The Fund was created to provide a conservation service. Technical merit is of utmost importance to determine which projects are supported.
- There is a relatively small amount of annual funding available and it is important to design a simple, cost effective decision-making structure.

Service Areas & Establishment Process

Establishment of a conservation fund within a regional district must be done through the creation of a bylaw. The bylaw can be established in two ways:

1. Assent voting (referendum) process.
2. Alternative approval process.

It is up to the regional district and member municipalities as to which option the bylaw is established.

Assent Voting Examples [82]

Columbia Valley Conservation Fund: Regional District of East Kootenay

The original goal was to have all municipalities and electoral areas in the RDEK participate in the service, however, the conservation fund idea only received support from the Upper Columbia Valley portion of the RDEK. The residents who were clear that they wanted the opportunity to vote on the initiative wanted it to happen in the most cost-effective way possible. This translated to an assent vote (referendum) being conducted in conjunction with a general election in 2008. Only electors in the service area (Upper Columbia Valley) were eligible to vote on the question of setting up a conservation fund. After a successful vote, the RDEK board adopted the bylaw to establish the Columbia Valley Local Conservation Fund service in the Upper Columbia Valley portion of the

[82] South Okanagan-Similkameen Conservation Program. (2022). Local Conservation Funds in British Columbia: A Guide for Local Governments and Community Organizations (3rd ed.). Penticton, B.C.

regional district, including the Village of Radium Hot Springs, District of Invermere, Village of Canal Flats, and RDEK electoral areas F & G.

Kootenay Lake Local Conservation Fund: Regional District of Central Kootenay
Even with residents' support, it was the elected officials' role to decide whether or not establishment would proceed. In this case, of the areas that indicated support at the public opinion research stage, one municipality opted out, and so the assent vote (referendum) question was posed, on a subregional basis, to voters in three RDCK electoral areas. The RDCK established the Kootenay Lake Local Conservation Fund after a successful vote in November 2014, which was held in conjunction with the local election in electoral areas A, D, and E. In October 2022, voters in the Slocan Valley (Area H) voted 'yes' to joining the Regional District of Central Kootenay Local Conservation Fund service that will support wildlife, habitat and water.

Alternative Approval Process Examples
South Okanagan Conservation Fund: Regional District of Okanagan-Similkameen
Elected officials decided whether their electoral area or municipality was interested in participating in the environmental conservation service. In the end, it was decided that the bylaw would be proposed as a subregional service for 6 of the 9 electoral areas and 3 of the 6 municipalities within the region (communities of Summerland, Penticton, and Oliver, and rural RDOS electoral areas A, C, D, E, I and F). Public approval for the bylaw was sought through alternative approval process conducted for the proposed sub-regional service as a whole. The alternative approval process was concluded with < 1% of eligible voters opposed to the proposed bylaw. In December 2016, the RDOS board approved the environmental conservation service bylaw that established the South Okanagan Conservation Fund.

North Okanagan Conservation Fund: Regional District of North Okanagan
The Okanagan Collaborative Conservation Program and its partners worked with Regional District staff and elected officials for 24 months to identify local conservation priorities for the fund's terms of reference and assisted with local government planning processes to create the fund. On January 22, 2020 the City of Armstrong, the Village of Lumby and Electoral Areas "B" through "F" established the service bylaw for a sub-regional conservation fund to support local conservation priories. The bylaw was established through the alternative approval process which notified property owners of a new conservation service in the form of a property tax. The alternative approval process easily passed with little to no opposition to establish the fund.

Fund Design

How the fund functions would be decided upon based on the priorities and targets. The following are examples of how a fund could be designed:

- A call for project proposals will be issued annually and will be advertised based on criteria set by the Consultant and approved by the MVRD Chief Administrative Officer or their designate.
- Funds will be dispersed annually, based on responses to calls for proposals. Any funds not dispersed can be carried forward to the next fiscal year.

- Projects must be in the Fund Service Area (e.g. the entire MVRD or certain municipalities/Electoral areas).
- Multi-year projects are acceptable to a maximum of a certain number of years. Such projects will receive annual funding approval, and will be subject to annual review by the Technical Advisory Committee to ensure they are on track.
- Projects should address MVRD threats identified and fall into at least one theme area.
- Proponents must be non-profit, have registered society status or must partner with an organization that has registered society status.
- Project evaluation by the Technical Advisory Committee includes consideration of conservation value for money.
- Proposals should reflect relationship to the MVRD Regional Growth Strategy and Municipal Official Community Plans.
- Proponents must be prepared to make a 10-minute presentation on the outcomes of their work on an annual basis, in addition to submitting written interim and final reports.
- Proponents will receive 80% of the grant upon signing a contribution agreement and 20% upon completion of the approved final report.
- Fund recognition. Proponents are required to acknowledge in all communications products including publications, public information releases, advertising, promotional announcements, activities, speeches, lectures, interviews, ceremonies and website materials related to the project, including on permanent signage. The MVRD logos must appear on all communications and promotional materials.
- Administrative costs should not exceed 7% of the annual fund amount.

Examples of other Conservation and Environmental Funds

There are several examples of local governments in BC that have created funds for environmental and conservation objectives (Table 16).

Table 17 Examples of Conservations Funds in BC.

	South Okanagan Conservation Fund	Columbia Valley Local Conservation Fund	Kootenay Lake Conservation Fund
Conservation Themes	Conservation of water quality and quantity stewardship, protection, enhancement and restoration of sensitive terrestrial and aquatic ecosystems, wildlife species & SAR and habitat for native fish and wildlife.	Water conservation, Wildlife and habitat conservation, open space conservation.	Aquatic systems, water conservation, wildlife and habitat conservation.
Fund purpose	Provide local financial support for projects (not under the responsibility of federal, provincial or local governments) that will	Provide local financial support for projects (not under the responsibility of the federal, provincial or local governments) that will contribute to the	Provide local financial support for projects (not under the responsibility of the federal, provincial or local governments) that will contribute to the

	contribute to conservation of natural areas.	conservation of our valuable natural areas.	conservation of our valuable natural areas.
	South Okanagan Conservation Fund	Columbia Valley Local Conservation Fund	Kootenay Lake Conservation Fund
Fund administration	RD maintains the fund, including decisions of awarding the grants, making payments, RD may hire a third party to administer the fund, or appoint a technical advisory committee to select projects and fund recipients.	RD maintains the fund, including final approval of all projects, grant payments and financial audits. The Kootenay Conservation Program is a partner in the fund and is responsible for all administrative activities pertaining to the fund other than direct financial administration and final approval of projects.	RD maintains the fund, including final approval of all projects, grant payments and financial audits. The Kootenay Conservation Program is a partner in the fund and is responsible for all administrative activities pertaining to the fund other than direct financial administration and final approval of projects.
Financing mechanism	Property tax- Fund not to exceed the greater of $450,000 or $0.0292 per thousand dollars of net taxable value of land and improvements in the RD.	Parcel tax of $0.5 per $1000 taxable assessed value, up to a maximum of $230,000 annually ($20 per parcel).	Parcel tax, $15/parcel/year applied to residential, commercial and industrial properties.
Fund Reach	38 grants funded, $1,528,791 awarded	From 2010-2020, 93 grants totaling $2.43 million	From 2016-2020, 29 grants, $400,000 awarded

District of West Vancouver Environmental Reserve Fund

Adopted by council on July 25, 2022[1], the District of West Vancouver adopted Bylaw number 5188, an Environmental Levy to fund efforts support and protect the natural environment through education, mitigation and adaptation efforts. Community engagement prior to the creation of this fund (December 2021- January 2022) showed a high level of concern for climate change and a support for the implementation of an environmental levy.

Mechanism and Amount:

- The annual Environmental levy would amount to $0.8M, which is equivalent to 1.00% tax rate increase.
- Single Family Dwellings will pay $65 and Strata will pay $29.

Purpose: Dedicated funds for climate change response, sustainability, and protecting the District's natural resources. The fund can be utilized by both internal and external bodies to contribute to the objective of the fund.

Administration: The new Manager of Climate Action & Environment (to be hired) will be responsible for creating a program to determine the best use of the Environmental Levy funds.

Table 18 Details of the West Vancouver Environmental Reserve Fund.

Source of financing	Use of Fund	Process of Funding of Services
Annual district environmental levy (property tax), Interest earned at the prevailing rate on the average annual balance in the Fund, Grants received from the district or external sources, any other amounts designated as contributions to the fund	The Fund may be used for external and District resources for: a) Programs that support the protection of the natural environment; b) Climate change response, mitigation, and adaptation; c) Sustainability and protection of the District's natural capital assets; and d) Reduction of Greenhouse Gas emissions both by corporate operations and the community.	Annual expenditures projected to be financed from the Fund shall form part of the Annual Financial Plan of the District, and no expenditures shall be made from the Fund that have not previously been included in the Annual Financial Plan as approved or amended, Monies from the Fund shall be expended pursuant to Council resolution.

Capital Regional District Land Acquisition Fund

In 2000 the Capital Regional District introduced the Land Acquisition Fund (LAF) for the exclusive purpose of expanding the regional parks system through land procurement. Since 2000, the CRD has secured 4,900 hectares of land into the parks system where is now serves as conservation space, habitat connectivity and recreational uses. The acquisition of land is guided by criteria laid out in the Regional Parks Land Acquisition Strategy. The LAF is funded by a household fee, which was initially set at $10 per household, but has since risen to $20 per household, with the expectation of the fee increasing to a maximum of $25 per household by 2029. The anticipated revenue stream will service up to $50 million of land purchases over 15 years, leveraging a net increase in land values of more than $100 million.

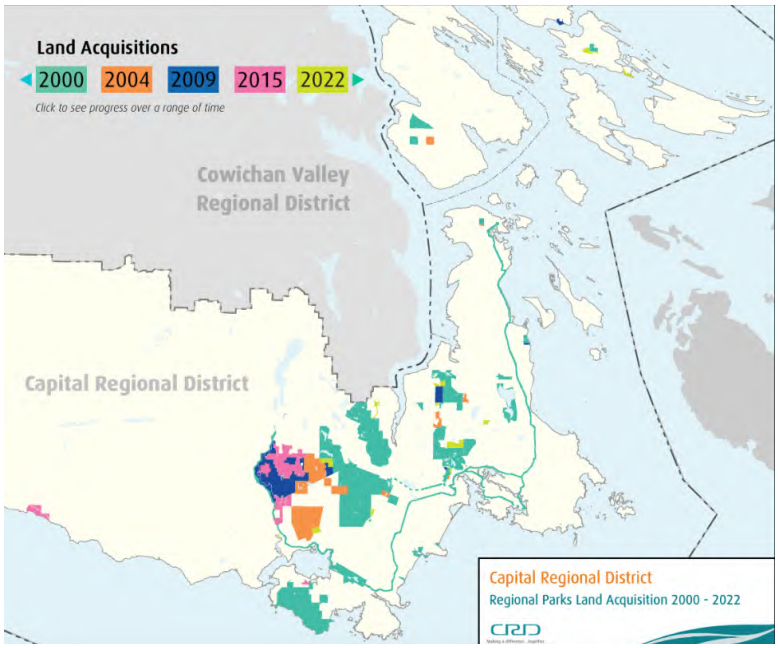

Figure 18 Land secured by the CRD Land Acquisition Fund, 2000 – 2022.

Appendix C: Resources Consulted

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Scoping Ecosystem Services on Agricultural Land

PROJECT OVERVIEW & OUTCOMES

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metrovancouver

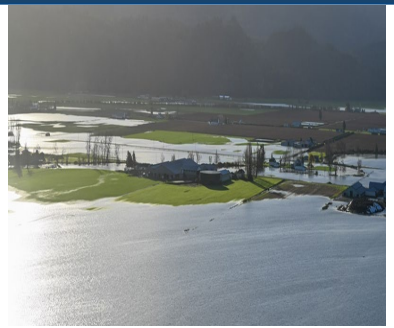
Regional Planning Committee | May 12, 2023
59509953

BACKGROUND

- 2011 – Regional Food System Strategy
- 2014 – Sensitive Ecosystem Inventory
- 2018 – Ecological Health Framework
- 2023 – Metro 2050
- 2023 – draft Climate 2050 Agriculture Roadmap

WHY DO THE STUDY?

- Understand the benefits, increase agriculture resilience
- Specific to Metro Vancouver - 20% regional land base is ALR, unique regional characteristics
- Identify the multi-functional value of agricultural land
- Recommend support mechanisms



SCOPE OF WORK

- Focused literature review
- Observe ecosystem types on agricultural land
- Document benefits to agriculture
- Recommend Best Management Practices by ecosystem type
- Policy, regulatory, or financial actions and mechanisms

PHASE 1 OUTCOMES

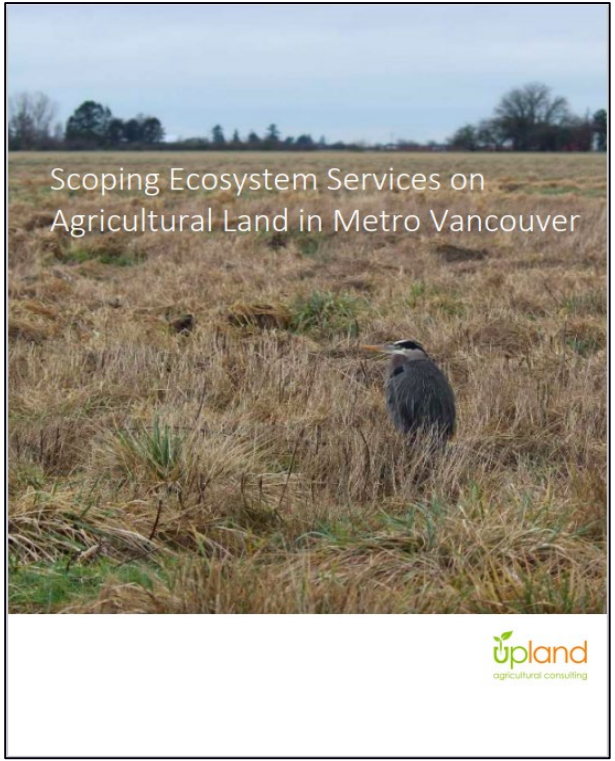
- Literature Review
- Ecosystem Types
- Benefits to Agriculture
- Best Management Practices

PHASE 2 OUTCOMES

- Mapping Analysis Results
- Policy, Regulatory, Financial Actions

RECOMMENDATIONS

1. Explore and build regional conservation fund that includes payment for ecosystem services
2. Conduct polling across Metro Vancouver to gauge support for payment for ecosystem services
3. Conduct in-depth mapping of ecosystem services
4. Estimate financial value of ecosystem services
5. Align with on-going work to establish a Regional Green Infrastructure Network



NEXT STEPS

- Recommendation Analysis
- Additional Engagement
- Prepare White Paper

Thank you

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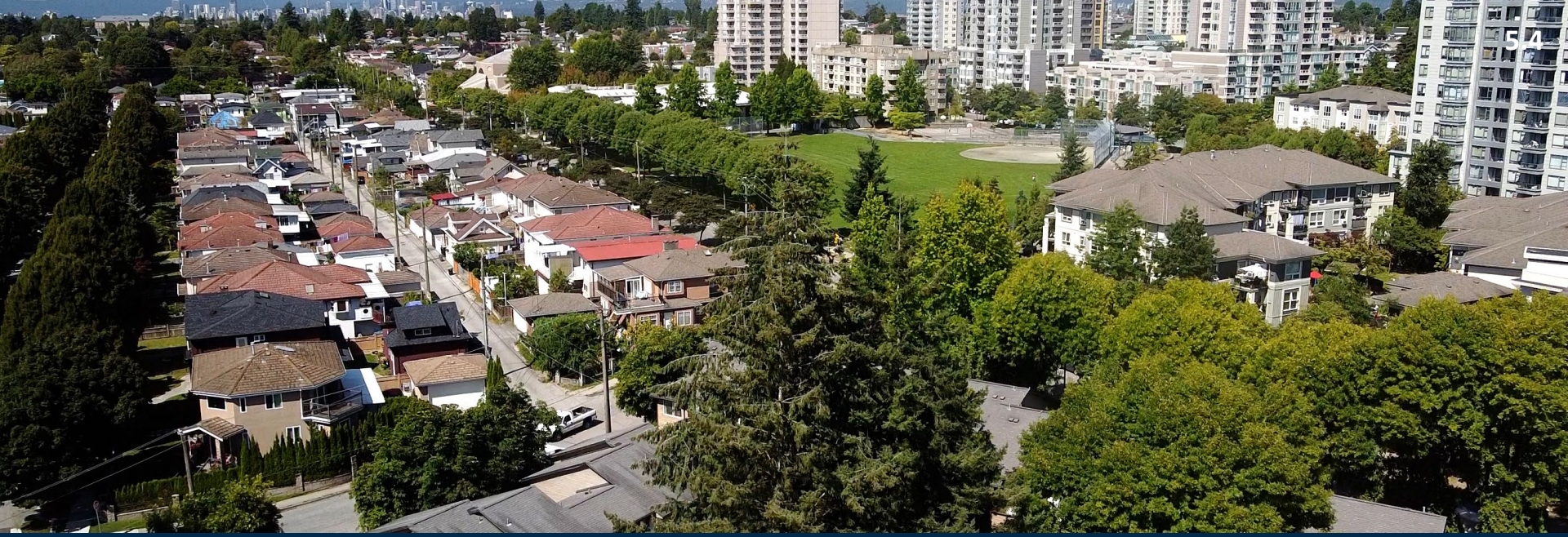

Regional Land Use Assessment

Sinisa Vukicevic, PhD

Program Manager, Planning Analytics, Regional Planning and Housing Services

Regional Planning Committee, May 12, 2023
59489031

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OUTLINE

Land Use Assessment Project

- Standardization of municipal OCP land use designations
- Quantifying residential net OCP capacity
- Residential and employment land demand
- Demand-supply gap analysis for Employment land

Standardized OCP Land Use Designations

CHALLENGES WITH EXISTING OCP DESIGNATIONS

- Varied approached across the region for density standards
- Unclear definitions – e.g.
  - “Comprehensive Development”
  - “Area Under Study”
  - “Unique Site”
  - “Major Project”

WHY ARE STANDARDIZED OCP DESIGNATIONS NEEDED?

- Support a conceptual, regional land use plan (Metro 2050)
- Benefits to member jurisdictions
- Support better regional planning and utility investments (transit, water and sewer)

- **662** unique land use designations across the region were translated into **22** generalized land use categories

STANDARDIZATION PROCESS

MV 2020 land use classes

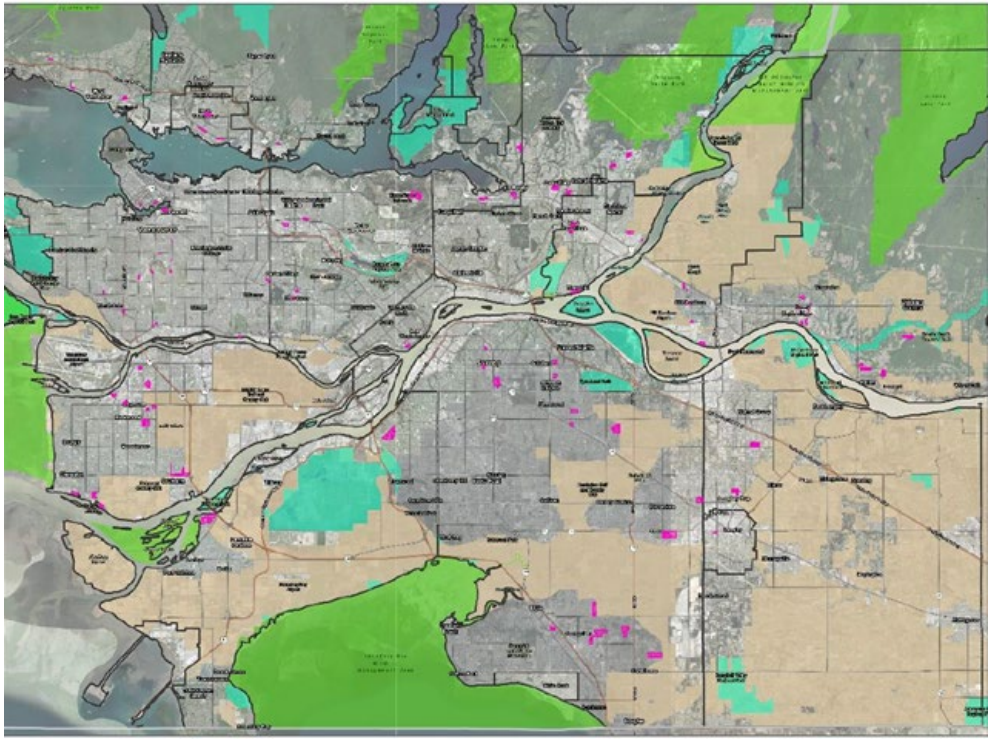
OCP designations

GIS data clean-up

Assessment matrix

Site sampling exercise

Standardized OCP designations



AGGREGATION

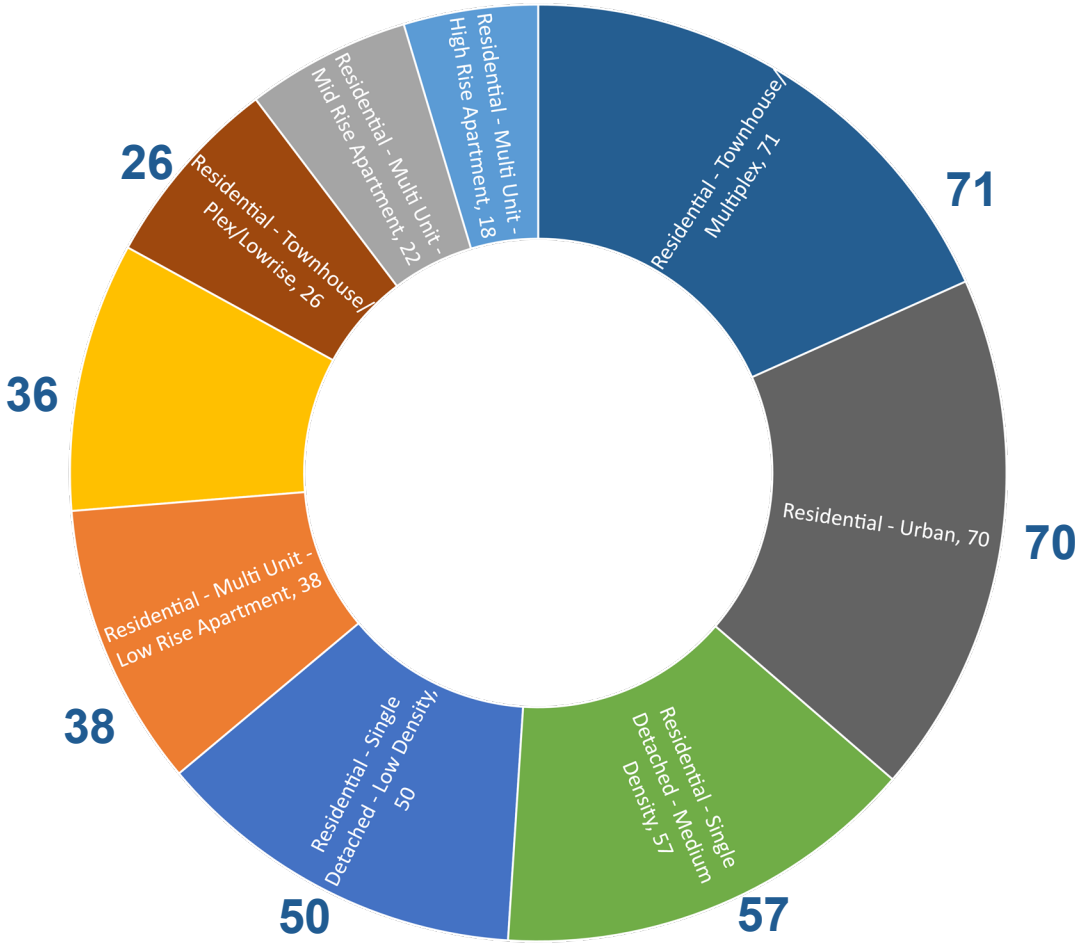
Residential designations

Employment lands – residential permitted:

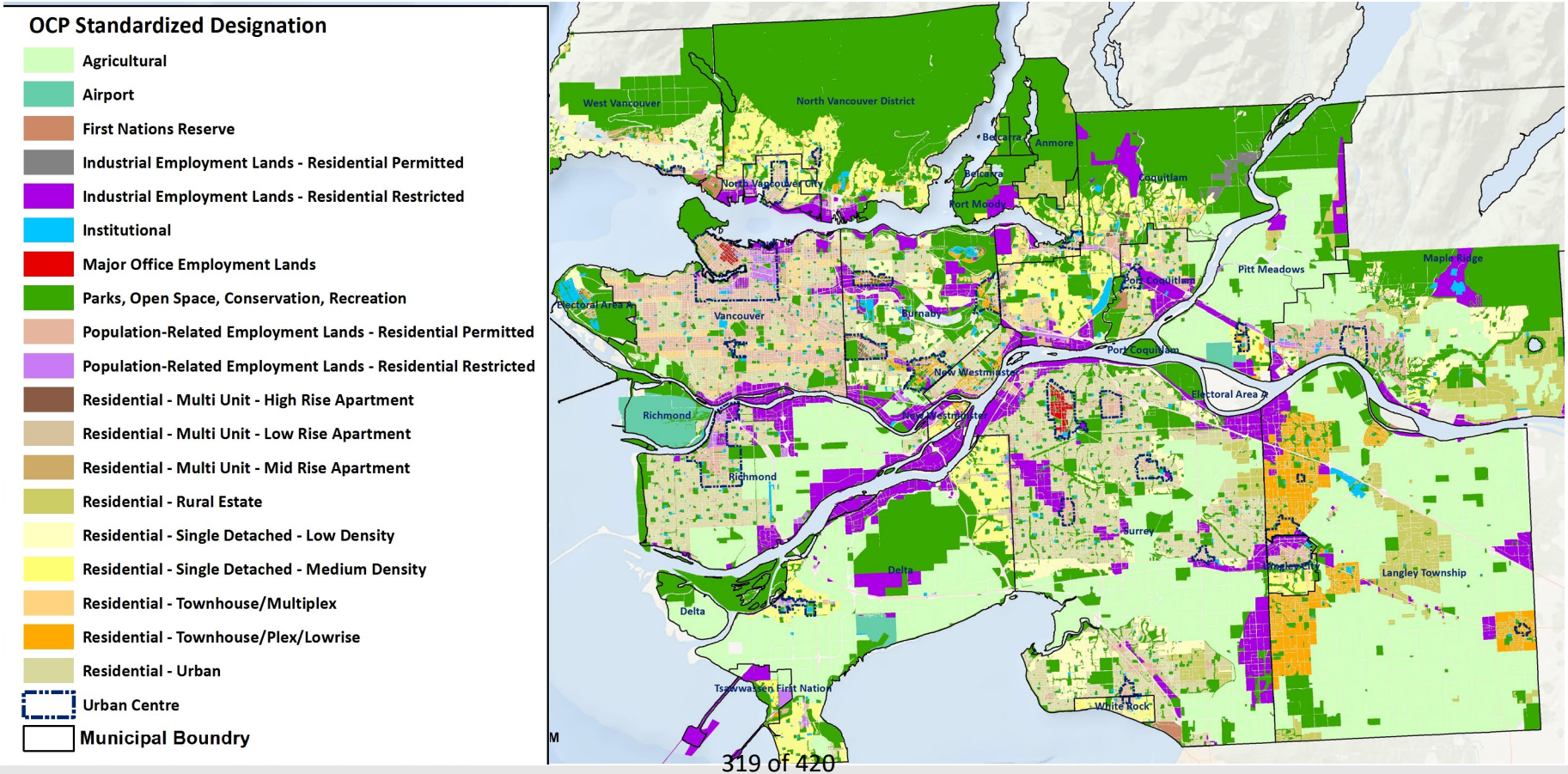
- 288 different designations

Industrial employment lands – residential restricted:

- 202 different designations



STANDARDIZED OCP DESIGNATIONS

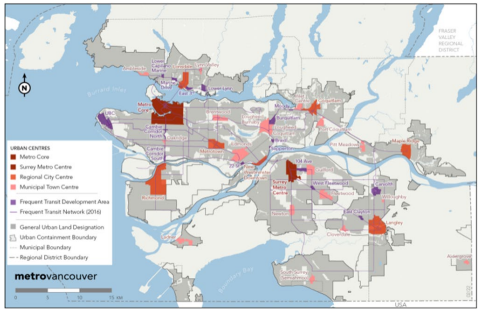


Residential Growth Capacity

FINITE NUMBER OF UNITS POSSIBLE ANNUALLY

~35,000 people

Regional annual growth

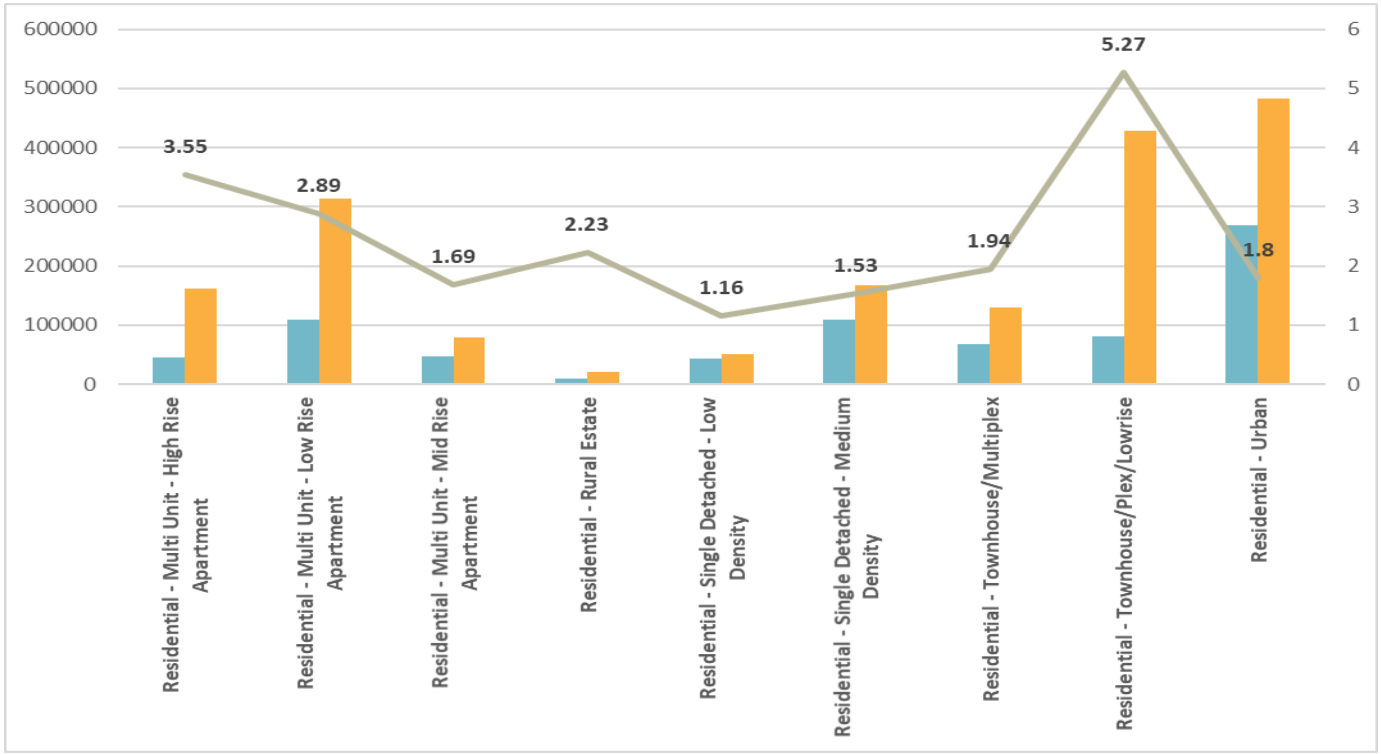


Growth allocation (2/3rds to Centres and transit corridors)

- Metro 2050
  - UCB
  - LUD
  - Centres/FTDA
- OCP
  - OCP designations
  - Zoning
  - Density bonus
- Transit
- Infrastructure
- Market

BUILDING CAPACITY?

Theoretical Building Capacity vs. Current (2020) Units, by housing type



Land demand

RESIDENTIAL LAND DEMAND

Region-Wide Dwelling Unit Demand by 2050

Unit Types	Overall Demand by 2050	% of Total by 2050	% of Total in 2020
Single Detached	324,833	20%	28%
Multi-Attached	306.640	19%	18%
Row House	195,995	12%	10%
Apartments	761,926	48%	44%
TOTAL	**1,589,394**		

LAND DEMAND AND DENSITY SCENARIOS

Sub Region	Residential Single Detached	Residential Townhouse	Residential multiplex	Residential - Low-rise Apartment	Residential - Mid/High-rise Apt
Burrard Peninsula					
South of Fraser – West					
North Shore					
Northeast					
Ridge Meadows					
South of Fraser East					

Employment

FUTURE EMPLOYMENT LAND DEMAND ESTIMATE (2021-2051)

Future Employment Net Land Demand Estimates, 2021-2051

Sub-region	Rural	Commercial	Industrial	Institutional	Total (sub-region)
Burrard Peninsula					
North Shore					
Northeast					
Ridge Meadows					
South of Fraser - East					
South of Fraser - West					

ESTIMATED INTENSIFICATION

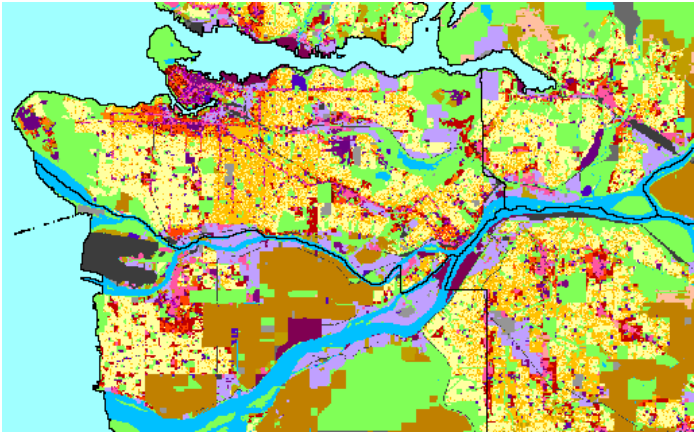
Employment Land Gap Analysis (2021-2051)

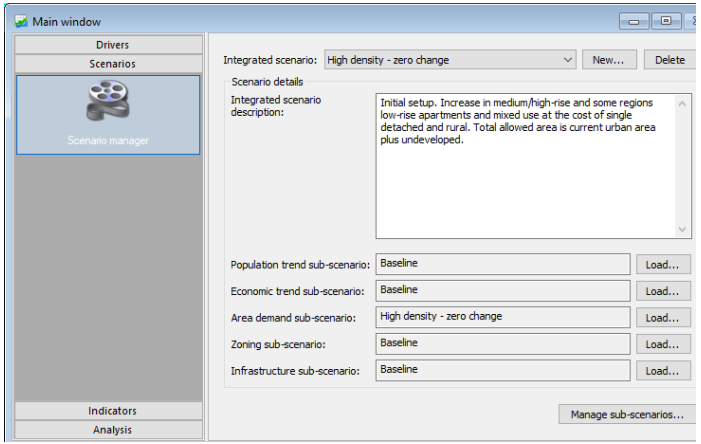
Sub-region	Rural	Commercial	Industrial	Institutional
Burrard Peninsula				
North Shore				
Northeast				
Ridge Meadows				
South of Fraser - East				
South of Fraser - West				

NEXT STEPS

Regional Land Use Model

- Land use assessment data will be input into the Regional Land Use Model
- A scenario-based model that will forecast land use to 2050
- A planning and decision support tool that will allow policy testing at the regional and municipal scales





Thank You

metrovancouver

To: Regional Planning Committee

From: Carla Stewart, Senior Planner, Regional Planning and Housing Services

Date: April 20, 2023 Meeting Date: May 12, 2023

Subject: **2023 Agriculture Awareness Grant Recommendations**

RECOMMENDATION

That the MVRD Board award the annual Agriculture Awareness Grants, as presented in the report dated April 20, 2023, titled "2023 Agriculture Awareness Grant Recommendations", to the following 14 non-profit organizations:

a) BC Agriculture in the Classroom, for "Take a Bite of BC" in the amount of $5,000;
b) BC Chicken Grower's Association, for "Poultry in Motion Educational Mini Barn Program" in the amount of $4,000;
c) CEED Centre Society, for "CEED Centre Farm Market + Urban Ag Educational Series" in the amount of $2,000;
d) Delta Farmland and Wildlife Trust, for "Day at the Farm" in the amount of $1,750;
e) Earthwise Society, for "Tomato Festival" in the amount of $2,000;
f) Environmental Youth Alliance, for "Plant Gifts for Community Projects" in the amount of $5,000;
g) Farm Folk/City Folk, for "Sustainable Bites: Growing Agricultural Awareness" in the amount of $5,000;
h) BC Association of Farmer's Markets, for "In the Raw: BC Farm and Food Champions" in the amount of $4,000;
i) Growing Chef's Society, for "Classroom Gardening & Cooking Program" in the amount of $3,000;
j) Langley Environmental Partners Society, for "Langley Eats Local" in the amount of $3,000;
k) The Sharing Farm, for "Garlic Festival" in the amount of $2,250;
l) Lower Mainland Sheep Producers Association, for "Wool n' Ewe A'Fair" in the amount of $4,500;
m) Society Promoting Environmental Awareness (SPEC), for "Growing Food Literacy and Food System Engagement Campaign" in the amount of $4,750; and
n) Village Vancouver Transition Society, for "Permaculture Corridor Expansion" in the amount of $3,750.

EXECUTIVE SUMMARY

Metro Vancouver has awarded annual grants for agriculture awareness since 2008, as recommended by the Metro Vancouver Agricultural Advisory Committee. Programs and outreach that support local sustainable food production are important contributions toward increasing awareness across the region. The funding provided through the Agriculture Awareness Grants is particularly valuable now for those community organizations doing public outreach on the value of producing or buying food close to home. This report supports those efforts by providing

recommendations to the Regional Planning Committee and MVRD Board to award a total of $50,000 in Agricultural Awareness Grants to 14 non-profit organizations in 2023.

PURPOSE

The purpose of this report is to recommend that the MVRD Board award $50,000 in grants to 14 non-profit organizations from around the region that are leading public awareness activities about the importance of local agriculture and food production and about educating residents on how to grow and cook food produced in the region.

BACKGROUND

The MVRD Board has supported agriculture awareness since 1994 to, in part, raise public understanding about the importance of local food and agriculture production in the region. The grant program started in 2008 and continues to provide annual funding to non-profit organizations that undertake such things as hosting events, workshops and educational programs in schools and communities. This report provides the MVRD with a summary of the applications and recommends the awards for 2023.

AGRICULTURE AWARENESS GRANTS

The number of applications and grants awarded over the past 15 years is listed by year in Table 1. A description of previous grant recipients (Reference 1) and a video highlighting the positive impacts for two of the 2022 grant recipients (Reference 2) is available on the Metro Vancouver website.

Table 1: Metro Vancouver Agricultural Awareness Grant Program 2008 – 2022

Year	Number of Applications	Number of Grants Awarded	Funding Awarded
2008	11	3	$25,000
2009	14	5	$25,000
2010	14	7	$30,000
2011	12	9	$35,000
2012	27	8	$35,000
2013	13	9	$40,000
2014	15	11	$40,000
2015	14	11	$40,000
2016	12	11	$40,000
2017	21	13	$40,000
2018	24	12	$40,000
2019	15	13	$45,000
2020	21	12	$45,000
2021	14	11	$50,000
2022	16	14	$50,000
TOTAL	**243**	**149**	**$580,000**

In 2022, a total of $50,000 in Agricultural Awareness Grants was awarded to 14 non-profit organizations. Most of the projects funded through the program were able to complete their work program. Some organizations are in the last stages of completing their projects and will be submitting their final project reporting over the next several months. Some organizations have not

submitted their final reports and additional follow-up is required to determine if the project was completed and met its objectives.

GRANT APPLICATION EVALUATION CRITERIA

The mandatory requirements for agricultural awareness projects receiving a grant are:

a) have a regional scope (i.e. impacting more than one municipality);
b) be located in Metro Vancouver;
c) be administered by a non-profit organization in good standing; and
d) have matching funding (dollars or in-kind) from another organization.

The six evaluation criteria and basis for scoring are the following:

1. The agriculture awareness activity is unique. A high score will be given to awareness activities that are one of a kind in the region and are currently not being done by another organization in Metro Vancouver.
2. The geographic scope of the grants awarded reaches out to municipalities across the region. A high score will be awarded to projects that provide a broad reach in Metro Vancouver or are targetting areas that are currently not well served by agriculture awareness activities.
3. The activity reaches out to culturally diverse audiences, urban residents, youth or K-12 school aged children. A high score will be awarded when these audiences are targetted in the awareness activity.
4. The activity contributes to the following desirable outcomes that support regional policy objectives, where a high score is awarded when the agriculture awareness activity aligns with two or more of the regional policy objectives:
    - Educates residents about local food production;
    - Enhances food literacy and skills in schools;
    - Communicates how food choices support the local economy;
    - Supports the next generation of food producers; and
    - Involves community gatherings that educate residents about local food.
5. The grant request is in the range of $500 to $6,000. A higher score will be awarded if the Metro Vancouver cash contribution is greater than 20% of the total cash budget, so that projects that may have a greater financial need are prioritized.
6. The extent to which grant applicants have received previous Agriculture Awareness Grant funding, and the completion of the imposed conditions listed on the application form. Groups that have not previously received a grant would automatically score high, while the previous grant recipients would be scored based on past compliance with the five conditions.

2022 AGRICULTURE AWARENESS GRANTS

On February 3, 2023, agricultural-related organizations, community groups and municipal staff liaisons were notified about Metro Vancouver's 2023 Agriculture Awareness grants with an invitation to submit an application which was available on the Metro Vancouver website. 16 applications were received by the March 3, 2023 deadline.

The grant applications were initially evaluated by staff using the mandatory requirements and evaluation criteria listed above. The evaluation results were confirmed by the Metro Vancouver Agricultural Advisory Committee at its meeting on April, 20, 2023. Table 2, shown below, highlights the 2023 Agriculture Awareness Grant applications submitted by non-profit organizations, and the recommended grants. Each funding request was reviewed based on the amount of additional funding available to that organization and the overall amount that the organization was relying on the grant funding. The proposed grants being recommended were deemed to be the fairest based on the information received in each application. A summary description of all of the applications is provided in the attachment and a list of all the recommended Agriculture Awareness Grants is provided in Table 2.

Table 2: List of Recommended 2023 Agriculture Awareness Grant Amounts

#	NON-PROFIT GROUP	PROJECT TITLE	GRANT REQUEST	RECOMMENDED GRANT
1	BC Agriculture in the Classroom	Take a Bite of BC	$6,000	$5,000
2	BC Chicken Grower's Association	Poultry in Motion Educational Mini Barn Program	$5,000	$4,000
3	CEED Centre Society	CEED Centre Farm Market + Urban Ag Educational Series	$5,000	$2,000
4	Delta Farmland and Wildlife Trust	Day at the Farm	$2,000	$1,750
5	Earthwise Society	Tomato Festival	$2,500	$2,000
6	Environmental Youth Alliance	Plant Gifts for Community Project	$6,000	$5,000
7	FarmFolk/CityFolk	Sustainable Bites: Growing Agricultural Awareness	$6,000	$5,000
8	BC Association of Farmer's Markets	In the Raw: BC Farm and Food Champions	$5,000	$4,000
9	Growing Chef's Society	Classroom Gardening & Cooking Program	$6,000	$3,000
10	Langley Environmental Partners Society	Langley Eats Local	$6,000	$3,000
11	The Sharing Farm	Garlic Fest	$3,000	$2,250
12	Lower Mainland Sheep Producers Association	Wool n 'Ewe A'Fair	$6,000	$4,500
13	Society Promoting Environmental Awareness (SPEC)	Growing Food Literacy and Food System Engagement Campaign	$6,000	$4,750
14	Village Vancouver Transition Society	Permaculture Corridor Expansion	$6,000	$3,750
Total			**$70,500**	**$50,000**

ALTERNATIVES

1. That the MVRD Board award the annual Agriculture Awareness Grants, as presented in the report dated April 20, 2023, titled "2023 Agriculture Awareness Grant Recommendations", to the following 14 non-profit organizations:
   a) BC Agriculture in the Classroom, for "Take a Bite of BC" in the amount of $5,000;

b) BC Chicken Grower's Association, for "Poultry in Motion Educational Mini Barn Program" in the amount of $4,000;
c) CEED Centre Society, for "CEED Centre Farm Market + Urban Ag Educational Series" in the amount of $2,000;
d) Delta Farmland and Wildlife Trust, for "Day at the Farm" in the amount of $1,750;
e) Earthwise Society, for "Tomato Festival" in the amount of $2,000;
f) Environmental Youth Alliance, for "Plant Gifts for Community Projects" in the amount of $5,000;
g) FarmFolk/City Folk, for "Sustainable Bites: Growing Agricultural Awareness" in the amount of $5,000;
h) BC Association of Farmer's Markets, for "In the Raw: BC Farm and Food Champions" in the amount of $4,000;
i) Growing Chef's Society, for "Classroom Gardening & Cooking Program" in the amount of $3,000;
j) Langley Environmental Partners Society, for "Langley Eats Local" in the amount of $3,000;
k) The Sharing Farm, for "Garlic Festival" in the amount of $2,250;
l) Lower Mainland Sheep Producers Association, for "Wool n' Ewe A'Fair" in the amount of $4,500;
m) Society Promoting Environmental Awareness (SPEC), for "Growing Food Literacy and Food System Engagement Campaign" in the amount of $4,750; and
n) Village Vancouver Transition Society, for "Permaculture Corridor Expansion" in the amount of $3,750.

2. That the MVRD Board receive for information the report dated April 20, 2023 titled "2023 Agriculture Awareness Grant Recommendations" and provide alternative direction to staff.

FINANCIAL IMPLICATIONS

The total funds available for the Agriculture Awareness Grants in 2023 is $50,000. This amount is included in the Board-approved Regional Planning budget for 2023. If the Board chooses Alternative 1, the 14 successful grant recipients will be notified.

CONCLUSION

Based on the evaluation by Metro Vancouver Agricultural Advisory Committee members and by Metro Vancouver staff, 14 non-profit organizations are recommended to receive a 2023 Agriculture Awareness Grant, for a total amount of $50,000. The recommendations enable the continuation of successful educational programs and community agriculture-related events in 2023. Staff recommend Alternative 1.

Attachment

Full List of 2023 Agriculture Awareness Grant Applications

References

1. Previous Agriculture Awareness Grant Recipients
2. 2022 Agriculture Awareness Grant Video

56942017

Full List of 2023 Agriculture Awareness Applications

#	NON-PROFIT GROUP	PROJECT TITLE	BRIEF PROJECT DESCRIPTION	GRANT REQUEST	TOTAL BUDGET
1	BC Agriculture in the Classroom	Take a Bite of BC	Provides fresh BC grown products to BC Culinary Arts Secondary schools.	$6,000	$33,000
2	BC Chicken Grower's Association	Poultry in Motion Educational Mini Barn Program	Mobile mini barn used for public awareness about food safety, nutrition, animal care and bio-security.	$5,000	$65,780
3	CEED Centre Society	CEED Centre Farm Market + Urban Ag Educational Series	Inform the public how produce is grown by small local farms and how to grow their own food in an urban environment.	$5,000	$20,350
4	Delta Farmland and Wildlife Trust	Day at the Farm	Day event to increase awareness and support for local agriculture with a focus on local, sustainable agriculture.	$2,000	$47,475
5	Earthwise Society	Tomato Festival	Family-friendly community gathering and celebration of the history and diversity of BC agriculture.	$2,500	$6,000
6	Environmental Youth Alliance	Plant Gifts for Community Project	Opportunity for youth from equity-deserving communities to gain hands-on skills in native plant food and medicine production.	$6,000	$26,000
7	FarmFolk/CityFolk	Sustainable Bites: Growing Agricultural Awareness	Encourage residents to learn about and advance climate-friendly, resilient, thriving, sustainable food systems.	$6,000	$14,000
8	BC Association of Farmer's Markets	In the Raw: BC Farm and Food Champions	A travelling photography exhibit illustrating the story behind the local farmers who grow our food.	$5,000	$5,000
9	Growing Chef's Society	Classroom Gardening & Cooking Program	Hands-on education of elementary school students about local food options and how food choices affect their health, community, environment and economy.	$6,000	$241,473
10	Langley Environmental Partners Society	Langley Eats Local	Interactive learning experiences to school children about where food comes from.	$6,000	$57,200
11	Little Mountain Neighbourhood House	Feeding Our Future: Building our Collective Food Security Resilience	Increase food security and resilience in Little Mountain-Riley Park Neighbourhood.	$6,000	$13,660
12	Richmond Food Security Society/Urban Bounty	Climate Action in Urban Gardens - Boots on the Ground	Increase community education and awareness around climate adaptation in city gardens.	$5,000	$25,000
13	The Sharing Farm	Garlic Fest	Event to celebrate local, sustainable agriculture.	$3,000	$31,600
14	Lower Mainland Sheep Producers Association	Wool n 'Ewe A'Fair	Component of the Maple Ridge / Pitt Meadows Country Fest providing education and awareness of wool production.	$6,000	$7,830
15	Society Promoting Environmental Awareness (SPEC)	Growing Food Literacy and Food System Engagement Campaign	Create systems change through awareness, public engagement, volunteerism, and connection to nature.	$6,000	$12,000
16	Village Vancouver Transition Society	Permaculture Corridor Expansion	Expand geographic scope of food production and food knowledge and skill building in urban areas.	$6,000	$21,712
			TOTALS	**$81,500**	**$628,080**

To: Regional Planning Committee

From: Jonathan Cote, Deputy General Manager, Regional Planning and Housing Development, Regional Planning and Housing Services

Date: April 18, 2023 Meeting Date: May 12, 2023

Subject: **Manager's Report**

RECOMMENDATION

That the Regional Planning Committee receive for information the report dated April 18, 2023, titled "Manager's Report".

REGIONAL PLANNING COMMITTEE 2023 WORK PLAN

The Regional Planning Committee's Work Plan for 2023 is attached to this report (Attachment 1). The status of work program elements is indicated as pending, in progress, ongoing or complete. The listing is updated as needed to include new issues that arise, items requested by the Committee, and changes to the schedule.

REGIONAL LAND USE ASSESSMENT PROJECT

Starting in early 2022, Metro Vancouver initiated a Regional Land Use Assessment project funded by the Metro Vancouver Sustainability Innovation Fund. The project work was undertaken by a consultant and completed in early 2023. The project involved collecting parcel-level land use data across the region to establish a comprehensive, region-wide inventory of all land uses across Metro Vancouver and their respective attributes, based on Official Community Plan land use designations and the associated development densities.

The project included the preparation of a regional 'land budget' of the current supply and anticipated projected demand by land use category. This land supply / demand model was compared to the regional projections for population, housing, and employment that were prepared for *Metro 2050*. This analysis will provide staff the needed data for a forecasting model which is currently being developed by Regional Planning. The data from the project will also assist with Metro Vancouver utility planning to understand development and potential intensity, and where infrastructure investments would be priorities. The results may also inform future opportunities for more optimized locations and uses of land to support regional policy objectives, infrastructure investments, and inform staff's evaluation of regional land use and policy change requests.

REGIONAL PLANNING TRANSPORTATION PORTFOLIO UPDATE

At its April 14, 2023 meeting, the Regional Planning Committee received for information a report dated March 21, 2023, titled "Regional Planning Transportation Portfolio Update". The report provided an overview of Metro Vancouver's role in regional transportation planning, focusing on the key projects and initiatives identified in the Regional Planning Committee's 2023 Work Plan. The report outlined:

- the connection between land use and transportation planning;

- policy highlights from Goal 5 of *Metro 2050;*
- specific projects such as the Housing + Transportation Cost Burden Study Update and Regional Parking Strategy; and
- ongoing coordination and collaboration on external transportation initiatives.

The associated presentation slides are attached to this report for reference (Attachment 2).

CANADA AND BC HEAD OFFICES AND JOBS REPORT

A recent report by the Business Council of British Columbia (BCBC) examines the number of head offices and head office jobs in British Columbia and Canada over the past decade (Reference). The presence of corporate head offices plays important roles in the economy, including: creating demand for high value-added activity, high-paying jobs and ancillary services; contributing to an innovation ecosystem; generating significant tax revenues; and supporting university research, the arts and charities. Corporate business tenants also required office space accommodations, which in turn drives demand for new office building development.

According to the report, Canada and BC are losing head offices. Between 2012 and 2021, one-in-twenty-five Canadian head offices closed or merged with other companies. There was also a decline in the average size of the remaining corporate headquarters, with a one-in-twenty decline in head office staff. Although BC is Canada's strategic gateway to trade with the Asia-Pacific region, and despite representing 14% of Canada's population, BC is home to only 12% of its head offices. The province has lost nine head offices since 2012. BC punches even further below its weight on head office employment, with only 8% of Canadian head office jobs. In other words, BC's corporate head offices tend to be smaller than those in other provinces – as well as being proportionately fewer in number.

Attachments

1. Regional Planning Committee 2023 Work Plan
2. Regional Planning Transportation Portfolio Update Presentation Slides

References

Canada and BC Head Offices and Jobs Report

59097429

Regional Planning Committee 2023 Work Plan

Report Date: April 18, 2023

Priorities

1st Quarter	Status
E-Commerce Study Findings	Complete
Municipal Liaison Review Implementation	Complete
Adoption of Metro 2050	Complete
Metro 2050 Climate Policy Enhancement Project – Scope	Complete
Equity Study Phase 3 – Final Report	Complete
Tree Canopy Cover and Impervious Services Update – Scope	Complete
Metro Vancouver Office Inventory Update	In Progress
Community and Social Data Model – Phase 1	Complete
2nd Quarter	**Status**
Ecosystem Services on Agricultural Lands	Complete
Regional Food Systems Strategy Update - Scope	Pending
Agricultural Land Protection and Viability Strategy – Scope	Pending
Sensitive Ecosystem Inventory	In Progress
Transportation Corridor Study	In Progress
Housing + Transportation Cost Study Update	In Progress
Metro 2050 Implementation Guidelines – Phase 1 (Technical Documents)	In Progress
Develop Immigration Model	In Progress
Metro Vancouver 3D Model	In Progress
Community and Social Data Model – Phase 2	In Progress
3rd Quarter	**Status**
Conduct Urban Centres and FTDAs Policy and Target Review	Pending
Recommended Actions – Industrial Land Strategy	Pending
Regional Green Infrastructure Network Guidelines	In Progress
Metro 2050 Climate Policy Enhancement Project	In Progress
Metro 2050 Implementation Guidelines – Phase 2 (Best Practice Guide)	In Progress
Regional Land Use Model	In Progress
Metro Vancouver Regional Data Book	Pending
4th Quarter	**Status**
Regional Food Strategy Update	Pending
Regional Green Infrastructure Network Guidelines	Pending
Sensitive Ecosystem Inventory	Pending
Regional Parking Strategy	In Progress
Agricultural Land Use Inventory	In Progress
Agricultural Data Book	Pending
Metro Vancouver Housing Data Book	Pending
2021 Census Custom Data Report Outs	Pending

Regional Planning Transportation Portfolio Update

Mark Seinen

Senior Planner, Regional Planning and Housing Services

Regional Planning Committee | April 14, 2023

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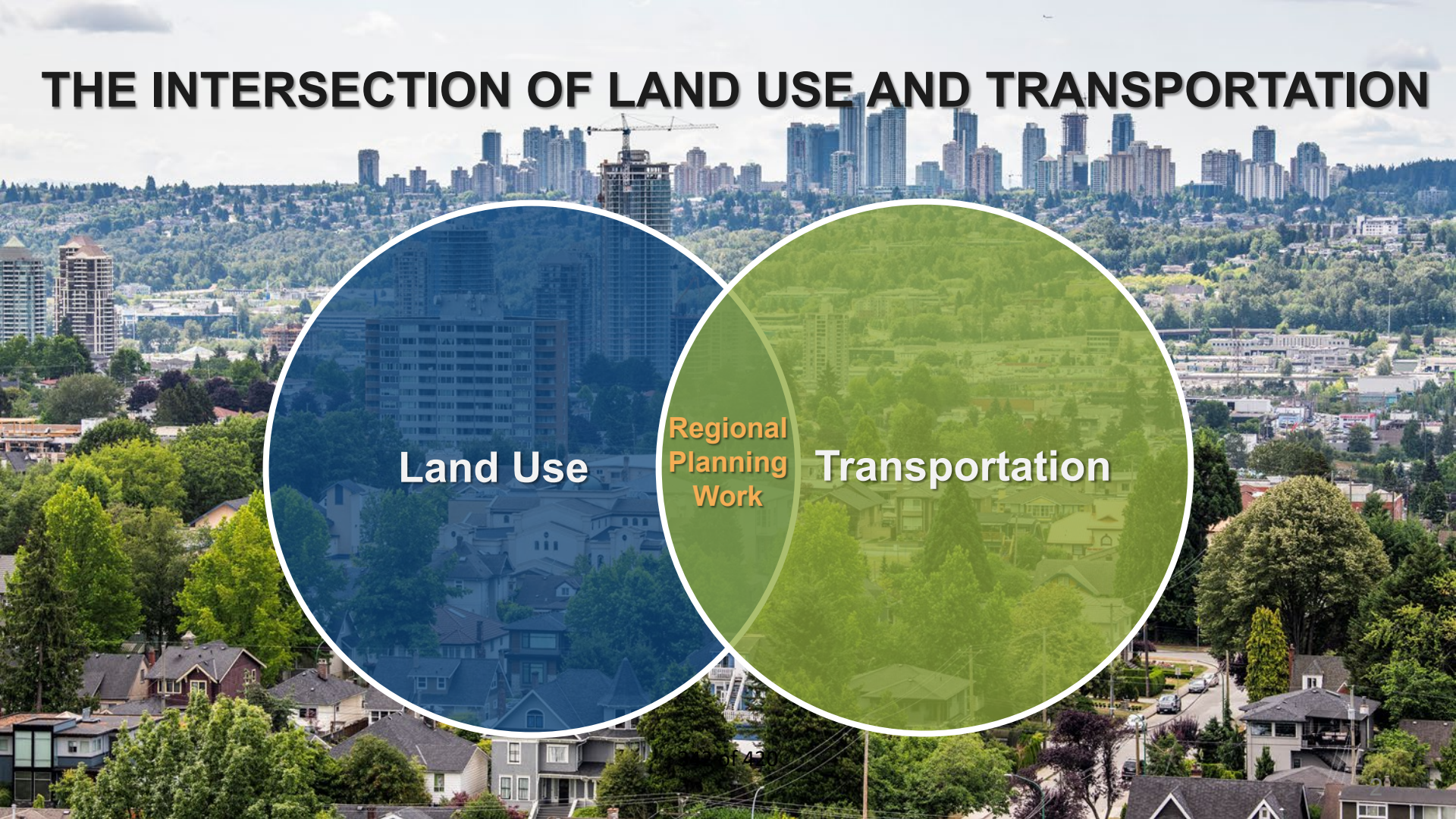
THE INTERSECTION OF LAND USE AND TRANSPORTATION



GOAL 5 OF METRO 2050

Support Sustainable Transportation Choices

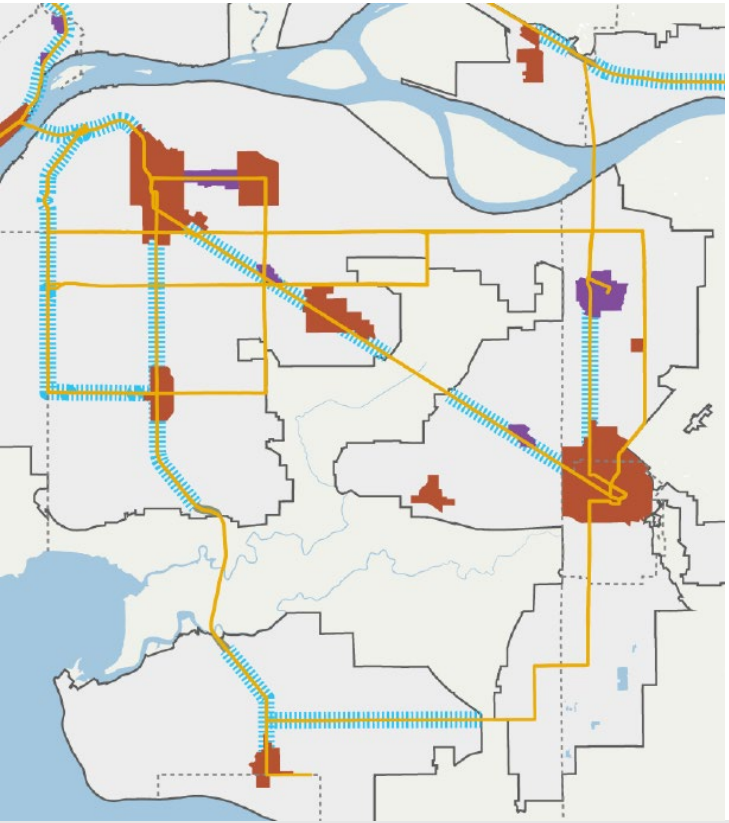
- Coordinate land use and transportation
- Support the safe and efficient movement of vehicles for passengers, goods, services

GOAL 5 OF METRO 2050

What's new?

- Major Transit Growth Corridors
- Major Transit Network
- Regional Cycling Network
- Regional Parking Strategy
- TransLink's role in affordable housing
- Enhance system resilience
- Micro-mobility and zero-emission vehicles

MAJOR TRANSIT GROWTH CORRIDORS



- **Anchored** by Urban Centres or FTDAs
- **Connected** by the Major Transit Network
- **Resilient** to natural hazards
- **Accessible** to jobs and services
- **Walkable**

PROJECTS: HOUSING + TRANSPORTATION COST BURDEN STUDY UPDATE

- Investigate impact of combined H+T costs
- Use latest available data
- Assess changing housing costs and transportation patterns

PROJECTS: REGIONAL PARKING STRATEGY

- Objectives include: right-size parking supply, manage on-street parking, decrease driving, reduce construction costs
- Provide guidance sensitive to local context
- Partnership with TransLink and member jurisdictions

PROJECTS: TRANSPORTATION CORRIDOR STUDIES / MONITORING

- Marine-Main
- Lougheed
- Broadway Subway Project
- Surrey-Langley SkyTrain
- 196 St Joint TOD Study
- 200 St Corridor Study

COORDINATION WITH EXTERNAL AGENCIES

- Greater Vancouver Regional Fund (“Gas Tax Fund”)
- 10-Year Investment Plan
- Major projects
- Committee involvement

Thank you

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SERVICES AND SOLUTIONS FOR A LIVABLE REGION

To: Climate Action Committee

From: Edward Nichol, Regional Planner, Regional Planning and Housing Services
Josephine Clark, Natural Resource Management Planner, Parks and Environment
Jason Emmert, Program Manager, Climate Policy, Parks and Environment

Date: February 15, 2023 Meeting Date: April 6, 2023

Subject: **Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap**

RECOMMENDATION

That the MVRD Board:

a) endorse the *Climate 2050 Nature and Ecosystems Roadmap* as attached to the report dated February 15, 2023, titled "Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap" as the initial Roadmap to achieve the *Climate 2050* vision, goals, and targets for a carbon neutral and resilient region supported by healthy and biodiverse ecosystems;
b) direct staff to continue working with member jurisdictions and other partners to implement the actions in the *Climate 2050 Nature and Ecosystems Roadmap*; and
c) direct staff to update the Roadmap, as needed, in response to new information.

EXECUTIVE SUMMARY

This report presents the *Climate 2050 Nature and Ecosystems Roadmap*, one of ten *Climate 2050* Roadmaps that will guide our region's policies and collective actions to transition to a carbon neutral, resilient region by 2050. The region's ecosystems store approximately 65 million tonnes of carbon, sequestering an additional one million tonnes of carbon from the atmosphere each year and providing additional biodiversity, resilience, and human health co-benefits. To maximize these benefits, the *Climate 2050 Nature and Ecosystems Roadmap* lays out strategies and actions to protect and restore ecosystems, connect green infrastructure, integrate natural assets, support a resilient urban forest, and advance nature-based solutions to climate change. Like the other *Climate 2050* Roadmaps, the Nature and Ecosystems Roadmap is intended to be dynamic, and change over time, in response to opportunities. To achieve the vision, goals and targets established in this Roadmap, Metro Vancouver and its partners need to implement the actions as soon as possible, using the full extent of each agency's authority, while continuing to explore new opportunities to enhance existing actions and for additional actions. A draft of the Nature and Ecosystems Roadmap was presented to the Climate Action Committee and MVRD Board in April 2022. Staff have since completed engagement through a number of avenues, and have included a summary of key feedback that has been considered in finalizing the *Nature and Ecosystems Roadmap*. This report seeks endorsement of the *Climate 2050 Nature and Ecosystems Roadmap* by the MVRD Board.

PURPOSE

This report presents the *Climate 2050 Nature and Ecosystems* Roadmap, seeking endorsement by the MVRD Board.

BACKGROUND

In September 2018, the MVRD Board adopted the *Climate 2050 Strategic Framework* and directed staff to initiate development of the *Climate 2050* Roadmaps. The Board subsequently authorized staff to begin an engagement process for *Climate 2050*, using a series of issue area discussion papers related to the ten Roadmaps. The Climate Action Committee received the *Climate 2050 Discussion Paper on Nature and Ecosystems* at its May 2020 meeting (Reference 1). Following engagement on the Discussion Paper, a draft *Nature and Ecosystems Roadmap* was provided to the Climate Action Committee at its April 2022 meeting (Reference 2). With the completion of engagement on the draft Roadmap, staff have now finalized the *Climate 2050 Nature and Ecosystems Roadmap* (Attachment), and are seeking endorsement by the Board.

CLIMATE 2050

Climate 2050 will guide our region's policies and collective actions to transition to a carbon neutral and resilient region over the next 30 years. *Climate 2050* is being implemented through ten issue area Roadmaps, which will describe long-term goals, targets, strategies and actions to reduce regional greenhouse gases and ensure that this region is resilient to climate change impacts. Implementation of the Roadmaps will be driven by Metro Vancouver's management plans including the *Clean Air Plan*, *Metro 2050* (the regional growth strategy) and the *Regional Parks Plan 2022*.

METRO VANCOUVER'S CLIMATE 2050 NATURE AND ECOSYSTEMS ROADMAP

The *Climate 2050 Nature and Ecosystems Roadmap* supports the vision to achieve a carbon neutral and resilient region through healthy and biodiverse ecosystems. In addition to outlining challenges and benefits, the *Climate 2050 Nature and Ecosystems Roadmap* lays out 31 actions for storing carbon and building resilience, organized under the following five strategic areas:

1. Protect, Restore, and Enhance the Region's Ecosystems
2. Connect Green Infrastructure
3. Integrate Natural Assets into Conventional Asset Management and Decision-Making Processes
4. Support a Resilient, Robust, and Healthy Urban Forest
5. Advance Nature-based Solutions to Climate Change

Big Moves in the *Nature and Ecosystems Roadmap*

Among the 31 actions, the *Climate 2050 Nature and Ecosystems Roadmap* identifies the following seven Big Moves:

1. Protect an Additional 10% of the Region for Nature
2. Develop a Regional Green Infrastructure Network
3. Incorporate Natural Assets into Asset Management and Financial Planning
4. Integrate Ecosystems and their Services into the Design of Major Infrastructure
5. Achieve 40% Tree Canopy Cover Within the Region's Urban Areas
6. Explore Innovative Funding and Incentive Programs
7. Plan for Climate Change Impacts on Ecosystems

The *Climate 2050 Nature and Ecosystems Roadmap* proposes an implementation timeline to encourage swift early action on key issues. Given the timelines and ambitious targets and goals, staff have continued to advance relevant work plan items across departments and collaborate with

other governments and partners while planning and developing the Roadmap.

Metro Vancouver is working to ensure Roadmap content is accessible to a broad audience. As Roadmap content is endorsed and published in full, staff will also provide an executive summary and unpack the Roadmap content in plain language as a web resource.

Potential Impact on Greenhouse Gas Emissions
A conservative estimate of the carbon stored in the vegetation and soils of the region's ecosystems (such as wetlands, forests, and riparian areas) is 65 million tonnes. Every year, an estimated one million tonnes of additional carbon is sequestered from the atmosphere and added to the carbon stores held by the region's ecosystems. Protection of ecosystems helps ensure stored carbon remains locked away and ongoing sequestration of carbon continues. Restoration and enhancement of ecosystems improves the region's long-term carbon storage potential.

Carbon sequestration and storage is one of the many benefits achieved through ecosystem protection and restoration. However, significantly increasing the amount of carbon stored in ecosystems requires large areas and long timeframes. While the *Climate 2050 Nature and Ecosystem Roadmap* actions are supplemental solutions to the greenhouse gas emissions reduction actions outlined in other *Climate 2050* Roadmaps, they are still essential to meeting the regional target of a carbon neutral region by 2050.

Potential Impact on Regional Resilience
Actions related to nature and ecosystems are integrated climate solutions in that they help to both store carbon and increase resilience. Resilience is increased through a broad range of 'ecosystem services' including cooling and shading urban areas, capturing and cleaning stormwater, moderating floods, and reducing the impacts of coastal storms. To provide these services, ecosystems must be healthy, biodiverse, and able to withstand the impacts of climate change. Protecting, restoring and enhancing nature and ecosystems maximizes their ability to provide climate resilience benefits to the region.

Implementation of the Nature and Ecosystems Roadmap
The actions in the *Climate 2050 Nature and Ecosystems Roadmap* will be implemented through Metro Vancouver's regulatory and planning authority, delivery of regional services, and its role as convener of and advocate for issues of regional significance. The Roadmap considers equity and identifies opportunities to reduce disproportionate impacts. It also identifies actions for implementation by other governments and organizations. Progress on achieving the goals and targets will be measured against key performance indicators, and reported publically.

Climate 2050 Nature and Ecosystems Roadmap, Regional Parks Plan and Metro 2050
Metro Vancouver works with member jurisdictions to develop, implement and steward *Metro 2050*, the regional growth strategy. The strategy represents the regional federation's ongoing commitment to building a compact metropolitan region - where approximately two thirds of the land is designated for agricultural, recreational, and conservation uses. *Metro 2050* defines actions and directions for Metro Vancouver, member jurisdictions, and TransLink. Though *Metro 2050* and *Climate 2050* are distinct plans, they are intended to be mutually supportive, with policies and

actions that are complementary and focused on common objectives. The *Climate 2050 Nature and Ecosystems Roadmap* builds on *Metro 2050* with further actions to protect stores of carbon and build resiliency with nature and ecosystems.

Important connections also exist between the *Climate 2050 Nature and Ecosystems Roadmap* and the *Regional Parks Plan 2022*. Metro Vancouver manages regional parks to protect important natural areas across the region and provide opportunities for people to connect with nature. The *Regional Parks Plan 2022* was updated to more fully address climate change and incorporates many actions from the *Climate 2050 Nature and Ecosystems Roadmap*.

CONSULTATION AND ENGAGEMENT PROCESS

The full draft Roadmap was publically available on the Metro Vancouver website from June to February 2023 and the opportunity to provide comments and feedback forms was promoted to relevant Metro Vancouver Advisory Committees, as well as through emails, online newsletters, social media platforms, and a recorded webinar. Staff engaged with those likely to comment, be impacted or have a role in implementation, including targeted meetings with key subject matter experts, municipal staff, environmental NGOs and First Nations.

Summary of Feedback

Interest	**How We're Responding**
Action 5.1	*What we heard:* • Implementation of Action 5.1 should begin sooner than 2024-2029; • There are opportunities to incorporate innovative financial mechanisms into other strategies (e.g. Strategy 1); and • There is no reference to gauging public support for various financial mechanisms such as conservation funds. *How we're responding:* • Action will now begin in 2021-2023; • Language was added to clarify that the outcomes of action 5.1 may support the implementation of other Roadmap strategies; and • Language was updated to reflect the need for gauging public support in Action 5.1.
Convening partners and sharing information	*What we heard:* • The document could further emphasize Metro Vancouver's role in convening other partners and sharing information. *How we're responding:* • Edits were applied to action 1.8, 2.2, 3.4, and 4.2 to reflect the importance of convening partners and sharing information.
Advancing green infrastructure	*What we heard:* • There are potential conflicting priorities between utility and drainage access points and green infrastructure implementation. *How we're responding:* • Metro Vancouver staff are working internally to integrate and align green infrastructure priorities across departments.

Feedback Received Through Other Management Plans

In addition to engagement on the draft Roadmap, relevant feedback was also received through updates to the regional growth strategy (*Metro 2050*) and the regional parks plan which took place during the same timeframe.

Many actions that received strong engagement support through *Metro 2050* were brought forward into the Nature and Ecosystems Roadmap, such as including regional targets for land protection and tree canopy cover, and the identification of a regional green infrastructure network.

Relevant feedback received through engagement for the *Regional Parks Plan 2022* included recognition of the importance of protecting nature, enhancing ecosystem connectivity, and the role of nature in human health and regional resilience.

First Nations Engagement

In 2022, staff sent an engagement letter to the ten in-region First Nations, inviting input on the Roadmap. Feedback was received from two Nations. Key engagement themes included:

- An emphasis on future policy alignment and integration opportunities with traditional laws;
- Noted climate change impacts (such as flooding) and their impact on ecosystems and wildlife;
- Climate change impacts on culturally significant species, such as Western Red Cedar trees;
- Climate grief and anxiety associated with climate change and its impact on cultural traditions;
- The importance of exploring partnerships with First Nations on various Roadmap actions; and
- The importance of sharing best practices.

Unique to this Roadmap, staff also contracted with two Indigenous, and Indigenous-owned business consultants to 1) review the draft Roadmap and provide feedback on existing content, and 2) recommend additional opportunities to reflect Indigenous perspectives. Based on the consultant recommendations and internal engagement with Metro Vancouver's Indigenous Relations department, staff revised the Roadmap to reflect the importance of Indigenous Knowledge in various sections of the document.

ALTERNATIVES

1. That the MVRD Board:
   a) endorse the *Climate 2050 Nature and Ecosystems Roadmap* as attached to the report dated February 15, 2023, titled "Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap" as the initial Roadmap to achieve the *Climate 2050* vision, goals, and targets for a carbon neutral and resilient region supported by healthy and biodiverse ecosystems;
   b) direct staff to continue working with member jurisdictions and other partners to implement the actions in the *Climate 2050 Nature and Ecosystems Roadmap*; and
   c) direct staff to update the Roadmap, as needed, in response to new information.

2. That the MVRD Board:
   a) endorse the *Climate 2050 Nature and Ecosystems Roadmap* as attached to the report dated February 15, 2023, titled "Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap" as the initial Roadmap to achieve the *Climate 2050* vision, goals, and targets for a carbon neutral and resilient region supported by healthy and biodiverse ecosystems, with amendments proposed by the Climate Action Committee;
   b) direct staff to continue working with member jurisdictions and other partners to implement the actions in the *Climate 2050 Nature and Ecosystems Roadmap*; and
   c) direct staff to update the Roadmap, as needed, in response to new information.

3. That the MVRD Board receive for information the report dated February 15, 2023, titled "Metro Vancouver's Climate 2050 Nature and Ecosystems Roadmap" and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

The overall resources required to develop and engage on *Climate 2050* Roadmaps have been approved in program budgets for 2021 and 2022, including staff time and consulting expenditures. Continued alignment between *Climate 2050* Roadmaps and regional management plans is intended to make the best use of resources available, as well as minimize time commitments for interested parties providing feedback. The 2023 and subsequent annual budgets and five-year work plans will reflect the resource needs to begin implementation of actions in the *Climate 2050 Nature and Ecosystems Roadmap*.

CONCLUSION

Metro Vancouver's *Climate 2050 Nature and Ecosystems Roadmap* sets an ambitious path to maintain and restore healthy and resilient ecosystems that store carbon, moderate the impacts of a changing climate, and provide a range of other co-benefits. The *Nature and Ecosystems Roadmap* has been updated based upon feedback received on the draft in 2022. To achieve the 2030 and 2050 targets, Metro Vancouver and its partners need to start on the actions in the *Climate 2050 Nature and Ecosystems Roadmap* as soon as possible, using the full extent of each agency's authority, while continuing to explore opportunities to store carbon and bolster resilience. Staff recommend Alternative 1, to endorse the *Climate 2050 Nature and Ecosystems Roadmap*.

Attachment

Climate 2050 Nature and Ecosystems Roadmap

References

1. *Climate 2050 and Clean Air Plan* Discussion Paper on Nature and Ecosystems, report dated April 17, 2020
2. *Draft Climate 2050 Nature and Ecosystems Roadmap*, report dated March 9, 2022

48692173

CLIMATE **2050 Roadmap**

Nature & Ecosystems

A pathway to storing carbon and building a resilient future with Nature and Ecosystems in Metro Vancouver

April 2023

FRONT COVER: FOREST

Metrotower III, 4515 Central Boulevard,
Burnaby, BC, V5H 0C6
www.metrovancouver.org

April 2023

Metro Vancouver acknowledges that the region's residents live, work, and learn on the shared territories of many Indigenous peoples, including 10 local First Nations: q̓iċəy̓ (Katzie), q̓ʷɑ:ńƛəń (Kwantlen), kʷikʷəƛəm (Kwikwetlem), máthxwi (Matsqui), xʷməθkʷəy̓əm (Musqueam), qiqéyt (Qayqayt), se'mya'me (Semiahmoo), Sḵwx̱wú7mesh Úxwumixw (Squamish), scəẃaθən məsteyəxʷ (Tsawwassen), and sə́lílwətaʔɬ (Tsleil-Waututh).

Metro Vancouver respects the diverse and distinct histories, languages, and cultures of First Nations, Métis, and Inuit, which collectively enrich our lives and the region.

LOWER SEYMOUR CONSERVATION RESERVE

Metro Vancouver

Metro Vancouver is a federation of 21 municipalities, one electoral area, and one treaty First Nation that collaboratively plans for and delivers regional-scale services. Metro Vancouver's core utility services include drinking water, sewage treatment, and solid waste management, along with regional services like regional parks, affordable housing, regional land use planning, and air quality and climate action that help keep the region one of the most livable in the world.

Mission

Metro Vancouver's mission is framed around three broad roles:

1. **Serve as a Regional Federation**

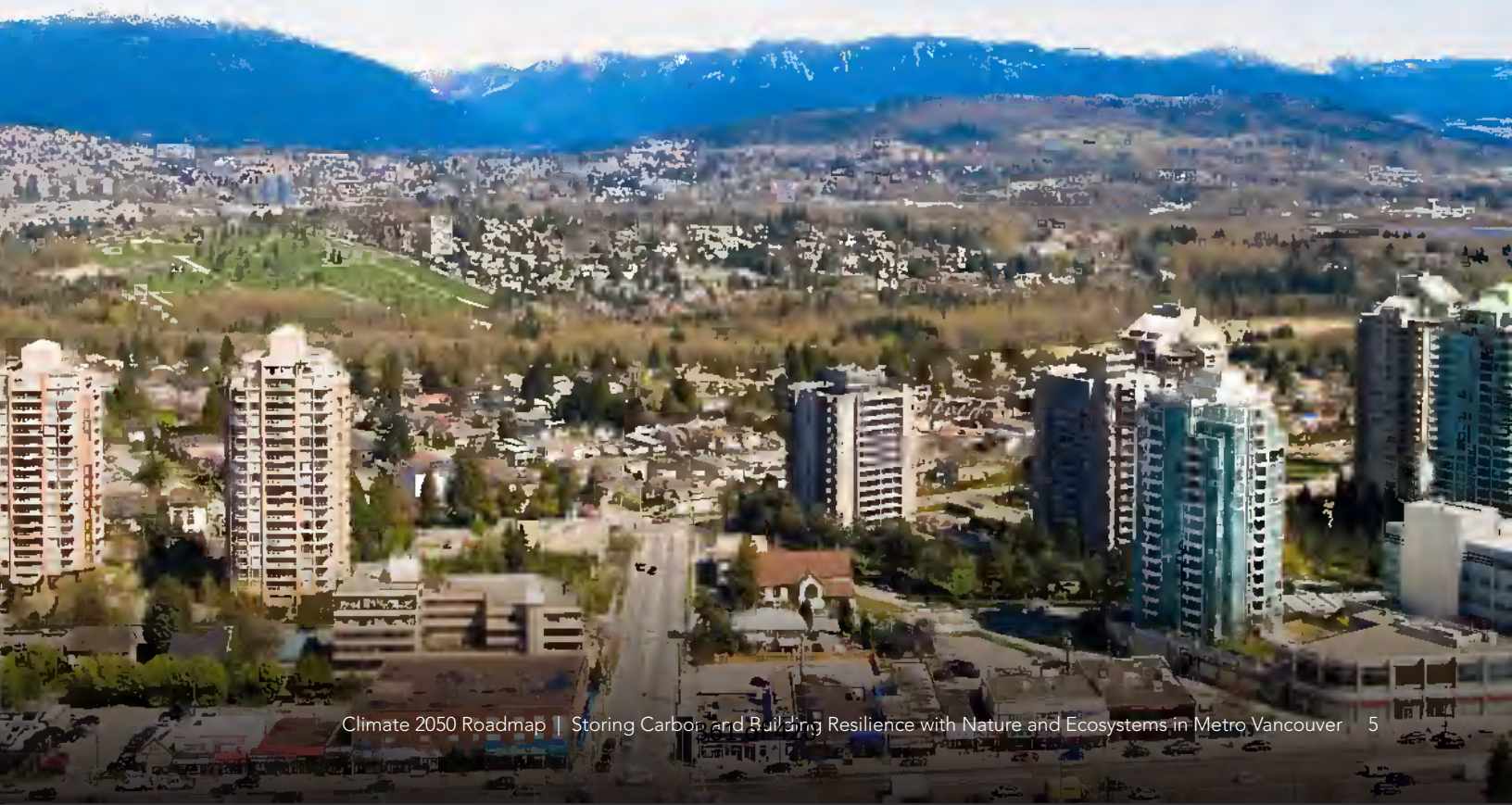
Serve as the main political forum for discussion of significant community issues at the regional level, and facilitate the collaboration of members in delivering the services best provided at the regional level.

2. **Deliver Core Services**

Provide regional utility services related to drinking water, liquid waste and solid waste to members. Provide regional services, including parks and affordable housing, directly to residents and act as the local government for Electoral Area A.

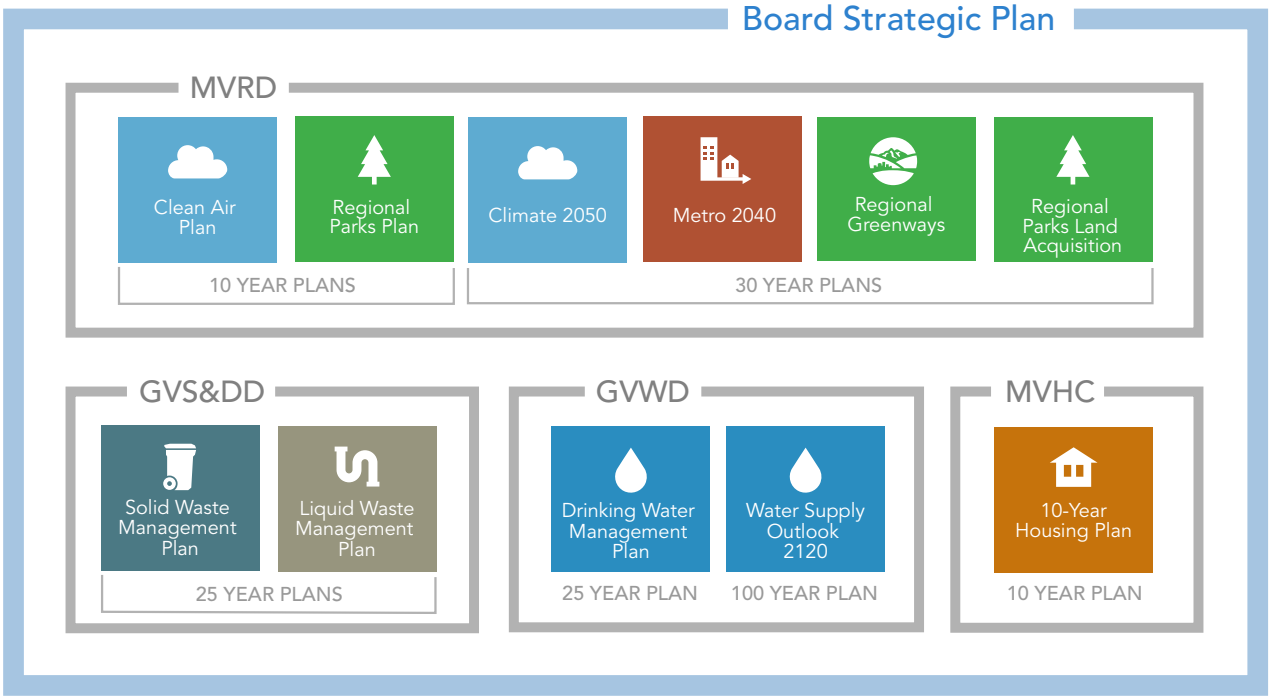
3. **Plan for the Region**

Carry out planning and regulatory responsibilities related to the three utility services as well as air quality, regional planning, regional parks, Electoral Area A, affordable housing, labour relations, regional economic prosperity, and regional emergency management.



Building a Resilient Region

Building the resilience of the region is at the heart of Metro Vancouver's work. Each of Metro Vancouver's regional plans and strategies adopts a vision, guiding principles, goals, strategies, actions and key performance measures that will support a more resilient, low carbon and equitable future. Metro Vancouver's interconnected plans and strategies are guided by the *Board Strategic Plan*, which provides strategic direction for each of Metro Vancouver's legislated areas of responsibility and the *Long-Term Financial Plan* which projects total expenditures for capital projects and operations that sustain important regional services and infrastructure. Together these documents outline Metro Vancouver's policy commitments and specific contributions to achieving a resilient region.



Adopted by the Metro Vancouver Board in 2018, the *Ecological Health Framework* encapsulates Metro Vancouver's collective efforts around ecological health and provides guiding principles, goals, and strategies to help achieve the vision of "a beautiful, healthy, and resilient environment for current and future generations". To help guide corporate actions, the Framework set three high-level goals: 1) build ecological resilience and minimize impacts; 2) protect natural areas and conserve ecosystem services; and 3) nurture nature within communities. The *Climate 2050 Nature and Ecosystems Roadmap* complements and builds on the *Ecological Health Framework* by identifying additional corporate and regional actions to maximize carbon storage, resilience, and other critical ecosystem services.

Metro Vancouver's Roles and Responsibilities for Climate Action

The actions to achieve carbon neutrality and building a more resilient region will depend on the collaborative efforts of many players in the region as well as the federal and provincial government. However, Metro Vancouver has some unique and important roles and responsibilities for advancing climate action.

- Under the *Environmental Management Act*, Metro Vancouver has the delegated authority to provide the service of air pollution control and air quality management and may, by bylaw, prohibit, regulate and otherwise control and prevent the discharge of air contaminants, including greenhouse gases.
- Through the regional growth strategy, Metro Vancouver, with its members, protects important lands and plans for compact, complete communities that are foundational to enabling a carbon neutral, resilient region.
- As part of delivering its core services, Metro Vancouver also generates and uses clean, renewable energy from its facilities and is working to ensure core regional services and infrastructure are prepared for and resilient to climate change.
- Invest Vancouver is Metro Vancouver's economic development leadership service with the vision of a dynamic and resilient regional economy that delivers prosperity for all. It aims to foster greater regional collaboration on economic development issues, to advise leaders on sound economic policy and strategy, and to brand the region and its key industries to a global audience with the intention of attracting strategic investment. Invest Vancouver focuses on key export oriented industries in which the region has a productive advantage. This includes many aspects of the green economy, including clean technology, renewable energy and clean transportation.
- In its role as a regional forum, Metro Vancouver builds and facilitates collaborative processes which engage the public and build partnerships to address significant regional issues like climate change. As part of this role, Metro Vancouver coordinates with and advocates on behalf of its member jurisdictions to other governments and partners on greenhouse gas management and climate change adaptation initiatives.

These roles are necessary but not sufficient to achieve our goals of a climate neutral, resilient region. Metro Vancouver will be looking to other orders of government, First Nations and other regional partners to lead and collaborate in the implementation of a number of key actions in the *Climate 2050 Roadmaps*.

MINNEKHADA REGIONAL PARK

The Roadmap at a Glance

Metro Vancouver's ecosystems are vital to the people and wildlife who live here. In both urban and natural areas, these ecosystems have tremendous cultural and spiritual importance, contribute to the region's livability, provide a sense of place, and foster biodiversity. Nature and ecosystems help us address climate change by sequestering carbon annually and storing it over the long-term, while also bolstering our resilience to climate change impacts such as extreme heat and flooding. Nature and ecosystems are themselves at risk of a changing climate, exacerbated by other stressors such as land development and invasive species.

Despite the challenges faced, the region is well-positioned to take action and maintain a healthy environment. By protecting, restoring, and enhancing ecosystems, and connecting them together across the region through a robust green infrastructure network, we can support productive and resilient ecosystems that help us address climate change. Natural asset management — a concept that involves accounting for the benefits nature provides — continues to gain traction across the region. Improving the health and extent of the region's urban forest is another opportunity to take climate action close to where people live and work. Lastly, our collective efforts to address climate change can include nature-based solutions that help address multiple problems, such as biodiversity loss and climate change, simultaneously.

Although there is much work to be done, there are some important actions that can be implemented now to supplement the efforts in other sectors to reach a carbon neutral and resilient region by 2050. It is critical that the actions identified in this Roadmap are implemented rapidly to prevent future ecosystem loss and degradation, and to maximize long term carbon storage, resilience, and other co-benefits. We are not alone in this challenge.

VIEW OF THE URBAN FOREST

The *Nature and Ecosystems Roadmap* lays out 31 actions for storing carbon and increasing resiliency, organized under the following five strategic areas:

1. Protect, Restore, and Enhance the Region's Ecosystems
2. Connect Green Infrastructure
3. Integrate Natural Assets into Conventional Asset Management and Decision-Making Processes
4. Support a Resilient, Robust, and Healthy Urban Forest
5. Advance Nature-based Solutions to Climate Change

The actions in this Roadmap demonstrate the importance of working collectively to reach climate objectives, and will complement other regional plans that support healthy and biodiverse ecosystems. Working closely with First Nations, the federal and BC governments, member jurisdictions, and other key partners will be critical to effectively implement the actions in this Roadmap. Together, we can ensure that nature and ecosystems are an integral part of creating a carbon neutral and resilient region.

Incorporating Indigenous Knowledge into Climate Action

The *Nature and Ecosystems Roadmap* emphasizes that a healthy natural environment is vital to the region's response to climate change, as well as the health and well-being of people. Our current decision-making frameworks do not properly recognize the importance of natural systems and operate as if humans are separate from or a higher priority than nature. The *Nature and Ecosystems Roadmap* recognizes that we need to do things differently moving forward.

Since time immemorial, First Nations have been stewards of the region's lands, waters, and air. Practiced and learned for millennia, complex knowledge systems grounded in earth based observation are known collectively as 'Indigenous Knowledge'. The *Declaration on the Rights of Indigenous Peoples Act* (DRIPA) emphasizes Indigenous rights to conserving the environment and protecting Indigenous knowledge.

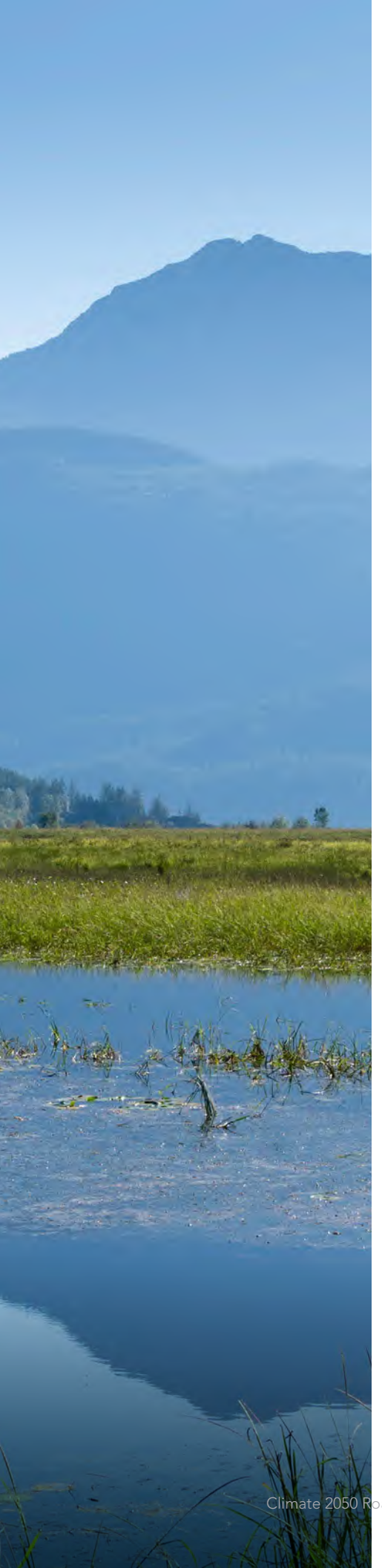
Indigenous Knowledge systems and Western science may function differently, but these two approaches can be mutually supportive. Bringing these ways of knowing together and combining their strengths requires a commitment to work together to build trust and understanding.

As the Truth and Reconciliation Commission of Canada report states, reconciliation between Indigenous and non-Indigenous Canadians, from an Indigenous perspective, also requires reconciliation with the natural world.

Inspired by the work of the Truth and Reconciliation Commission of Canada, Metro Vancouver is working together with First Nations to strengthen relationships by exploring pathways to reconciliation, such as increased engagement, dialogue, and collaboration.


CODD WETLAND ECOLOGICAL CONSERVANCY AREA

WIDGEON MARSH REGIONAL PARK



Contents


CRIPPEN REGIONAL PARK

Visioning Healthy and Resilient Nature and Ecosystems in 2050

Our vision is that in 2050, Metro Vancouver is a place where the natural environment provides benefits to humans and other species alike, and the relationship between people and nature is more intrinsically known and understood by residents across the region. Indigenous Knowledge of the natural world is respected and honoured and informs decision-making alongside Western science. Nature and ecosystems are recognized for their inherent value as irreplaceable systems, but also for their ability to foster biodiversity, store carbon, and moderate the impacts of climate change. The way we "do business" has undergone a paradigm shift, such that these benefits are recognized and accounted for in decision-making processes. Ecosystems are healthy in natural areas, but also within the communities where people live, work and play. Our region is known globally as a leader in fostering relationships and partnerships - working together to enable the protection, enhancement, restoration, and connection of ecosystems, and implementing nature-based solutions to support biodiversity, moderate the impacts of climate change, and store carbon over the long-term.

Climate 2050 Nature and Ecosystems Roadmap

A pathway to storing carbon and building a resilient future with Nature and Ecosystems in Metro Vancouver

The Challenge

This Roadmap is about ambitious and necessary protection, enhancement and restoration of our natural environment. It presents a robust plan for this region to maintain a healthy environment that is supported by productive and resilient ecosystems. Nature and ecosystems have the capacity to store carbon and help moderate the impacts of a changing climate, and they provide numerous other benefits; however, these natural systems are themselves at risk due to a changing climate, land development, invasive species, pollution, and other factors. Decisions we make now to protect, restore, enhance, and connect nature and ecosystems across the region will have a lasting impact on the state of the natural environment in the future.

A carbon neutral and resilient region, supported by healthy ecosystems, is the best option for future generations to maintain a good quality of life, beyond 2050. We have to make some significant decisions and investments today or pass them on to future generations at higher cost and consequence. Metro Vancouver and many of its member jurisdictions have committed to ambitious targets and bold leadership to respond to the climate crisis. This plan responds to the global challenge to come together, think big, and act now in this region.

The Connection between Climate and Air Quality

The *Clean Air Plan* is Metro Vancouver's air quality and greenhouse gas management plan. Actions in the Plan will reduce air contaminant emissions and impacts in our region, including greenhouse gases, over the next 10 years. These actions will support the interim target of a 45% reduction in greenhouse gas emissions by 2030, and establish the foundation for the 30-year goal of a carbon neutral region by 2050. The *Clean Air Plan* also addresses air quality targets for the region.

Residents in the region generally experience good air quality, but additional emission reduction actions are needed to continue protecting human health and the environment. Some air contaminants, such as ground-level ozone, can damage plants and reduce vegetation growth, adding to the stress on nature and ecosystems imposed by climate change. As temperatures rise and droughts become more frequent, forests in the Pacific Northwest are at increased risk to wildfires. Wildfires create significant amounts of fine particulate matter, the air contaminant with the greatest air quality-related health impacts in our region. While this topic area is touched on in the *Nature and Ecosystems Roadmap*, response to the air quality impacts of wildfires will be addressed in more detail in the *Human Health and Well-being Roadmap*, as well as the *Clean Air Plan*.

Climate Change Impacts on Nature and Ecosystems

While nature and ecosystems store carbon and help us adapt to climate change impacts, many natural areas and the services they provide are themselves at risk from a changing climate. For example, trees store carbon, cool our streets, and capture and regulate floodwater, but they are less able to provide these benefits if they are suffering from drought and extreme heat.

Many species and ecosystems in the region are being impacted by climate change because they cannot adapt fast enough – for instance, Pacific salmon are affected by warming stream temperatures, stressing fish and increasing vulnerability to disease (see Species Case Study on page 26). Climate change adaptation must be considered when managing ecosystems in urban and natural areas, including the development of best practices supported by current climate science. While specifics are likely to change when new climate change projections are completed and more data becomes available, high-level trends are likely to remain consistent over time. Metro Vancouver would like to combine different sources of knowledge by working with First Nations to understand observed changes in climate and the natural environment.

We can contribute to the region's collective climate resilience by monitoring the extent and health of urban and natural ecosystems, providing space in our communities for nature to adapt and flourish, and considering the natural environment as a critical part of climate action.

The region's nature and ecosystems are, and will continue to be, affected by climate change and associated hazards – these hazards could cause impacts in numerous ways. However, nature and ecosystems can also minimize the impacts of climate change. These relationships are outlined in Table 1 below.

Anticipated impacts to nature and ecosystems from climate change may also affect species important to First Nations for traditional ceremonial use, foods and medicines.

WESTERN RED CEDAR IN A STATE OF DECLINE IN WEST VANCOUVER (DISTRICT OF WEST VANCOUVER)

Climate change and its associated impacts on ecosystems can also cause feelings of grief and anxiety, negatively impacting mental health and well-being. This issue will be explored in greater detail in the *Human Health and Well-Being Roadmap*.

TABLE 1: CLIMATIC CHANGES AND HAZARDS AND THEIR POTENTIAL IMPACTS ON NATURE AND ECOSYSTEMS

CLIMATIC CHANGES AND HAZARDS	ANTICIPATED IMPACTS TO NATURE AND ECOSYSTEMS	HOW NATURE AND ECOSYSTEMS CAN MINIMIZE IMPACTS
Sea level rise and flooding (coastal and riverine)		
Rising water levels	• Shoreline ecosystems will be lost as they are caught between rising waters and hardened shoreline infrastructure (known as coastal squeeze). • Extreme flooding causes structural changes to rivers and shorelines, shifting ecosystems and impacting fish and wildlife. • Flood waters deposit excess sediment over fish habitat, including spawning areas, impacting fish health and populations. • During a flood, toxic substances from low-lying areas (e.g. urban and industrial sites) can be released, damaging ecosystems.	• Natural shorelines reduce the impacts of riverine and coastal flooding by absorbing water and wave energy. They also provide space for ecosystems to adapt and move as water levels rise.
Changing salinity in rivers	• Salt water will move further upstream during lower river flows, affecting freshwater aquatic ecosystems.	
Combined impact of sea level rise, storm surge and coastal flooding	• The ecological impacts of coastal storms and flooding are exacerbated by sea level rise.	• Coastal and intertidal ecosystems (such as mudflats and seagrass beds) protect at-risk communities by reducing the impacts of waves and extreme tides, absorbing excess water, and buffering the impacts of coastal storms.
Changing precipitation patterns		
More intense rainfall events	• Increased pollutant run-off, turbidity, and erosion, leading to poor water quality and impacts to freshwater and marine ecosystems. • Increased risk of landslides, disrupting wildlife habitat and movement.	• Wetlands, riparian ecosystems and other vegetated areas reduce the impacts of flooding, prevent erosion, and absorb and filter rainwater, reducing the strain on stormwater infrastructure – but in extreme events, natural systems can be overwhelmed.

CLIMATIC CHANGES AND HAZARDS	ANTICIPATED IMPACTS TO NATURE AND ECOSYSTEMS	HOW NATURE AND ECOSYSTEMS CAN MINIMIZE IMPACTS
Longer dry spells in the summer	• Drought conditions, combined with higher temperatures, reduce annual tree growth and increase mortality rates. • Warmer waters and less flow during the dry season, combined with an earlier freshet, will stress and limit migration of salmon and other aquatic species. • Drought can stress newly planted restoration areas, increase the risk of fire and disease, and increase the likelihood that trees are blown over during high winds. • Longer and more intense wildfire season, driven by both heat and drought. • Long periods of drought will dry out wetlands by lowering water tables.	• Trees and other vegetation help to retain the little water available during drought conditions by reducing the loss of water from the soil, which also cools the air. • Intact forest and riparian vegetation alongside streams and waterbodies provide shade, keeping waters cooler and reducing evaporation.
Increased precipitation in winter, spring and fall	• Forests can be damaged and soils lost by heavy rain storms, resulting in flooding, slope instability and tree failure.	• Healthy, intact forests are better able to stabilize slopes and resist change. • Vegetated areas capture and regulate rainwater, reducing the strain on stormwater infrastructure.
Changing temperatures		
Extreme heat	• Heat sensitive ecosystems (e.g. wetlands) and species (e.g. salmon, bats, western red cedar) become stressed at higher temperatures. Impacts are compounded by drought conditions. • Ecosystems and species can be driven to move as conditions become less suitable; however, finding new locations that support their needs may not be possible. For example, cold climate, high-elevation alpine ecosystems are restricted in their ability to move. • Higher outdoor temperatures increase the formation of ground-level ozone, which can damage plants.	• Healthy trees and other vegetation help protect people from extreme heat, by reducing the urban heat island effect. • Trees adjacent to riparian and wetland areas support fish and other wildlife by keeping water cool.
Warmer winters	• Increased spread of pathogens, pests and invasive species that are controlled by low winter temperatures.	• Healthy, biodiverse ecosystems are more resilient and better able to resist pathogens, pests and invasive species.

CLIMATIC CHANGES AND HAZARDS	ANTICIPATED IMPACTS TO NATURE AND ECOSYSTEMS	HOW NATURE AND ECOSYSTEMS CAN MINIMIZE IMPACTS
Seasonal shifts	• Shifts in seasonal temperatures (e.g. early spring/ late fall) can cause disconnects between species and their habitats or food sources. For example, migratory pollinators may return to their home habitat after flowers have already bloomed.	• Resilient, large, and connected ecosystems across the landscape help native species adapt to changing conditions.
Ocean warming and acidification	• Impacts to marine and intertidal ecosystems (e.g. die-offs during heatwaves), stress on native species due to changing conditions, and new incidences of invasive aquatic species.	• Impacts can be reduced by lessening human-caused stressors such as over-fishing and pollution, and ensuring healthy biodiverse coastal ecosystems. • Seagrasses may help to reduce salinity and buffer the impacts of ocean acidification.
Wind storms		
High winds exacerbate other hazards	• Wind storms, in conjunction with sea level rise, can lead to greater storm surge.	• Natural breakwaters such as reefs can reduce wave action. • Contiguous areas of forest are more resilient to wind damage. Buffer trees can also protect infrastructure and crops from wind.

Note: These climatic hazards can cause cascading impacts – for example, flooding tends to be more severe following a wildfire, landslides tend to occur following heavy rainfall, and severe storms may cause more damage in coastal areas as the sea level rises. Cascading events were experienced in British Columbia during November 2021 when intense precipitation (an "atmospheric river") resulted in severe flooding and landslides. Non-climatic hazards can also exacerbate climatic ones; for instance, subsidence can increase the risk of coastal flooding and exacerbate sea level rise, and earthquakes can disrupt flood protection infrastructure. Climate change impacts will magnify existing stressors on ecosystems from other human activities. Our understanding of how ecosystems will be affected by cumulative impacts is incomplete, but we do know that large, healthy, connected, and biodiverse ecosystems are more resilient to climate change impacts.

Carbon Storage and Sequestration from Nature and Ecosystems in Metro Vancouver

Carbon stored in nature and ecosystems, including forests, wetlands and intertidal areas, takes thousands of years to accumulate. A conservative estimate of the total carbon stored in the vegetation and soils of the region's nature and ecosystems is 65 million tonnes[1]. Every year, these areas sequester additional carbon, removing carbon dioxide from the atmosphere and storing it away long-term. The ecosystems that Metro Vancouver protects in the drinking water supply areas, along with the regional parks system, store 22 million tonnes of carbon. Although carbon storage is not the primary function of these areas, ongoing protection of these significant carbon stores is critical to the region's efforts to reduce greenhouse gas emissions. Figure 2 shows the key natural carbon stores in the region.

Carbon is released from ecosystems when trees are cut down, soils are disturbed, and water cycles are altered (e.g., draining wetlands). Becoming a carbon neutral region by 2050 will require protection of regional ecosystems to ensure the carbon they store remains in place and they are able to continue to remove carbon from the atmosphere, year after year. Restoring, connecting and enhancing these ecosystems in locations that can sustain them can also improve the region's long-term carbon storage potential.

LARGE TREES STORE THE MOST CARBON

1 Figures derived from Metro Vancouver's regional carbon storage dataset. The estimate provided applies to the full extents of Metro Vancouver's drinking water supply areas, along with estuarine and intertidal areas.

Carbon Sequestration and Storage

Carbon sequestration is the removal of carbon dioxide from the air on an annual basis. The measure of annual sequestration would be considered as part of the region's efforts to measure carbon neutrality by 2050.

Carbon storage refers to the total amount of carbon stored in the vegetation and soils of ecosystems such as forests, wetlands and intertidal areas, which often takes thousands of years to accumulate.

Carbon sequestration and storage is one of many benefits achieved through ecosystem protection and restoration, but it is not a silver bullet solution – it is a supplemental solution to directly reducing our greenhouse gas emissions through actions explored in other *Climate 2050 Roadmaps*. Significant increases in carbon storage levels in natural systems require ample space for ecosystems to grow and shift, and long timeframes.

FIGURE 1: ESTIMATED GREENHOUSE GAS EMISSIONS REDUCTIONS COMPARED TO CARBON SEQUESTRATION AND STORAGE BY NATURE AND ECOSYSTEMS

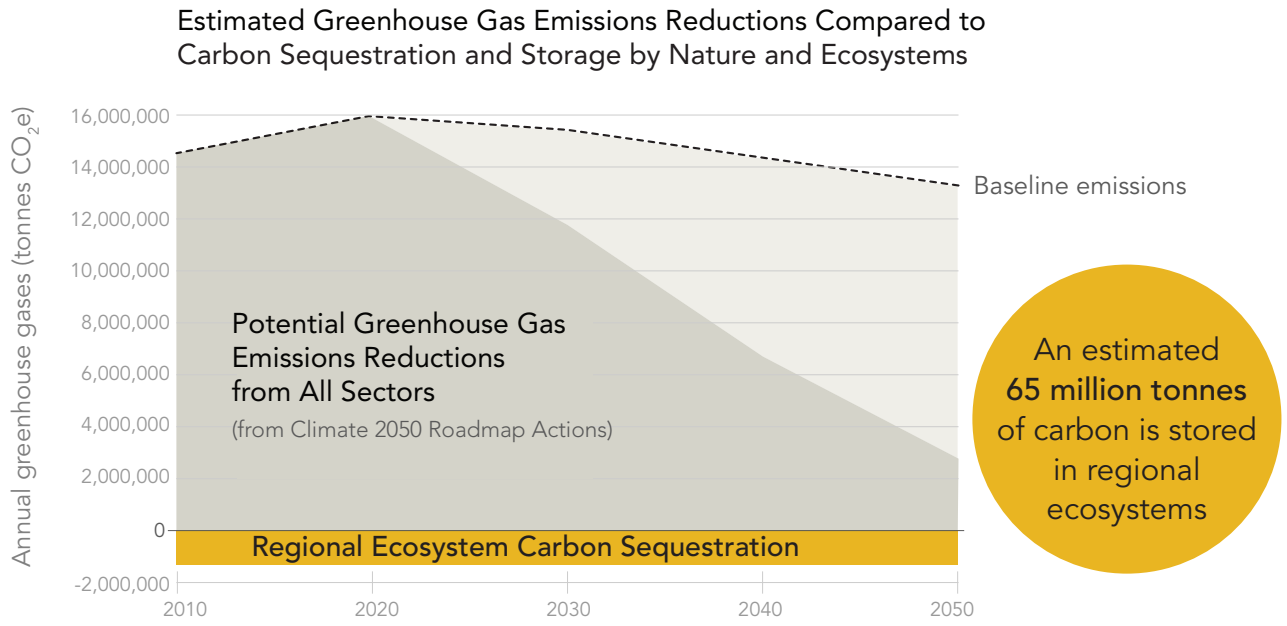
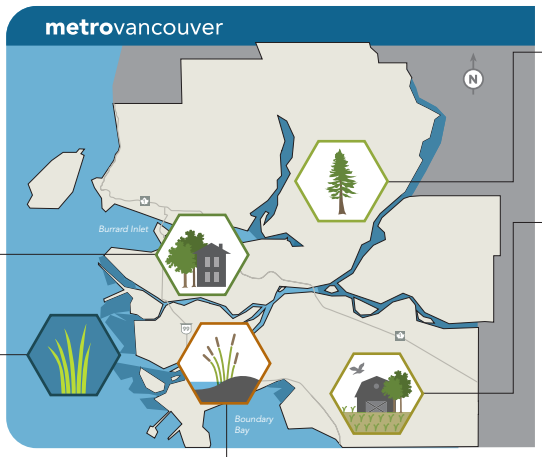


FIGURE 2: KEY NATURAL CARBON STORES IN THE REGION AND THEIR IMPACTS ON REGIONAL CLIMATE RESILIENCE

Millions of tonnes of carbon are stored in vegetation and soil in the Metro Vancouver region

Trees in the region's **urban forests** store about **8 million tonnes** of carbon. These trees also capture stormwater, cool our streets, and improve human health and well-being.

Coastal ecosystems store carbon (often referred to as "Blue Carbon"), protect shorelines from coastal storms, and provide habitat for fish and wildlife.



Extensive forests in the north of the region store over **40 million tonnes** of carbon. These forests provide clean water and wildlife habitat.

Agricultural land stores carbon in vegetation and soils; Delta's agricultural soils alone store close to **1 million tonnes** of carbon. In addition, agricultural land provides food security, economic benefits, and wildlife habitat.

Burns Bog and other **wetlands** store large amounts of carbon. They also control floodwaters, improve water quality, and provide essential wildlife habitat.

DOWITCHERS FLYING

Storing Carbon and Building Resilience Through Nature and Ecosystems

The following section outlines several key concepts that underpin the strategies and actions in this Roadmap. These key concepts are foundational for understanding how nature and ecosystems can become incorporated into the region's climate action strategy.

For nature and ecosystems to be effective as part of climate action planning, biodiversity must be considered and prioritized throughout all actions to ensure ecosystem health, and to avoid unintended consequences (e.g. planting of vegetation that maximizes carbon storage, but negatively affects wildlife and habitat for species). Ecosystems that are biodiverse are able to provide more ecosystem services, or co-benefits. Many ecosystem services are climate change related; for instance, trees and forests can store carbon but also provide shading, cooling, and other benefits associated with climate change adaptation. Green infrastructure refers to the types of natural, enhanced and engineered assets that provide ecosystem services. Linking different types of green infrastructure together into a functional network is best practice to maximize ecosystem services. Nature-based solutions are a type of green infrastructure that helps address both biodiversity loss and climate change simultaneously. Nature-based solutions are increasingly being integrated into climate action plans to supplement other technological and engineered solutions, such as those identified in other *Climate 2050 Roadmaps*.

Biodiversity

The Metro Vancouver region's rich and diverse natural environment is vital to the people and wildlife who live here. The region's natural areas have tremendous cultural and spiritual importance, contribute to the region's livability, provide a sense of place, and foster biodiversity, which can be broadly defined as the variety of life. The region is home to the Fraser River Estuary, an important and productive marine ecosystem that forms the mouth of one of the largest salmon-bearing rivers in the world, and supports one of the highest concentrations of migratory birds in Canada. The Fraser River Estuary is one of four Important Bird Areas (IBA) being assessed as Key Biodiversity Areas – internationally recognized sites defined by a global standard – within Metro Vancouver. Large, contiguous ecosystems such as these have benefits for biodiversity, but the smaller, "stepping stone" habitats are important as well. For example, while the north shore mountains contain some of the highest quality habitat in the region, habitats at lower elevations are used by birds migrating back to the region in early spring while habitats in the north shore forests are still frozen. Collectively, the region's ecosystems - from the forests, wetlands, and watercourses to the urban trees and parks - form a mosaic of habitats that support biodiversity.

" Biodiversity enables Nature to be productive, resilient and adaptable. Just as diversity within a portfolio of financial assets reduces risk and uncertainty, so diversity within a portfolio of natural assets increases Nature's resilience to shocks, reducing the risks to Nature's services."

THE ECONOMICS OF BIODIVERSITY: THE DASGUPTA REVIEW

Climate change and biodiversity loss are two interlinked challenges occurring simultaneously, both globally and locally. Metro Vancouver's ecosystems are affected by a changing climate (see Table 1), and the lower mainland of southwestern British Columbia where they are situated has been identified as an ecoregion at significant risk to biodiversity loss. As climate change places stress on ecosystems, they become less resilient and less capable of storing carbon. In order for nature and ecosystems to provide benefits and ecosystem services, they must be resilient to the impacts of human activities, including climate change. Resilient ecosystems are both healthy and biodiverse. For example, a healthy forest that supports a wide variety of tree species will store more carbon and recover faster from disturbances, such as fire or pests, because not all species will be impacted to the same degree and some will rebound more easily. Protecting and enhancing biodiversity in nature and ecosystems maximizes their ability to provide climate change benefits.

SOCKEYE SALMON

Species Case Study: Pacific Salmon

In the Pacific Northwest, salmon are a keystone species, supporting people, ecosystems and wildlife. Salmon have cultural, spiritual and food source significance in our region, particularly to First Nations communities. First Nations' connection to water and salmon remains strong despite the impacts of colonization. The Fraser River is one of North America's greatest salmon-producing rivers. The river and its main tributaries within Metro Vancouver – Kanaka Creek, Pitt River (Alouette River, Widgeon Creek), Coquitlam River and Brunette River – weave through the region, providing important habitats for salmon and other species.

Eagles, bears, and orcas all rely on salmon as a food source. As migrating salmon return to rivers and are eaten by other species, essential nutrients from their carcasses are transferred to forests and other ecosystems.

Salmon, and the habitats they thrive in, are at risk from climate change impacts. In the Metro Vancouver region, we are projected to experience warmer and wetter winters, hotter and drier summers, reduced snowpack, and more precipitation falling as rain and less as snow. These impacts may decrease the amount of water available in streams during dry periods, raising stream temperatures. Salmon are sensitive to warming temperatures – they may not enter streams until the water has cooled to a specific temperature, and warmer temperatures can affect both survival and reproductive success. The Fraser River summer water temperature has warmed by, on average, 1.5°C since the 1950s, and this trend is projected to continue. We can take action to help salmon adapt to climate change impacts. Restoring riparian corridors with native vegetation can cool stream temperatures. Integrating fish passage into the design of flood control infrastructure will ensure salmon can continue to reach their spawning grounds.

We can also identify and protect critical salmon spawning habitat – often this habitat provides other ecosystem services. For example, eelgrass serves as nursery habitat for salmon, but also reduces wave impacts from coastal storms, and stores carbon.

Ecosystem Services

The importance of nature and ecosystems in the Metro Vancouver region is intrinsic, invaluable and unmeasurable, and these environments have significant cultural and spiritual importance for all communities. The concept of 'ecosystem services' (see Figure 3) has emerged as a tool to allow us to more fully understand the breadth of benefits that nature provides, including cultural ones. Many of these benefits also relate to climate change – for instance, nature and ecosystems store carbon, cool city streets, clean stormwater, and moderate floods. The concept of ecosystem services can help underscore the fact that we live in reciprocity with nature; while ecosystems provide benefits to humans, we also co-exist in concert with the natural world.

Ecosystem services are not typically accounted for in decision-making, and this lack of understanding results in a devaluation of nature, contributing to its ongoing loss and degradation. As technology and methods that allow for measurement of ecosystem services improve, it will become easier to incorporate ecosystem services into broader decision-making, resulting in better outcomes for both people and nature.

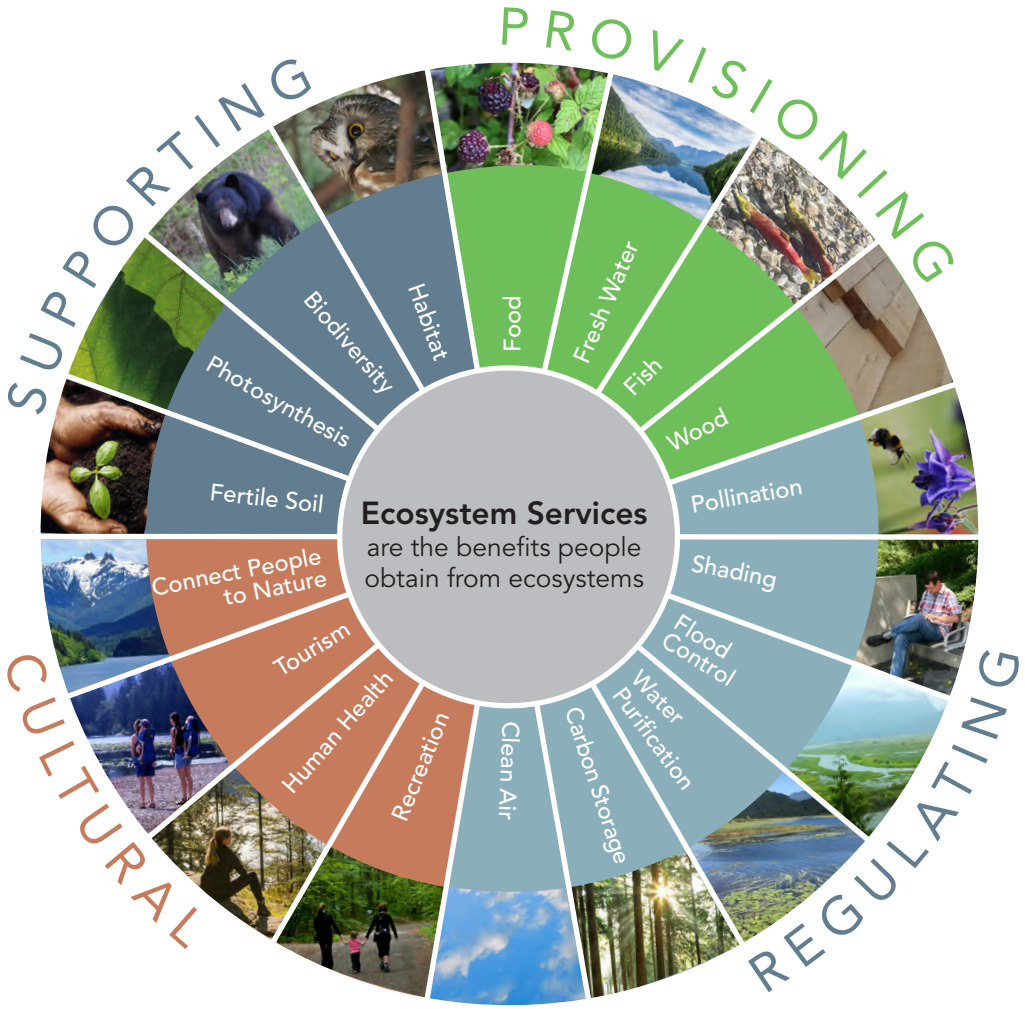
Human Health Benefits of Nature and Ecosystems

Health benefits from nature are wide-ranging and include:

- Improved mental health, including reduced depression and stress
- Improved physical health, including reduced obesity, diabetes, and cardiovascular disease, and increased immune system function
- Improved pregnancy outcomes
- Improved cognitive function, with slower cognitive decline in the elderly and improved cognitive development in children
- Improved social cohesion
- Reduced mortality risk
- Reduced medical costs

Social factors including income level, gender, and ethnicity can have a significant influence on how healthy a person is, with vulnerable populations experiencing greater health inequality. Evidence suggests that the health benefits linked with access to green space may be strongest for vulnerable populations.

FIGURE 3: ECOSYSTEM SERVICES PROVIDED BY HEALTHY ECOSYSTEMS



Green Infrastructure

The term Green Infrastructure refers to the natural, enhanced and engineered systems (shown in Figure 4) that collectively store carbon, help communities adapt to climate change, and provide society with a range of other ecosystem services. This Roadmap considers green infrastructure across all landscapes and land use types, from urban street trees and green roofs to natural ecosystems such as wetlands, forests, and watercourses.

FIGURE 4: TYPES OF GREEN INFRASTRUCTURE

Stormwater management is a key driver for the implementation of enhanced and engineered green infrastructure solutions, and demand for this ecosystem service is likely to increase due to climate change. However, a major benefit of green infrastructure is that it provides a wide range of ecosystem services beyond stormwater management, including support for biodiversity and human health and well-being. In order to maximize benefits, green infrastructure needs to be planned and implemented with multiple ecosystem services in mind.

Metro Vancouver member jurisdictions have considerable experience planning and implementing green infrastructure projects; however, there is a need to move beyond individual projects and pilots to broad implementation across the region, with consideration given to 'networking' the individual elements of green infrastructure into a functioning system.

Green Infrastructure – a Cross-Cutting Climate Action

Green infrastructure will need to be integrated across different land uses and involve a range of sectors. This Roadmap focuses on the importance of creating a network of green infrastructure and planning for co-benefits, including support for biodiversity. Connections between other *Climate 2050* issue areas and green infrastructure are outlined below:

Land Use and Urban Form – the land use planning framework supports green infrastructure planning and implementation through the protection of lands important for conservation, recreation, and agriculture, as well as the integration of green infrastructure into the design of new or redeveloped urban areas, reducing the loss of trees and greenspace, and creating better places for people and nature.

Agriculture – agricultural land includes remnant natural vegetation such as wetlands and riparian areas, and other permanent vegetation (e.g. hedgerows). These areas provide opportunities for wildlife, pollinator and bird habitat and connectivity across the landscape. Supporting long-term farm health and resiliency through the expansion of regenerative agriculture practices (e.g. cover cropping) also enhances biodiversity and ecosystems services.

Transportation – opportunities exist to reduce climate change impacts on the transportation network by integrating green infrastructure into transportation networks (e.g. through planting trees and other vegetation along road and railway verges and recreational greenways). Siting of infrastructure to avoid fragmentation of green infrastructure networks also supports a regional green infrastructure network.

Water and Wastewater Infrastructure – green infrastructure in urban areas tends to be heavily focused on stormwater management benefits. Green infrastructure can supplement grey infrastructure by filtering stormwater and reducing the amount of stormwater overflow during smaller rain events. Considering other benefits from green infrastructure (such as support for biodiversity and human health) increases the range of potential benefits achieved in urban areas.

Buildings – buildings dominate the urban landscape, so there is significant potential to leverage the climate-related benefits of green infrastructure (e.g. providing shade and capturing rainwater) by incorporating green infrastructure elements onto and around built structures.

Energy – green infrastructure (such as trees) can reduce the amount of energy needed to cool buildings and people by providing shade and reducing air temperatures.

Human Health – green infrastructure provides a range of health benefits to people through connection to nature, as well as by providing services that support adaptation, including providing shade and capturing flood waters. For more information on the connections between nature and human health, see page 27.

Nature-Based Solutions

Green infrastructure, if designed and implemented with biodiversity outcomes as a priority (e.g. a green roof that creates habitat for pollinators), is an example of a nature-based solution to climate change.

Locally and internationally, there has been a growing understanding and recognition of the climate change and biodiversity co-benefits that ecosystems provide, and this has led to the emergence of nature-based solutions as a focus for climate action. Nature-based solutions are holistic actions that protect, sustainably manage, and restore ecosystems, while simultaneously addressing societal challenges such as climate change. These solutions provide benefits for humans and wildlife alike, and ideally, these solutions recognize that humans and nature are interconnected and mutually dependent. For example, seagrass meadows store carbon, reduce impacts of coastal storms on shorelines, and provide essential habitat for fish and other species.

While climate change actions have historically been focused on technological and engineered solutions – which continue to be important – nature-based solutions can supplement these actions and become an integral part of climate action planning. The intentional inclusion of nature-based solutions in climate action plans is a relatively new approach and awareness, protocols and standards for these types of interventions continue to evolve. International guidance documents such as the *IUCN Global Standard for Nature-based Solutions* provide a framework for the verification, design, and scaling up of nature-based solutions. First Nations have stewarded the lands, waters, and air for millenia as part of a reciprocal relationship with nature. These long practiced approaches can inform current efforts to integrate nature-based solutions into climate action planning.

FIGURE 5: NATURE-BASED SOLUTIONS FOR ADDRESSING CLIMATE CHANGE

Barriers and Opportunities

The Metro Vancouver region is growing by approximately 35,000 people per year, and the impacts from human activities, including urban development, logging, and climate change have resulted in ecosystem change and loss. Nature and ecosystems offer important benefits, but if they are lost, it will require substantial time and available space for them to regenerate into mature, functioning systems. Additional barriers, and opportunities to overcome them, are included in Table 2 below:

TABLE 2: BARRIERS AND OPPORTUNITIES ASSOCIATED WITH STORING CARBON AND BUILDING RESILIENCE WITH NATURE AND ECOSYSTEMS

BARRIER	OPPORTUNITY
The region is facing a dual challenge of climate change and biodiversity loss, the impacts of which are interrelated.	Taking action on both biodiversity loss and climate change together is the key to success. There is an opportunity to implement nature-based solutions that help to address both challenges. Healthy, resilient, and biodiverse ecosystems are needed to support biodiversity and climate action.
Species and ecosystems are experiencing increasingly challenging environments that will continue to change in the future.	It is important to consider future climate conditions in planning processes; for instance, considering how future climate conditions might impact the urban forest, invasive species, natural resource management, and restoration work.
This region has a constrained land base, high costs and competition for land, and a steadily increasing population – all of which present challenges when trying to conserve space for nature and ecosystems. To achieve substantial gains in carbon storage, for instance, would require significant space for tree planting and ecosystem restoration.	Space for nature must be considered and integrated throughout different land uses. This prioritization requires innovation and collaboration; for instance, collaboration between multiple departments to maximize both housing density and tree canopy in urban areas. Multi-functional ecosystems across land uses support more habitats, which improves overall biodiversity.
Informed decision-making requires regionally-specific data (e.g. vulnerability of ecosystems to climate change, susceptibility to new invasive species), and this data is not always available or current.	Some regional datasets have been developed to inform decision-making. These datasets were generated, and will be updated, using a consistent methodology across the region, and trend reporting can occur at regular intervals. As technology improves and costs decrease, some data will become increasingly more accessible. Partnerships with agencies and organizations that produce relevant data can also help overcome this barrier.
Lack of understanding of Indigenous Knowledge systems can make it difficult to integrate it into existing processes and with Western science.	First Nations have been stewards of the region's lands, waters, and air since time immemorial. There is an opportunity to learn together and share knowledge to address climate change, contributing to improved understanding between Indigenous and non-Indigenous Peoples.

BARRIER	OPPORTUNITY
Approaches such as nature-based solutions may not be widely understood due to a lack of knowledge and training. This uncertainty leads to perceived risks around the performance, cost and maintenance of using new and innovative solutions. In addition, the results from case studies and pilot studies in other locations are not always transferable to this region.	There is an opportunity to develop knowledge in a range of sectors through professional training. Providing a regional forum to share technical knowledge, as well as the development of standards and guidelines, can help to dispel some of the uncertainties and instill confidence in new practices. Embedding new approaches as shared objectives across organizations avoids the risk of siloed initiatives within one department or discipline.
The inherent value of nature and the benefits it provides society are not fully recognized, leading to a lack of priority given to protection and restoration efforts.	Integrating natural assets and the ecosystem services they provide into decision-making will improve overall understanding and support efforts to prioritize protection and restoration.
The coastal and marine environment in the Metro Vancouver region is uniquely impacted by climate change. Ecosystems in these environments are affected by coastal squeeze, warmer temperatures, changing hydrology, and ocean acidification. These environments are governed by multiple agencies with differing levels of legislative authority, making it difficult to collaborate on solutions to these challenges.	There is an opportunity to monitor and share information related to the coastal marine environment among regional partners, and to connect with governments, agencies and organizations that have more direct influence in coastal and marine environments, including member jurisdictions, First Nations, and the federal and BC governments.

Equity Considerations

The impacts of climate change will affect everyone, but they pose a greater threat to people who are already vulnerable due to overlapping factors such as income and health. For example, vulnerable populations with lower incomes have fewer resources and less adaptive capacity to respond to climate change impacts; these challenges can be magnified by poor health. Typically, those who are the most at-risk to climate change impacts have contributed the least to greenhouse gas emissions. Given the interlinkage between vulnerable populations and climate change impacts, incorporating equity considerations into climate change policy is imperative.

As climate action is planned and implemented, it will be important to consider how different groups are affected by climate impacts, and who may be at a greater risk. Including these considerations throughout the process may mean targeting or timing action to assist those who are most vulnerable. A relevant example would be identifying vulnerable communities living in areas with low levels of tree canopy, parks and other green space.

Green infrastructure enhancements can have unintended social consequences; for instance, researchers are investigating whether 'green gentrification' is contributing to the displacement of marginalized communities. If green infrastructure is to provide benefits to those most in need, it is essential to consider the potential for these kinds of unintended consequences and involve the community early in an inclusive planning process.

CAPILANO RIVER REGIONAL PARK

The Journey - Storing Carbon and Building Resilience through Nature and Ecosystems

Climate 2050 Roadmap Connections

There are many links between nature and ecosystems and other issue areas. Metro Vancouver is exploring which linkages must be considered when developing climate policies and actions.

Land Use and Urban Form – policies that support more compact, complete communities, and protect ecologically important areas from development lead to increased resilience and carbon storage.

Water and Wastewater Infrastructure – green infrastructure such as green roofs and rain gardens improve building energy efficiency, and absorb rainfall and stormwater, which reduces the loading on built infrastructure during smaller rain events and restores urban biodiversity. Separation of combined sewers into separate sanitary and storm systems allows for partial restoration of original drainage courses (e.g. daylighting streams).

Energy – nature and ecosystems cool urban areas, reducing the need for air conditioning and decreasing overall energy use.

Human Health and Well-Being – nature-based climate change solutions (such as planting trees in urban areas) improve mental and physical health.

Agriculture – agricultural lands can be managed to protect natural areas, and enhance ecosystem services that build resilience to climate impacts and store carbon.

Buildings – nature and ecosystems can help reduce greenhouse gas emissions from buildings and increase resilience by protecting from flooding and heat.

Waste – biosolids and compost are soil amendments that improve soil health, improve water retention, promote vegetation growth, and restore disturbed ecosystems.

Climate Goals and Targets for Nature and Ecosystems

Metro Vancouver's *Climate 2050 Strategic Framework* has set the following regional vision to guide the region's response to climate change:

- Metro Vancouver is a carbon neutral region by 2050
- Infrastructure, ecosystems, and communities are resilient to the impacts of climate change

Metro Vancouver has also set an interim target of 45% reduction in greenhouse gas emissions from 2010 levels, by 2030.

Achieving this vision means setting goals in each of the *Climate 2050 Roadmaps*, in order to ensure that each sector in the region plays as strong a role as possible in getting to a carbon neutral, resilient region.

What is a Carbon Neutral Region?

A carbon neutral region means that we have achieved the deepest greenhouse gas emission reductions possible across all economic sectors, and any emissions left are balanced out by the carbon dioxide removed from the atmosphere by the plants, trees, and soil in the region, as well as by potential carbon capture technologies that are under development.

Metro Vancouver has set the following goals for nature and ecosystems in this region:

Goal

Nature and ecosystems are resilient, protected, maintained, enhanced, restored and connected, to maximize ecosystem services across the region.

TARGETS

By 2050:

- Protect 50% of the region for nature
- Achieve 40% tree canopy cover within the Urban Containment Boundary

Goal

Nature-based solutions that support biodiversity are included in the region's response to climate change.

MEASURABLE OUTCOMES:

Measurable outcomes for nature-based solutions are still to be determined based on additional review and discussion.

Many of the actions identified in this Roadmap will need to be participated in or led by other governments (e.g., national, provincial, local, and First Nations) as well as other regional partners. Metro Vancouver has a long history of working with other governments towards common goals. Fortunately, many of the organizations needed to make this transition are already actively working toward similar goals, including: the Provincial Government and its *CleanBC Plan*, *CleanBC Roadmap to 2030*, and *Climate Preparedness and Adaptation Strategy*; the Federal Government's recently strengthened climate plan called *A Healthy Environment and a Healthy Economy*; First Nations climate-related goals and initiatives; Metro Vancouver's member jurisdiction's own community and corporate climate plans; utilities; and, increasingly, industry associations.

Best Practices to Guide Success

The next section outlines 5 strategies and 31 actions; these measures set a pathway forward for nature and ecosystems to support the vision of a carbon neutral and resilient region by 2050. The following principles should be considered as best practices when implementing the actions throughout this Roadmap:

1. Prioritize biodiversity, equity, and conservation objectives when implementing nature-based climate solutions.
2. Integrate different forms of knowledge, including Western science and Indigenous Knowledge.
3. Prioritize planting native species in natural areas. Prioritize planting native species in urban areas where possible, but use non-native species to augment in challenging sites where native species will not thrive.
4. Choose solutions that support multiple ecosystem services, rather than focusing on only one ecosystem service.
5. Prioritize protection of mature trees and ecosystems.
6. Integrate environmental objectives so they are shared priorities across whole organizations and everyone is working to achieve them.
7. Offsetting the loss of ecosystems (e.g. through habitat compensation) should be done on a net-gain basis, but only considered after options for avoiding and reducing impacts have been explored.
8. Ensure long term maintenance and ecosystem health is considered and prioritized after planting.

Connecting the Nature and Ecosystems Roadmap and Metro 2050

Metro Vancouver works with member jurisdictions to develop, implement and steward *Metro 2050*, the regional growth strategy. The strategy represents the regional federation's ongoing commitment to building a compact metropolitan region - where approximately two-thirds of the land is designated for agricultural, recreational, and conservation uses. *Metro 2050* defines actions and directions for Metro Vancouver, member jurisdictions, and TransLink.

Though *Metro 2050* and *Climate 2050* are distinct plans, they are intended to be mutually-supportive, with policies and actions that are complementary and focused on common objectives. The *Climate 2050 Nature and Ecosystems Roadmap* builds on *Metro 2050* with further actions to protect stores of carbon and build resiliency with nature and ecosystems.

BIG Move

Big Moves are foundational to achieving the 2030 and 2050 targets, and should lead to the most significant greenhouse gas reductions and/or climate resilience.

Corporate LEADERSHIP

Corporate Leadership actions are ones Metro Vancouver will implement in its corporate operations to demonstrate leadership and support regional actions.

METRO 2050

Metro 2050 identifies actions that are already adopted through *Metro 2050*, the regional growth strategy.

TREE IN MINNEKHADA REGIONAL PARK

Strategy 1: Protect, Restore, and Enhance the Region's Ecosystems

To become a carbon neutral and resilient region by 2050, we need to make substantial commitments to protect, restore, and enhance nature and ecosystems, and at a larger scale than ever before. Currently, about 40% of the region's land base is protected by government and other organizations in the form of parks and other publically-owned lands, for the purposes of conservation or recreation. Large, healthy, connected, and biodiverse ecosystems are more resilient to climate change impacts and therefore better able to store carbon and support climate change adaptation. Scientific reviews of how much of the Earth should be protected vary, but 50% - also know as 'Nature Needs Half' - is considered a mid-point of estimates and is supported by a range of scientific studies (see callout box - Why Protect 50% of the Region?).

Increasing the amount of parkland in the region also provides additional space for the region's growing population to access nature and recreate, contributing to community and individual health and well-being. Given that this region faces significant land use constraints, meeting this target will involve making trade-offs between competing priorities, reducing the amount of land available for urban development and other uses.

Indigenous Peoples have lived on these lands since time immemorial, and continue to steward the lands, waters, and air as part of a reciprocal relationship with nature. Historically, protected areas have often been places where restrictions were in place for First Nations, preventing access to natural areas to practice cultural activities. Moving forward, the participation and leadership of First Nations in protected area management should be prioritized through collaborative agreements and approaches to shared stewardship.

Why Protect 50% of the Region?

There have been growing efforts globally to set ambitious area-based targets for protection. For example, the High Ambition Coalition for Nature and People, an intergovernmental group of 70 countries including Canada, committed to protecting 30% of land and seas by 2030 (known as 30 x 30). This is intended as an interim goal, with another 20% needed as 'climate stabilization areas' to keep climate change below 1.5 degrees.

Studies estimating the percentage of the Earth that should be protected provide values from 30% to 70%, or even higher. **The call for 50% - known as Nature Needs Half - is a mid-point of these values and is supported by a range of scientific studies.**

Ecosystem Loss in the Metro Vancouver Region

Metro Vancouver maintains the Sensitive Ecosystem Inventory (SEI) of the region's most important ecological areas and monitors it for change. Between 2009 and 2014, 1,600 hectares of ecosystem loss was documented, including 1,000 hectares of forest, 120 hectares of wetland, and 100 hectares of riparian areas. Primary drivers of ecosystem loss were urban development (as planned within local official community plans) and logging (as permitted by the BC government).

The losses documented by the SEI represent just four years of change. Estimates of ecosystem loss since European settlement began in the early 1800's help to place recent losses within a longer timeframe of cumulative impacts. For example, as much as 85% of the region's freshwater wetlands were lost by 1990[2].

2 Boyle, C.A., L. Lavkulich, H. Schreier, E. Kiss. 1997 Changes in land cover and subsequent effects on Lower Fraser Basin ecosystems from 1827 to 1990. Environmental Management. 21: 185-196.

Prioritizing the protection of the region's remaining mature ecosystems will focus effort on the highest functioning, most biodiverse areas. Once mature ecosystems are degraded or lost, it will take many years (and potentially extensive effort and resources) to return them to a similar well-functioning state.

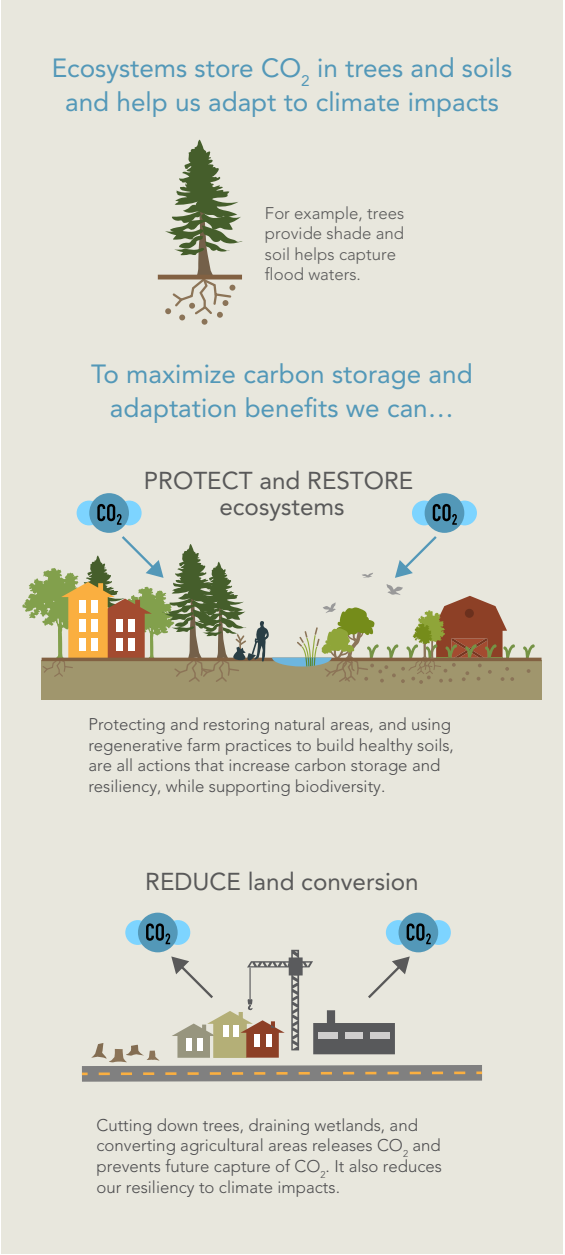
Restoration provides us an opportunity to gain back ecosystems and the services they provide. Examples of how restoration efforts could support climate action include:

- increasing ecosystem connectivity between major protected areas to allow species to move in response to climate change;
- improving the health of ecosystems to keep large carbon stores locked away;
- replacing hard shoreline infrastructure with gently sloped vegetated shorelines to reduce the impacts of sea level rise and wave action; and
- restoring or enhancing wetlands to protect against flooding and daylighting streams to improve hydrological function.

Restoration planning will need to take into account the impacts of climate change in selecting plant species and choosing native species that can cope with the new and changing conditions.

By protecting and restoring a range of ecosystem types in different situations across the landscape (e.g. both high and low elevation forests), we provide for a diversity of ecosystems, species, and conditions. Diverse ecosystems are more resilient and have a greater capacity to recover from disturbances.

FIGURE 6: THE CLIMATE CHANGE BENEFITS OF PROTECTING AND RESTORING ECOSYSTEMS



STRATEGY 1

Potential Impacts of Strategy	Key Partners
• Sets a collective regional vision for ecosystem protection • Expands the amount of land protected for nature • Increases collaboration and knowledge-sharing on ecosystem protection, restoration, and enhancement in the region	• Member jurisdictions • First Nations • BC government • Federal government • NGOs

1.1 Protect an Additional 10% of the Region for Nature.

BIG Move METRO 2050

All member jurisdictions, through implementation of the regional growth strategy, will identify local ecosystem protection targets and demonstrate how these targets will contribute to the regional target of protecting 50% of the region for nature. In addition to directly contributing to protection efforts (action 1.2), Metro Vancouver will support this process by providing data, information resources, and a forum for discussion.

1.2 Protect, Restore, and Enhance Natural Areas at the Regional Scale.

Corporate LEADERSHIP

Continue to implement the *Regional Parks Land Acquisition 2050* strategy to increase the amount of important natural areas protected in the Regional Parks system. In regional parks and the drinking water supply areas, continue to restore and enhance degraded sites, enhance biodiversity, and promote ecosystem resilience. Advocate to the federal and BC governments and other partners to protect, or fund the protection of, additional natural areas in the region, taking into consideration the importance of connecting existing protected areas.

1.3 Protect, Restore, and Enhance Nature at the Local Scale.

METRO 2050

All member jurisdictions, through implementation of the regional growth strategy, support the protection, enhancement and restoration of ecosystems through measures such as land acquisition, density bonusing, development permit requirements, subdivision design, conservation covenants, land trusts, and tax exemptions.

1.4 Incorporate Climate Change Planning into Protected Area Management.

Corporate LEADERSHIP

Develop a Regional Parks Climate Action Strategy. Continue work to improve understanding of climate impacts on the ecosystems and infrastructure in regional parks and the drinking water supply areas. Work with knowledge holders including First Nations, and other agencies with a role in protected area management, to improve understanding of climate impacts on the region's protected areas and develop best practice approaches to managing these areas in the context of a changing climate.

1.5 Prioritize the Conservation of Ecosystem Health and Biodiversity in BC Forest Management.

Advocate to the BC Government to make ecosystem health and biodiversity conservation the overarching priority of forest management and implement the recommendations of the strategic review of old forest management[3].

1.6 Support Ecosystem Protection, Restoration, and Enhancement.

Provide data, guidance materials and best practices to inform the protection, restoration, and enhancement of ecosystems in the region. Convene a forum to provide opportunities for cross-regional collaboration.

3 A New Future For Old Forests: A Strategic Review of How British Columbia Manages for Old Forests Within its Ancient Ecosystems

1.7 Reverse the Loss of the Region's Ecosystems.

Advocate to the federal government, the BC government, member jurisdictions and other agencies to commit to ecosystem restoration and enhancement at a significant scale. Collaborate with others and identify opportunities to make significant gains through restoration and look for partnerships and funding opportunities to magnify efforts.

1.8 Manage Invasive Species.

Corporate LEADERSHIP

Support regional invasive species management by developing and promoting best practices, tracking disposal options, and working with researchers to improve our understanding of the potential spread of invasive species as our climate continues to change. Employ best practices to prevent the introduction and spread of invasive species on lands managed by Metro Vancouver. Continue to support opportunities for cross-regional collaboration.

Old Growth Forests

Old growth forests of coastal BC are those with dominant trees older than 250 years, although they will have a diversity of aged trees present as the oldest trees die, creating space for younger trees to grow. The diversity of tree sizes and ages creates a wide variety of habitats, which supports many different species. As well as having high biodiversity values, old growth forests store large amounts of carbon, approximately 1,000 tonnes of carbon per hectare. Mature and young forests are also critical for carbon sequestration (ongoing uptake of carbon as trees continue to grow) and they provide ecosystem connectivity so wildlife species can move across the landscape. Protecting mature and young forests, in addition to old growth, will increase the total amount of old growth in this region over the long term.

Old Growth Forests in Metro Vancouver

Metro Vancouver secures land for regional parks to protect the region's natural areas and to connect people with nature. Metro Vancouver is also responsible for developing long range plans for managing our region's drinking water sources, including 60,000 hectares of restricted access, protected water supply areas. These areas include the most intact old-growth forest ecosystems in south-western BC. Metro Vancouver tracks old growth and other rare, fragile, or at-risk ecosystems using the Sensitive Ecosystem Inventory. Within the region, including the full extent of Metro Vancouver's drinking water supply areas that extend north of the MVRD boundary, there are 49,853 ha of old growth forest. Of this amount, 34,805 (70%) is on Metro Vancouver owned or managed lands: 33,011 ha (66%) within watersheds and 1,794 ha (4%) in Regional Parks.

Metro Vancouver Corporate Leadership in Ecosystem Protection and Restoration

The regional parks system currently includes over 13,800 hectares of land which protects natural areas and provide opportunities for people to connect with nature. Metro Vancouver is also responsible for protecting the region's drinking water supply areas from development, pollution, and human-caused disturbances. By protecting these watersheds for drinking water we are also protecting about 60,000 hectares of mostly forested land.

Ecological Health Framework – Adopted by the Board in 2018, this framework encapsulates Metro Vancouver's collective efforts around ecological health and provides guiding principles, goals, and strategies to help achieve the vision of a beautiful, healthy, and resilient environment for current and future generations. Specifically, the *Ecological Health Framework:*

- Identifies Metro Vancouver's role in protecting and enhancing ecological health as it relates to its services and functions;
- Provides a foundation for integrating ecological health into Metro Vancouver's corporate decision making;
- Identifies how Metro Vancouver will report on ecological health-related initiatives across the organization; and
- Supports regional efforts to protect and enhance ecological health.

Regional Parks Land Acquisition 2050 Strategy – *Regional Parks Land Acquisition 2050* took a systematic, evidence-based approach to identifying land suitable for protection as a regional park. The result identifies the most regionally important unprotected natural areas that could be acquired for future new and expanded parks. It envisions growing the regional parks system into a connected network of resilient regional parks and greenways that protect regionally important natural areas and connects people to them.

Invasive Species Resources – Metro Vancouver provides a suite of resources to support invasive species management, including an online course, locally-tested best management guidance for practitioners, and fact sheets for residents.

Ecosystem Restoration in Regional Parks - Guided by the *Natural Resource Management Framework*, Regional Parks has an ongoing program to restore degraded sites, enhance biodiversity, and promote ecosystem resilience in the Regional Parks System. Every year through this program, thousands of trees and other native vegetation are planted, thousands of kilograms of invasive plants are removed, ecosystem health is monitored, and habitat improvements are made to support native biodiversity.

Ecohydrological Restoration of Burns Bog - Metro Vancouver works with other stakeholders to restore the bog and prevent the drying out of peat - a process that releases greenhouse gases.

Strategy 2: Connect Green Infrastructure

Green infrastructure includes both natural and urban elements (see Figures 4 and 7). From street trees, hedgerows and green roofs to forests, wetlands, and rivers, they provide a range of climate change, biodiversity, and health benefits. These benefits are magnified when individual green infrastructure elements are connected together into a network across jurisdictional boundaries, increasing resilience to climate impacts and supporting the movement of species across the landscape. A regional green infrastructure network would maximize ecosystem services by linking together natural and urban ecosystems through a robust system of recreational greenways, aquatic blueways, and wildlife crossings and corridors.

Developing a regional green infrastructure network would necessitate creating a collaborative and cross-jurisdictional process, building on existing local networks, and identifying opportunities to maximize associated climate change adaptation, ecosystem connectivity, and human health benefits.

2.1 Develop a Regional Green Infrastructure Network.

BIG Move METRO 2050

Through implementation of the regional growth strategy, collaborate with member jurisdictions, First Nations, and other agencies to identify a Regional Green Infrastructure Network that connects ecosystems and builds on existing local ecological networks, while maximizing resilience, biodiversity, and human health benefits. Collaboratively prepare Implementation Guidelines to support a Regional Green Infrastructure Network.

2.2 Green Urban Areas.

Support the greening of urban areas by developing and sharing best practices and guidelines to incorporate green infrastructure into new developments and redeveloped areas. Work collaboratively with member jurisdictions and other partners to identify barriers and opportunities to integrating green infrastructure in urban areas.

STRATEGY 2

Potential Impacts of Strategy	Key Partners
• Creates a process to work together to connect a cross-regional network • Integrates ecosystem connectivity into green infrastructure planning and implementation	• Member jurisdictions • First Nations • BC government • Federal government • NGOs • Academic institutions • Agricultural land owners

2.3 Green the Regional Greenways Network.

Corporate LEADERSHIP

Identify opportunities to incorporate green infrastructure, restoration of ecosystems and unprotected natural areas in greenway planning and design to enhance ecosystem connectivity and provide shading and other benefits to trail users. Advocate to other agencies who own or manage parts of the Regional Greenways Network to do the same.

2.4 Minimize Ecosystem Fragmentation.

METRO 2050

Avoid ecosystem loss and fragmentation when developing and operating infrastructure within the regional growth strategy Conservation and Recreation regional land use designation, but where unavoidable, mitigate the impacts, and advocate to other agencies to do the same. All member jurisdictions, through the implementation of the regional growth strategy, will discourage or minimize the fragmentation of ecosystems through low impact development practices that enable ecosystem connectivity.

2.5 Develop Data and Resources to Support Ecosystem Connectivity.

Continue to work with others to develop and share data and resources related to ecosystem connectivity, including resources that identify the impacts of climate change on connectivity.

Nature in the City

Nature and ecosystems within urban areas can maximize ecosystem services – such as cooling and shading – close to where people live, work and play. By bringing nature into the city through enhancement and restoration – also known as 'rewilding' - urban ecosystems can play a role in supporting biodiversity across multiple scales, from green roofs on individual buildings to large, open, and natural spaces at the urban periphery. A Regional Green Infrastructure Network (as described in action 2.1) would connect ecosystems both between and within the region's urban areas.

FIGURE 7: COMPONENTS OF A GREEN INFRASTRUCTURE NETWORK

Components of a Regional Green Infrastructure Network

Habitat hubs are larger, intact core habitat areas and are a critical feature of any green infrastructure network. They provide areas of refuge for a diverse range of species, including those less tolerant of human disturbance. Smaller sites also provide habitat and can act as 'stepping stones' between hubs.

Corridors are linear areas of habitat that support movement of birds, fish and mammals between hubs and other areas of habitat. They can span short or long distances. As land is developed, these remaining pathways become even more critical. Also known as wildlife, habitat, or green corridors, these areas also include riparian corridors that follow the path of a stream or river.

Urban green infrastructure includes a wide variety of features that support nature in the city and provide habitat for wildlife that is tolerant of human disturbance. Features include yards and gardens, green roofs and walls, and street trees.

Recreational greenways and blueways provide opportunities for people to recreate on land and water, but these areas are also used by wildlife to move through the region. Wildlife can be supported by enhancing natural vegetation alongside green and blueways, as well as increasing the width of vegetated buffers.

Natural coastlines provide important habitat for several species, while supporting connections between marine and terrestrial habitats and along the foreshore.

Hedgerows and areas of natural vegetation within agricultural areas provide habitat and support connectivity.

Strategy 3: Integrate Natural Assets into Conventional Asset Management and Decision-Making Processes

While ecosystems should not be considered solely as "assets" from which humans derive value, the concept of "natural assets" has emerged as a mechanism to highlight that ecosystems (e.g. a wetland) can be formally acknowledged as a fundamental asset that benefits the community - in the same way that engineered assets (e.g. a wastewater treatment plant) are recognized.

Natural assets provide an extensive range of ecosystem services which are not officially recognized in traditional asset management, financial planning, or decision-making processes. Integrating natural assets into asset management processes supports improved understanding of the services they provide, and this information supports efforts to maintain and manage natural assets for their long term health and resiliency. Ensuring these natural assets are protected and monitored over the long term is crucial in the context of a changing climate, since many of the services ecosystems provide help communities respond to climate change.

While the concept of natural asset management is gaining considerable traction at the local level, Metro Vancouver can also play a key role in managing regional assets, supporting regional partners, convening key groups, providing a discussion forum, and developing and sharing data. Collectively, the region can elevate natural asset management from an optional process to an integral one. While there is no way to place a true economic valuation on nature itself (nor should nature be valued this way), a more robust understanding of the location of natural assets and the level of services they provide helps to demonstrate their critical importance to our communities, and an additional tool to help protect, restore, and enhance them.

3.1 Incorporate Natural Assets Into Asset Management and Financial Planning.

BIG Move | METRO 2050

Corporate LEADERSHIP

Through implementation of the regional growth strategy, incorporate natural assets and ecosystem services into Metro Vancouver's corporate planning, asset management systems and investments, and provide regionally appropriate guidance on methodologies, tools and decision-making frameworks. This Big Move will require multiple departments at Metro Vancouver to shift their standard practice, and collaborate across silos.

STRATEGY 3

Potential Impacts of Strategy	Key Partners
• Elevates natural asset management as standard practice rather than the exception • Provides an additional mechanism to help protect nature and ecosystems long-term • Enables consistent funding opportunities	• Member jurisdictions • First Nations • NGOs • BC government • Public Sector Accounting Board • Agricultural land owners

3.2 Integrate Ecosystems and their Services into the Design of Major Infrastructure.

BIG Move Corporate LEADERSHIP

Demonstrate leadership and innovation by integrating nature-based solutions into the siting and design of major infrastructure where appropriate (or "where it makes sense"), and consider nature-based complements to hard (or "grey") infrastructure. Also require full carbon cost accounting and ecosystem service valuation during construction and operation of Metro Vancouver's water and wastewater infrastructure.

3.3 Consider Ecosystems and their Services in Major Development Decisions.

Work with member jurisdictions to understand and consider ecosystems and their services, including carbon storage and flood protection, in major development decisions, such as regional growth strategy amendment decisions. Using appropriate data and other forms of knowledge, consider how potential new developments may inhibit the capacity for nature to provide ecosystem services and explore alternatives.

3.4 Support Natural Asset Management at the Local Level.

Develop and share guidance materials to support natural asset management at the local level, and provide a forum to share and advance best practices. Regional datasets can be used to inform local natural asset inventories including trans-boundary areas. Forums are a vital space to connect and empower local champions of natural asset management, build a regional network, and develop internal natural asset knowledge within organizations.

3.5 Explore Opportunities to Overcome Barriers to Natural Asset Management.

Explore the legal landscape and other barriers that may inhibit natural asset management in the Metro Vancouver region. Results from this research may reveal opportunities to further reduce barriers or enable strategic frameworks and norms that support natural asset management in the region and across BC.

Municipal Natural Assets Initiative (MNAI)

The Municipal Natural Assets Initiative provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs, and in developing leading-edge, sustainable and climate resilient infrastructure. Local communities in the Metro Vancouver region have taken the lead in working with the MNAI to understand and advance natural asset management.

District of West Vancouver's Natural Asset Inventory

The District of West Vancouver is one of the first Canadian municipalities to estimate the value of their natural assets in terms of the services they provide annually and into the future – a first step toward integrating natural assets into the District's financial and asset management plans. Metro Vancouver provided its Sensitive Ecosystem Inventory data to support this process.

Strategy 4: Support a Resilient, Robust, and Healthy Urban Forest

The urban forest includes all of the trees in the public and privately owned lands of the built environment – including the trees in backyards, streets, and parks. A healthy and resilient urban forest provides essential ecosystem services such as habitat for local wildlife, shading and cooling hotter areas, capturing rainfall and stormwater, and storing carbon (the region's urban forest currently stores approximately 8 million tonnes of carbon[4]). To implement this strategy, Metro Vancouver can establish a regional urban tree canopy cover target, improve tree canopy cover in Metro Vancouver-owned lands such as Regional Parks and Watersheds, and support member jurisdictions, stewardship groups, and other regional partners by developing and sharing relevant data and resources.

4.1 Achieve 40% Tree Canopy Cover Within the Region's Urban Areas

BIG Move | METRO 2050

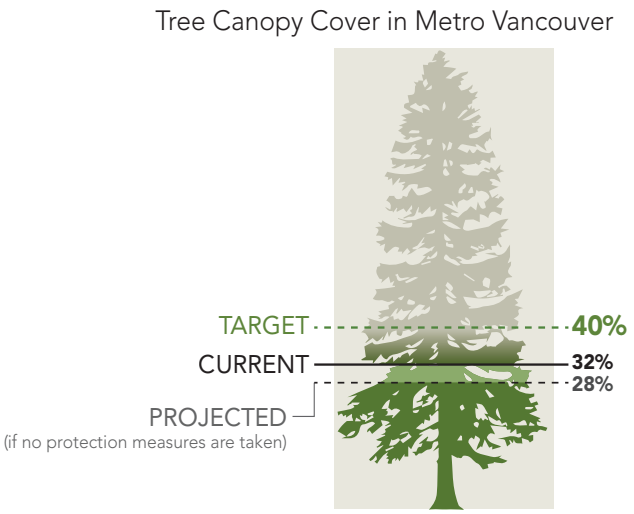
All member jurisdictions, through implementation of the regional growth strategy, will identify local tree canopy cover targets, and demonstrate how these targets will contribute to the regional target of 40% canopy cover within the region's Urban Containment Boundary. Metro Vancouver will contribute to this target by increasing tree canopy on Metro Vancouver-owned lands (where applicable), measuring and reporting on regional tree canopy cover trends, and advocating to the federal and BC governments to provide suitable funding opportunities for tree planting in urban areas.

STRATEGY 4

Potential Impacts of Strategy	Key Partners
• Increases tree canopy cover to improve ecosystem services, including those that are climate change-related • Improves the health and resiliency of the urban forest • Provides a forum for knowledge sharing and partnerships	• Member jurisdictions • Academic institutions • Health authorities • Urban forestry practitioners • First Nations • BC government • Federal government • Professional associations • Local residents

4 Figure obtained from Metro Vancouver's Carbon Storage Dataset (metrovancouver.org/data).

FIGURE 8: TREE CANOPY COVER IN METRO VANCOUVER



4.2 Provide Data and Resources to Support Urban Forest Management.

Continue to develop and share materials that support member jurisdictions and other partners in achieving a healthy and resilient urban forest. These materials can help support local and regional urban forestry objectives.

4.3 Improve Local Regulations and Management Practices.

METRO 2050

All member jurisdictions, through implementation of the regional growth strategy, will enable the retention and expansion of urban forests using various tools, such as local tree canopy cover targets, urban forest management strategies, tree regulations, development permit requirements, land acquisition, street tree planting, and reforestation or restoration policies, with consideration of climate resiliency. Through best practices and new or updated regulations, member jurisdictions have an opportunity to support a healthy urban forest by protecting and retaining existing trees, and supplementing those actions with the planting of new trees.

Tree Canopy Cover and the 40% Target

Tree canopy cover refers to the leaves and branches that form a visible layer, and the extent to which they cover the ground if one is viewing from the air. Given the ecosystem services that trees provide, we often use canopy cover as a proxy for these services. The region's canopy cover within the Urban Containment Boundary is currently 32%, and this number is expected to fall to 28% in the next 20-30 years based on projected development patterns. A canopy cover target of 40% is commonly adopted at the local level in cities around the world, and this number represents both an aspirational and achievable goal for the Metro Vancouver region. Local variation in geography, environmental conditions and historical development patterns will need to be considered, given that a 40% target is a regional average that will not be feasible for every individual member jurisdiction to meet at the local level.

Reversing the current trend of tree canopy loss and meeting a 40% tree canopy target will require collaboration and commitment throughout the region, and a major shift in the way tree protection and planting efforts are prioritized. Strategy 4 outlines critical next steps to achieve this objective.

4.4 Convene Partners on Urban Forestry Issues.

Continue to provide a forum for a diverse range of urban forestry practitioners to discuss and collaborate on issues of regional concern. These forums allow regional partners to learn from each other, share relevant information and updates, overcome barriers, and build a community of practice.

Metro Vancouver Corporate Leadership in Urban Forestry

Urban Forest Climate Adaptation Initiative - Metro Vancouver developed the Urban Forest Adaptation Initiative to assess the risks and predicted changes to the region's urban forest. The initiative provides guidance to help practitioners manage urban forests in a changing climate today and to prepare for the future.

Regional Tree Canopy Cover and Impervious Surfaces Report - This report contains an analysis of tree canopy cover and impervious surfaces in Metro Vancouver, and is accompanied by two publically-available GIS datasets.

Metro Vancouver Tree Regulations Toolkit - The Metro Vancouver Tree Regulations Toolkit identifies the available approaches to regulate trees in British Columbia, highlights considerations for selecting appropriate tools based on the local community context, and details the higher-level plans and local-scale regulatory tools that can help to preserve trees and increase tree canopy cover.

4.5 Consider Equity and Human Health in Urban Forestry Planning.

Work with health authorities, academic institutions, member jurisdictions, and other partners to further understand the connections between urban trees, human health, and equity, and consider these factors in urban forestry planning. These connections are particularly important to understand in the context of a changing climate.

Encouraging Tree Planting and Green Infrastructure on Residential Properties

Metro Vancouver's 2019 Regional Tree Canopy Cover and Impervious Surfaces Report identified that within the Urban Containment Boundary, approximately 37% of potential planting area – land that could *theoretically* be used to increase tree canopy cover – is located in residential areas. This means that local residents can play a significant role in improving residential tree canopy cover within communities. Local governments can encourage environmental stewardship, partnership, and tree planting and protection on private properties through programs and initiatives, and communicate the benefits of trees.

While trees provide significant levels of ecosystem services, other types of green infrastructure provide benefits close to where people live as well. Metro Vancouver's Grow Green platform is a helpful guide to creating and maintaining a sustainable garden or lawn space on private property - utilizing non-invasive, waterwise plants that are readily available in Metro Vancouver.

Strategy 5: Advance Nature-based Solutions to Climate Change

Nature-based solutions are actions that protect, sustainably manage, and restore ecosystems, as well as address societal challenges such as climate change, providing both human well-being and biodiversity benefits. These solutions can be an important part of climate action planning since the co-benefits extend beyond storing carbon and adapting to climate change impacts. Metro Vancouver can help advance nature-based solutions by integrating them into regional projects and plans, encouraging and supporting their uptake at the local level, and exploring new and innovative opportunities for this emerging area of practice.

5.1 Explore Innovative Funding and Incentive Programs.

BIG Move

Explore the viability of innovative financial and incentive mechanisms (such as nature-based carbon offsets and credits, conservation levies, green bonds, insurance-based funding, and payment for ecosystem services) to advance and support nature-based solutions. This Big Move also includes identifying existing funding sources, and advocating that the federal and BC governments enable and support nature-based solutions. This support could include providing reliable and sustainable funding sources and incentive programs for multiple ecosystem types and services. In addition to exploring partnership options, this Big Move will involve gauging public support for various options and determining appropriate implementation scales.

5.2 Plan for Climate Change Impacts on Ecosystems.

BIG Move

Work with other partners to conduct a vulnerability assessment of the region's ecosystems and update the Metro Vancouver Sensitive Ecosystem Inventory with climate change vulnerability information (e.g. impacts of coastal squeeze on intertidal ecosystems). This Big Move would create information that can be used across the region to inform planning efforts. It could also involve understanding how climate change impacts may affect carbon sequestration potential in the region's ecosystems.

5.3 Include Nature-Based Solutions in Climate Action Plans.

Advocate that member jurisdictions include nature-based solutions in climate action plans. Work with the federal and BC governments to identify opportunities to fund and implement nature-based solutions for climate change adaptation and carbon storage at the local level. Metro Vancouver will also provide data and a forum to share experiences and best practices.

Outcomes from action 5.1 may support implementation of other strategies and actions throughout the *Nature & Ecosystems Roadmap*.

STRATEGY 5

Potential Impacts of Strategy	Key Partners
• Supports the research, uptake, and mainstreaming of nature-based solutions in climate action planning • Provides human health and biodiversity co-benefits	• Member jurisdictions • First Nations • Academic institutions • BC government • Federal government • NGOs • Agricultural land owners

Nature-based Carbon Offsets and Credits

A carbon offset is a reduction in carbon (or an increase in carbon storage, e.g. through tree planting) that is used to compensate for greenhouse gas emissions that occur elsewhere. A carbon offset credit is a transferrable instrument certified by governments or other entities. These offsets and credits are transferred through markets – these markets exist under both **mandatory** (compliance) and **voluntary** programs, both of which require some form of verification.

- **Mandatory markets** are created and regulated by mandatory national, regional, or international carbon reduction programs.
- **Voluntary markets** function outside of compliance markets and enable the purchase of offsets on a voluntary basis.

Key Considerations for Carbon Offsets

- **Framing and Use:** Offsetting should be framed as an additional action to supplement deep reductions in greenhouse gases, rather than a compensating action that enables greenhouse gas emitting activities to continue business as usual.
- **Additionality:** Ecosystem protection/restoration to create the carbon offset must be an activity that would not have occurred without the offset – for instance, a forest that is already legally protected should not be counted in the offset process.
- **Permanence:** Ecosystems protected through offsets should be protected permanently. This can be difficult to ensure for some ecosystem types (e.g. salt marshes affected by sea level rise, and forests disturbed by pests and wildfire).
- **Leakage:** Preventing a harmful activity in one location may simply transfer that same activity to a new location – i.e. protecting a forest from logging may simply shift the activity to a new area, resulting in no net climate benefit.
- **Verification and quantification:** Given the complexity of carbon fluxes in natural systems, a project's greenhouse gas reductions must be quantified accurately and then verified by an accredited third party. Guidelines for quantification, verification, monitoring, and reporting are needed to ensure projects deliver the estimated carbon reductions. Verification methods for forest ecosystems are the most well-developed to date.

Future Work

Metro Vancouver will continue to monitor and explore the role and validity of nature-based carbon credits and offsets in the region, in addition to other innovative financial and incentive mechanisms that support nature-based solutions. Future work could also explore the role of alternative ecosystems (e.g. salt marshes) and ecosystem services (e.g. habitat, flood protection) in offset mechanisms, through mandatory, voluntary and regional scale markets.

5.4 Support the Implementation of Nature-based Solutions.

Work with academic institutions and other regional partners to explore and promote best practices and technologies for advancing innovative nature-based solutions, while ensuring risks are minimized. This action could also involve identifying legislative and other barriers to implementing nature-based solutions, and providing a forum for collaboration and knowledge-sharing with practitioners.

5.5 Manage Forests in the Context of a Changing Climate.

Advocate to the BC government to continue implementing measures that adapt forests to a changing climate (e.g. assisted migration research), enhance carbon storage (e.g. reforestation), and reduce greenhouse gas emissions associated with forest management (e.g. reduce slash pile burning). Continue to work with the BC government and local authorities in early detection and suppression of wildfire in the region's drinking water supply areas and adjacent forested areas, as well as fuel management practices in areas with high ignition risk.

Forest Fires and the Wildland Urban Interface (WUI)

Interventions to protect communities from wildfire risks will be explored further in the *Land Use and Urban Form Roadmap*.

5.6 Advance Nature-Based Solutions to Address Flood Hazards.

Work with partner organizations to advance cross-jurisdictional nature-based solutions for flood management, through processes such as the *Lower Mainland Flood Management Strategy* and the BC government's *Flood Strategy*.

5.7 Develop our Understanding of Coastal Ecosystems and Blue Carbon Potential.

Work with academic institutions and other regional partners to better understand the long-term health and carbon storage potential in the region's coastal and marine ecosystems, including tidal marshes, eelgrass and kelp. Researchers in the region are studying these ecosystems and filling data gaps, and Metro Vancouver will collaborate on next steps.

5.8 Partner with Others to Address Climate Change Issues in Coastal and Marine Ecosystems.

Work with Key Partners to address climate change issues in coastal and marine ecosystems. Given the complex overlapping jurisdictions that exist in the coastal and marine realm, action will require partnership and collaboration. Early opportunities include collaborating with the BC government on the proposed *Ocean Acidification and Hypoxia Action Plan* and *Coastal Marine Strategy*.

Climate Change and Marine and Coastal Ecosystems

Our rich marine and coastal areas provide important habitat for fish and wildlife including endangered killer whales, salmon, and hundreds of species of resident and migratory shorebirds. The ocean has spiritual, cultural and ceremonial value for local First Nations, and it provides traditional foods. Salt marshes and seagrasses can store carbon and mitigate flooding in coastal communities. However, these complex intertidal and marine ecosystems are particularly vulnerable to climate change. With rising seas and storm surge, intertidal wetlands will be lost as they are unable to move higher due to sea walls and other human-made structures. In marine environments, warmer temperatures, increased runoff from more extreme rainfall events, and changes in ocean chemistry will alter ecological processes.

CAMPBELL VALLEY REGIONAL PARK

Setting the Path Ahead

The "Setting the Path Ahead" section will eventually be found on Metro Vancouver's Climate 2050 webpages under "Nature and Ecosystems", and will serve as a companion to the *Nature and Ecosystems Roadmap*. This will allow Metro Vancouver to track progress towards targets, and add and adjust strategies and actions in response to performance measurement.

Nature and ecosystems are already providing critical ecosystem services that support climate action; locking away millions of tonnes of carbon in vegetation and soils, and moderating the impacts of a changing climate by reducing flooding, protecting shorelines, and cooling temperatures. However, natural systems are themselves at risk from climate change, land development, pollution, invasive species and other factors; these impacts reduce the ability of nature to provide important climate-related services.

In order to maintain the existing services provided by nature and prevent further losses, actions to protect nature and ecosystems need to be implemented without delay. This involves protecting the region's ecosystems, including the urban forest, and ecosystem connectivity across the region. These measures are supported by actions that seek to change how we do business by integrating nature into decision-making and managing natural assets for their long term health and resiliency. Actions to advance the understanding and mainstreaming of nature-based solutions are important to ensuring the region's responses to climate change leverage the benefits provided by nature, while also supporting biodiversity and human health and well-being. Actions that support restoration and enhancement of ecosystems offer an opportunity to gain back lost ecosystem function and climate-related benefits.

The timeline below contains all of the actions included in this Roadmap. Although there is much work to be done, there are some critical actions that, if started over the next two years, will support the regional vision of a carbon neutral and resilient region by 2050. Many actions contained in the *Nature and Ecosystems Roadmap* will be initiated in the short-term, but benefits and outcomes will be accrued slowly over time as ecosystems mature.

CLIMATE 2050 NATURE AND ECOSYSTEMS ROADMAP ACTION TIMELINE

STRATEGY	2021-2023	2024-2029	2030-BEYOND
STRATEGY 1 Protect, Restore, and Enhance the Region's Ecosystems	1.1 BIG MOVE Protect an Additional 10% of the Region for Nature		
	1.2 Protect, Restore, and Enhance Natural Areas at the Regional Scale		
	1.3 Protect, Restore, and Enhance Nature at the Local Scale		
		1.4 Incorporate Climate Change Planning into Protected Area Management	
	1.5 Prioritize the Conservation of Ecosystem Health and Biodiversity in BC Forest Management		
	1.6 Support Ecosystem Protection, Enhancement, and Restoration		
		1.7: Reverse the Loss of the Region's Ecosystems through Restoration.	
	1.8 Manage invasive species		
STRATEGY 2 Connect Green Infrastructure	2.1 BIG MOVE Develop a Regional Green Infrastructure Network		
	2.2 Green Urban Areas		
	2.3 Green the Regional Greenways Network		
	2.4 Minimize Ecosystem Fragmentation		
		2.5 Develop Data and Resources to Support Ecosystem Connectivity	
STRATEGY 3 Integrate Natural Assets into Conventional Asset Management and Decision-Making Processes	3.1 BIG MOVE: Incorporate Natural Assets into Asset Management and Financial Planning		
	3.2 BIG MOVE: Integrate Ecosystems and their Services into the Design of Major Infrastructure		
	3.3 Consider Ecosystems and their Services in Major Development Decisions		
	3.4 Support Natural Asset Management at the Local Level		
		3.5: Explore Opportunities to Overcome Barriers to natural asset management	
STRATEGY 4 Support a Resilient, Robust, and Healthy Urban Forest	4.1 BIG MOVE: Achieve 40% Tree Canopy Cover Within the Region's Urban Areas		
	4.2: Provide Data and Resources to Support Urban Forest Management		
	4.3: Improve Local Regulations and Management Practices		
	4.4: Convene Partners on Urban Forestry Issues		
	4.5 Consider Equity and Human Health in Urban Forestry Planning		
STRATEGY 5 Advance Nature-based Solutions to Climate Change	5.1 BIG MOVE: Explore Innovative Funding and Incentive Programs		
		5.2 BIG MOVE: Plan for Climate Change Impacts on Ecosystems	
	5.3: Include Nature-Based Solutions in Climate Action Plans		
	5.4 Support the Implementation of Nature-based Solutions		
	5.5: Manage Forests in the Context of a Changing Climate		
	5.6: Advance Nature-Based Solutions to Address Flood Hazards		
		5.7: Develop our Understanding of Coastal Ecosystems and Blue Carbon Potential	
	5.8 Partner with Others to Address Climate Change Issues in Coastal and Marine Ecosystems		

PLANTING NATIVE SPECIES, TYNEHEAD REGIONAL PARK

Measuring our Progress

The table below lists examples of some of the performance indicators that could be used to help Metro Vancouver measure regional progress towards meeting the objectives of this Roadmap. Indicators in the table below may apply to more than one strategy, even if not listed. The performance indicators used will depend, to some extent, on the availability of this information from other organizations and agencies. Because this Roadmap allocates some actions to other partners, data sharing will be critical for measuring the pace of our collective progress towards common goals.

ROADMAP ELEMENT	KEY PERFORMANCE INDICATOR	DATA SOURCE	DATA IS CURRENTLY COLLECTED
Protect, Restore, and Enhance the Region's Ecosystems	Hectares of unprotected Sensitive or Modified Ecosystems	Metro Vancouver	Yes
	Hectares of protected lands and waters	Metro Vancouver	Yes
	Hectares of Sensitive or Modified Ecosystems	Metro Vancouver	Yes
	Percent of inventoried Sensitive or Modified Ecosystems rated high quality	Metro Vancouver	Yes
	Hectares of ecological restoration areas	Metro Vancouver Member jurisdictions NGOs BC government Other agencies	Yes – regional parks No – rest of region
	Number of new invasive non-native species recorded and/or considered established	BC government Federal government	Yes
	Watershed and stream health index	Metro Vancouver	No

ENJOYING IONA BEACH REGIONAL PARK

ROADMAP ELEMENT	KEY PERFORMANCE INDICATOR	DATA SOURCE	DATA IS CURRENTLY COLLECTED
Connect Green Infrastructure	Ecosystem connectivity index	Metro Vancouver	No
	Percent impervious surfaces (e.g. paved roads, buildings)	Metro Vancouver	Yes
Integrate Natural Assets into Conventional Asset Management and Decision-making Processes	Carbon stored in vegetation and soils	Metro Vancouver	Yes
	Measurement of ecosystem services (T.B.D.)	T.B.D.	No
	Number of member jurisdictions with natural asset inventories	Member jurisdictions	No
Support a Resilient, Robust, and Healthy Urban Forest	Percent tree canopy cover (for the region and the urban containment boundary)	Metro Vancouver	Yes
	Urban forest health assessment	T.B.D.	No
	Number of member jurisdictions with current (<=5yrs) tree bylaws and/or urban forest management strategies	Member jurisdictions	Yes
	Number of member jurisdictions with tree canopy cover targets	Member jurisdictions	Yes
Advance Nature-based Solutions to Climate Change	Number of member jurisdictions' climate plans that incorporate nature-based solutions	Member jurisdictions	No
	Extent of coastal ecosystems	BC government NGOs Academic institutions	No
	Ecosystem vulnerability indicators (T.B.D.)	T.B.D.	No

Metro Vancouver will continue to develop indicators as new information becomes available, and technological advances are made.

Glossary

Air contaminants refer to any substance that is emitted into the air and that (a) injures or is capable of injuring the health or safety of a person; (b) injures or is capable of injuring property or any life form; (c) interferes or is capable of interfering with visibility; (d) interferes or is capable of interfering with the normal conduct of business; (e) causes or is capable of causing material physical discomfort to a person; or (f) damages or is capable of damaging the environment.

Biodiversity is the variety of species and ecosystems, and the ecological processes that they are part of.

Blue carbon refers to the carbon stored in coastal and marine ecosystems.

Blueway refers to a network of water bodies (such as rivers, creeks and lakes), often used for recreation.

Carbon neutral region is a region that has achieved the deepest greenhouse gas emission reductions possible across all economic sectors, and removes or captures sufficient carbon dioxide to balance any remaining regional greenhouse gas emissions.

Carbon sequestration is the removal of carbon dioxide from the air on an annual basis.

Carbon storage refers to the total amount of carbon stored in the vegetation and soils of ecosystems such as forests, wetlands and intertidal areas, which often takes thousands of years to accumulate.

Climate change adaptation means anticipating, planning for, and responding to the adverse effects of climate change and taking appropriate action to prevent or minimize the damage it can cause, or taking advantage of opportunities that may arise. It has been shown that well-planned, early adaptation action saves money and lives later.

Climate resilience describes the capacity of ecosystems, economies, infrastructure, and communities to absorb the impacts of climate change while maintaining essential services and functions needed to support health and well-being. In some cases, climate resilience involves changing services and functions so they are more sustainable.

Coastal squeeze occurs when rising sea levels push coastal habitats landward. Coastal habitats are often diminished in both size and function when caught between rising sea levels and fixed infrastructure (such as a sea wall) or high ground.

Ecological health captures the connection among healthy functioning ecosystems, the valuable services they provide, and human well-being.

Ecosystems are all the plants and animals that live in a particular area together with the relationships between them and their environment.

Ecosystem connectivity is the physical and functional links between ecosystems that support biodiversity by allowing movement of species across the region.

Ecosystem services are the benefits people obtain from ecosystems, including food, fresh water, shading, and human health and well-being. These services can be grouped into four main types: supporting, provisioning, cultural, and regulating.

Equity is the promotion of fairness, justice, and the removal of systemic barriers that may cause or aggravate disparities experienced by different groups of people. This can include consideration of the many dimensions of identity, such as socioeconomic status, race, ethnicity, sex, age, disability, gender, sexuality, religion, indigeneity, class, and other equity-related issues.

Fine particulate matter ($PM_{2.5}$) is made up of tiny solid or liquid particles that float in the air and can penetrate deep into the lungs and even into the bloodstream. Fine particulate matter can damage people's health by aggravating existing lung and heart diseases, increasing the risk of cancer and reducing life expectancy.

Green gentrification occurs when improvements to urban green space trigger a flow of wealth into an area, increasing the cost of living and forcing economically marginalized residents to relocate.

Green infrastructure is the natural, enhanced, and engineered assets that collectively provide society with ecosystem services required for healthy living.

Greenhouse gases are air contaminants that trap heat and are the cause of climate change. Greenhouse gases include carbon dioxide and nitrous oxide, as well as short-lived climate forcers such as methane, halocarbons, black carbon and ozone. Limiting or preventing greenhouse gas emissions and removing these gases from the atmosphere is critical to avoiding catastrophic climate change (sometimes referred to as climate change mitigation).

Ground-level ozone (O_3) can have harmful impacts on everyone, especially children, seniors, and people with lung and heart conditions. It is primarily formed when nitrogen oxides and volatile organic compounds react in the air on hot and sunny days.

Hazard refers to a dangerous phenomenon, substance, human activity, or condition. In this context, hazards are caused or made worse by climate change. Examples include rainstorms, extreme weather, wildfires, storm surges, and landslides.

Impacts refers to the consequences of realized risks on ecosystems, economies, infrastructure and communities. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial.

Indigenous Knowledge reflects the unique cultures, languages, governance systems and histories of Indigenous peoples from a particular location. Indigenous knowledge is dynamic and evolves over time. It builds on the experiences of earlier generations and adapts to present conditions. First Nations, Inuit and Métis each have a distinct way of describing their knowledge. Knowledge-holders are the only people who can truly define Indigenous knowledge for their communities.

Keystone species have a disproportionately large effect on the ecosystems in which they occur. Keystone species help to maintain local biodiversity within a community either by controlling populations of other species that would otherwise dominate the community, or by providing critical resources for a wide range of species.

Natural assets are the stock of natural resources and ecosystems (including geology, soil, air, water, and all living things) that provide benefits to people. Examples include forests, wetlands, aquifers and streams. It is from these natural assets that humans derive a wide range of services, often called ecosystem services, which make human life possible.

Nature-based solutions are actions that protect, sustainably manage, and restore natural or modified ecosystems but also address societal challenges (such as climate change), thereby providing both human well-being and biodiversity benefits.

Recreational Greenway refers to a linear corridor often used for recreation.

Regional Greenways Network is the region's network of recreational greenways which support recreational walking, cycling, and, where appropriate, horseback riding.

Riparian refers to areas close to or on river banks.

Sensitive Ecosystem are ecosystems mapped by the Metro Vancouver Sensitive Ecosystem Inventory. Sensitive Ecosystems are ecologically significant and relatively unmodified, and include wetlands, older forests and riparian areas. Some younger and more human modified ecosystems still have ecological value and importance to biodiversity (e.g., young forests), and are also included in the Sensitive Ecosystem Inventory.

BOUNDARY BAY REGIONAL PARK

Stormwater is the water from rain or melting snow that is not absorbed into the ground. In urban areas, stormwater goes into storm sewers (the grated drains found on streets), which empty directly into rivers, creeks or the ocean. Managing stormwater and drainage is key to preserving the health of urban streams and rivers.

Subsidence is the sudden sinking or gradual downward settling of the ground's surface. Subsidence is common in river deltas.

Tree canopy cover refers to the leaves and branches that form a visible layer if one is viewing the region from the air, and the extent to which they cover the ground.

Urban forest refers to the trees within the public and private lands of a city, including the trees in parks, around buildings, along streets and in backyards.

Urban heat island effect refers to a phenomenon where built-up areas are hotter than nearby non-urban areas. The average air temperature of a city can be several degrees warmer than the surrounding landscape.

Vulnerability is the degree to which ecosystems, economies, infrastructure and communities are susceptible to, or unable to cope with, the adverse effects of climate change. Vulnerability varies based on exposure, sensitivity and adaptive capacity. Geographic location, socio-economic conditions, and other factors can impact susceptibility to harm and adaptive capacity.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