E3b3. Density Summary

Site Area

The site area of 819,370 sf or 76,121.96 sm, including roads, is used for FAR calculations.

Zoning

Burnaby Lake Village's rezoning proposes Comprehensive Development (CD) designation, with Multiple Family Residential (RM5uv-a), Multiple Family Rental (RM5r) and Commercial (C2) Districts, from the original General Industrial (M2), and Community Institutional (P5) Districts.

Density Summary Chart

Use	FAR	sf
Residential (RM5uv-a) (Strata or Market Rental & Offset)		
RM5uv-a Base	2.40	1,966,488
Offset	0.86	704,658
Total	3.26	2,671,146
Rental RM5r (Non-Market/CMHC Median & Market Rental)	0.49	401,491
Total Residential	**3.75**	**3,072,638**
Commercial (C2)		
51% Commercial	0.66	543,242
49% Market Rental	0.64	521,939
Total Commercial (C2)	**1.30**	**1,065,181**
Total Density	**5.05**	**4,137,818**

Density Summary Chart: A Specific Breakdown Table of the Proposed Densities for Each Proposed Designation.

For the RM5uv-a uses, the maximum base density permitted is 2.4 FAR with an offset density of 0.86 FAR, totalling 3.26 FAR. The RM-5uv-a and offset density can be delivered as Strata or Market Rental.

Per Burnaby's Commercial (C2) district zoning bylaw, the maximum density permitted is 1.30 FAR. Of the total maximum permitted density for this district, the RUZP allows for unused commercial density to be used for rental units. Specifically 49% of the C2 density can be used as rental such that at least 51% is to be typical commercial such as office, retail, live/ work, or hospitality uses.

Zoning by Phase

Below is an example of how the site's FAR could be dispersed throughout Burnaby Lake Village. However, it is acknowledged that specific locations of FAR may be revised to respond to future market conditions. This will be determined during site-specific rezoning.

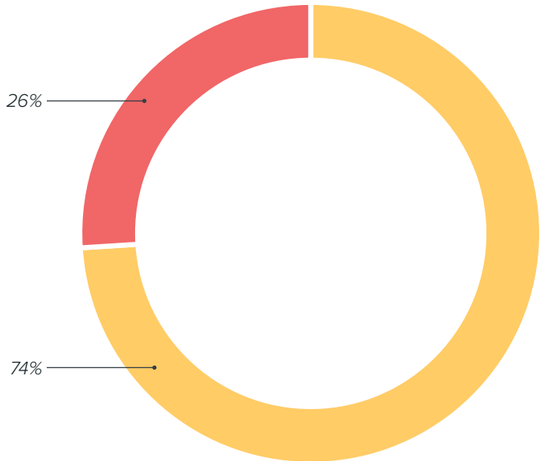
Zoning Notes

1. The maximum density permitted via the RM5r zone for Burnaby Lake Village is .49 FAR. The RM5r rental density will be allocated in accordance with the City's Rental Use Zoning bylaw (RUZP). The RUZP specifies a 20% non-market unit requirement that is calculated from the total number of RM5uv-a base units. Surplus RMr density can be delivered on a 1:1 unit ratio of Market Rental and CMHC Median rental units.
2. The total residential density for RM5uv-a and RM5r is 3.75 FAR.
3. While remaining consistent with the overall maximum densities noted, the specific density and land uses for individual development phases will be determined through site-specific rezonings.
4. Total densities may be dispersed across the full site in a manner that is consistent with Master Plan massing intent and Design Guidelines.
5. New Market Rental housing may be constructed with unused Commercial densities, subject to the residential rental floor area not exceeding the provided Commercial floor area.
6. Additional permissible Zoning Districts include M2 - General Industrial District (with uses such as Manufacturing of dry goods, Breweries, Animal Daycare, Retail, Cafes, Indoor Recreation) and P5 - Community Institutional District (with uses such as Childcare, Seniors Housing, Children's Institutions, Private Elementary Schools, and Private Secondary Schools) and C3 (Hotel). Application for these Zones will be made through site-specific rezoning following the Master Plan massing intent and Design Guidelines.
7. Childcare needs will be assessed on a per phase basis considering the childcare targets (spaces per 100 children) outlined in the City's 'Burnaby Child Care Action Plan'. If Senior's Housing is pursued via site specific rezonings, the density may be considered a P5 use. In this instance the permitted 1.3 FAR of commercial density will be reduced by the amount of seniors housing.

Use	Phase					Total
	1	2	3	4	5	
Residential	881,900	434,700	746,900	286,837	722,300	3,072,637
Commercial	52,300	83,500	288,000	12,942	106,500	543,242
Market Rental	25,900	287,700	-	61,839	146,500	521,939
Total FAR	**960,100**	**805,900**	**1,034,900**	**361,618**	**975,300**	**4,137,818**

Proposed Zoning Distribution

Per diagram below, zoning distribution is approximately 74% multi-family and 26% commercial,



Legend

Multifamily - 74%

Commercial - 26%

Population:

8,500+

E3b4. Land Use Strategy

Burnaby Lake Village is envisioned as the central location for mixed-use densification. Formerly an underutilized industrial site, the development will introduce fourteen new buildings to establish a high-density, dynamic, mixed-use community, complete with community amenity, non-market housing, animated commercial space, transit-access, and high-quality public spaces throughout. The Land Use diagram shows potential uses for each building.

Potential locations are shown in the Land Use diagram, however, it is acknowledged that specific locations, and its associated FAR, may be refined in order to be able to respond to future market conditions. Gross floor area and use for each building may be amended through site specific rezonings. The following sections detail the Housing and Commercial land use strategies.

Land Use Diagram

General Land Use Diagram

Land Use

- Market Rental
- Strata
- Non-Market Rental
- Retail or Live-work
- Commercial (Office, Retail, Institutional, etc.)
- Retail

Housing Strategy

Burnaby Lake Village contributes to a spectrum of housing options including purpose-built rental, family-oriented units, opportunities for multi-generational living, and an non-market housing component in support of Burnaby's new housing policies. This results in an estimated 4,000+ new housing units, including diverse typologies:

500+ Non-Market Rental Homes

750+ Market Rental Homes

3,500+ Market Homes

Opportunities to deliver non-market rental on lands owned by Sperling LP within the Bainbridge neighbourhood will also be permitted as per existing policy. In support of this, ways to leverage non-market housing opportunities within low- to medium-density residential areas that may benefit from lower construction costs (e.g. wood frame construction) will be explored, further to the Housing policy direction in Part 6 of the Bainbridge Urban Village Community Plan.

Potential Strata, Market Rental, and Non-Market Rental locations are shown in the housing Land Use diagram, however, it is acknowledged that specific locations, and its associated FAR, may be refined in order to be able to respond to future market conditions.

Commercial Strategy

This mixed-use site will build a socially resilient and accessible community, with an estimated 1,000+ jobs added across office and retail sectors all within walking distance to the Sperling-Burnaby Lake SkyTrain Station.

Ground-level commercial is intended to be located along key roads and public realm - the Esplanade, Gateway Plaza and Winston Street - to ensure active and animated frontages.

To support the needs of residents and employees, convenience retail (e.g., grocer, pharmacy, childcare) is being explored in the buildings fronting the Gateway Plaza and/or along the Esplanade.

Subject to market demands, office and hotel uses are being considered close to the Sperling-Burnaby Lake SkyTrain Station. There will be opportunities for Live-work and small to medium format light industrial space along Winston.

Opportunities for local employment and entrepreneurship are being explored in various ways, including live-work units and smaller commercial retail units.

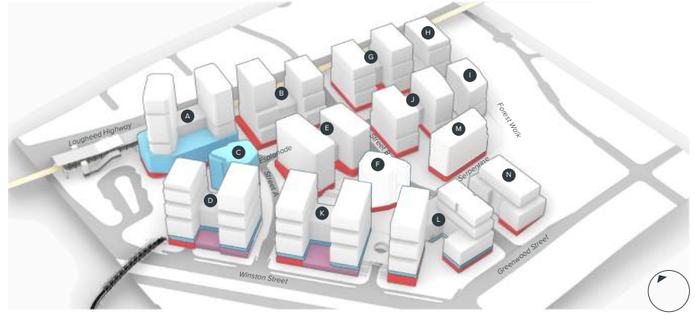
Potential locations are shown in the commercial Land Use diagram, however, it is acknowledged that specific locations, and its associated FAR, may be refined in order to be able to respond to future market conditions.

Gross floor area and use for each building may be amended through site specific rezonings.

Housing Strategy Diagram

General Housing Strategy Diagram

Commercial Strategy Diagram



General Commercial Strategy Diagram

Land Use

- Market Rental
- Strata
- Non-Market Rental
- Retail or Live-work
- Commercial (Office, Retail, Institutional, etc.)
- Retail

E3b5. Gross Floor Area (FAR) Summary

Parcel	C2					RM5uv-a	RM5r	Total
	Commercial				Voluntary Market Rental	Strata or Market Rental	Non-Market Rental, CMHC Median & Market Rental	
	Retail	Office	Live-Work	TOTAL Commercial	Market Rental			
A	18,700	132,900	-	151,600	-	383,600	-	535,200
B	52,700	-	-	52,700	287,700	-	142,200	482,600
C	2,500	98,000	-	100,500	-	-	-	100,500
D	6,000	25,200	4,700	35,900	-	363,300	-	399,200
E	30,800	-	-	30,800	-	292,500	-	323,300
F	8,200	-	-	8,200	-	109,700	-	117,900
G	42,800	-	-	42,800	-	323,700	-	365,500
H	-	-	-	-	25,900	-	118,600	144,500
I	-	-	-	-	-	127,400	-	127,400
J	9,500	-	-	9,500	-	312,200	-	321,700
K	60,600	-	-	60,600	-	378,400	-	439,000
L	37,700	-	-	37,700	146,500	234,200	-	418,400
M	7,300	-	-	7,300	-	146,146	-	153,446
N	5,642	-	-	5,642	61,839	-	140,691	208,172
sf	**282,442**	**256,100**	**4,700**	**543,242**	**521,939**	**2,671,146**	**401,491**	**4,137,818**

Proposed FAR Distribution

This is an example of how the site's FAR could be dispersed throughout Burnaby Lake Village. However, it is acknowledged that specific locations of FAR may be revised to respond to future market conditions. This will be determined during site-specific rezoning.

Office uses noted in the table could be any other commercial use permitted such as Breweries, Retail, Cafe, Daycare, etc.

Non-Market Requirement Calculation

Determine the total Base strata unit count and multiply by 20% to determine the required number of non-market units. Non-Market density may be less than 0.49 FAR, given non-market unit sizes will generally be smaller than strata units.

Example of Residential Density per Building

Phasing

The overall site redevelopment will be phased, beginning with the buildings at the north-east corner of the site. Then moving westward, prioritizing the community's high-street (The Esplanade) and the pedestrian connection to the sky train station.

At the time of the submission for Master Plan Rezoning, it is contemplated that development program will consist of five phases. Each of the buildings within a phase are intended to proceed through the site-specific rezoning process concurrently, however, the buildings may be delivered in phases, subject to market conditions.

Phasing by Use

The chart below is an example of how the site's used could be dispersed throughout the various phases of Burnaby Lake Village.

***Image**: The final configuration or order of phasing may be subject to change as it will be dependent on market conditions.*

Parcel	C2					RM5uv-a	RM5r	Total
	Commercial				Voluntary Market Rental	Strata or Market Rental	Non-Market Rental, CMHC Median & Market Rental	
	Retail	Office	Live-Work	TOTAL Commercial	Market Rental			
Phase 1	52,300	-	-	52,300	25,900	763,300	122,100	963,600
Phase 2	83,500	-	-	83,500	287,700	292,500	134,324	798,024
Phase 3	27,200	256,100	4,700	288,000	-	746,900	-	1,034,900
Phase 4	12,942	-	-	12,942	61,839	146,146	145,067	365,994
Phase 5	106,500	-	-	106,500	146,500	722,300		975,300
sf	**282,442**	**256,100**	**4,700**	**543,242**	**521,939**	**2,671,146**	**401,491**	**4,137,818**

E3b7. Planning Strategies

The Burnaby Lake Village Master Plan aims to redefine the 19-acres of industrial space as a dynamic urban village by prioritizing the pedestrian realm and creating a harmony between both the natural and urban landscape. Framed by the Lougheed Highway to the north, a 1000-acre park to the south that is connected to the development via a pedestrian bridge, an escarpment to the east, and the Sperling-Burnaby Lake SkyTrain station to the west, the wedge-shaped site offers the opportunity to define and create a vibrant community.

In response to the site's surroundings, the architecture will optimize impressive views of the nearby Burnaby Lake Park along with Burnaby's Town Centres to the west. Landmark buildings at the gateway to the project will welcome commuters from the SkyTrain. The Forest Walk provides an ecologically diverse pathway which will weave nature into the site's urban architecture.

Emphasizing a live-work model by incorporating a mix of commercial and residential throughout the buildings and blocks and animating the ground level with retail fronts will help activate the streetscapes, creating a vibrant urban village community.

Parallelization

The Master Plan consists of 14 development sites which will be constructed over time. The final parcel configuration will be finalized in future site-specific rezoning applications.

Image: *Preliminary parcel configuration shown in Image 1.*

Legend

Parcel Lines

Unit Mix

The Bainbridge Urban Village is predominantly improved with single family dwellings. The adoption of the community plan introduces a broader diversity of housing forms. A diverse mix of unit types are planned at Burnaby Lake Village. Burnaby Lake Village is a transit orientated development with the Sperling Sky train station at its western edge. With the convenience of the station, it is important a significant number of complimentary affordable housing options are provided. This is achieved with a substantial amount of smaller market and rental housing forms. As the Village develops, commercial uses that will serve the local community will be developed that will be attractive to prospective residents. Convenience retail uses such as grocery stores, pharmacies, coffee shops and banks are planned in the first few phases along the Esplanade, the Village's high-street. Daycare uses will also be explored in the early phases that front onto Esplanade. As these retail uses and the robust public realm is developed the community will become increasingly attractive to all, particularly families.

It is anticipated market demand in the first few phases will favour a smaller unit mix. As key amenities are built, more families will want to call Burnaby Lake Village home; therefore, more family housing is anticipated in the later phases of the development. Overall, the amount of family housing is planned to be significant. Approximately 45% of the RM5uv-a density will be 2 bedrooms or larger.

At completion of BLV the following mix of dwelling types for the Market Condo (RM5uv-a), Non-Market Rental (RM5r), and Voluntary Market Rental is anticipated, as shown in the tables below.

RM5uv-a Mix % / Unit Count	Studio	P11e 1 Bed	1 Bed/ 1 + Den	2 Bed	2+Den	3 Bed	Total
Phase 1	18% / 186	20% / 206	20% / 206	22% / 227	18% / 186	2% / 21	100% / 1032
Phase 2	10% / 38	35% / 134	18% / 69	18% / 69	14% / 53	5% / 19	100% / 382
Phase 3	9% / 85	34% / 333	16% / 161	17% / 173	19% / 192	5% / 49	100% / 993
Phase 4	5% / 10	25% / 48	25% / 48	10% / 19	25% / 48	10% / 19	100% / 191
Phase 5	5% / 50	32% / 305	15% / 137	15% / 144	26% / 244	7% / 62	100% / 942
Overall Mix Count*	10% / 368	29% / 1026	18% / 621	18% / 631	20% / 723	5% / 170	100% / 3540

Non-Market Rental Mix % / Unit Count	Studios	1 Bed	2 Bed	3 Bed	Total
Phase 1	18% / 33	40% / 74	40% / 74	2% / 4	100% / 186
Phase 2	10% / 17	53% / 89	32% / 54	5% / 8	100% / 168
Phase 3	0% / 0	0% / 0	0% / 0	0% / 0	0% / 0
Phase 4	5% / 8	50% / 83	35% / 58	10% / 17	100% / 167
Phase 5	0% / 0	0% / 0	0% / 0	0% / 0	0% / 0
Overall Mix Count*	11% / 59	47% / 247	36% / 187	6% / 29	100% / 521

C2 Voluntary Market Rental Mix % / Unit Count	Studios	1 Bed	2 Bed	3 Bed	Total
Phase 1	18% / 7	40% / 16	40% / 16	2% / 1	100% / 39
Phase 2	10% / 44	53% / 232	32% / 140	5% / 22	100% / 438
Phase 3	0% / 0	0% / 0	0% / 0	0% / 0	0% / 0
Phase 4	5% / 5	50% / 47	35% / 33	10% / 9	100% / 94
Phase 5	5% / 11	47% / 105	41% / 91	7% / 16	100% / 223
Overall Mix Count*	8% / 67	50% / 400	35% / 280	6% / 48	100% / 794

CLARIFICATIONS

1. RM5r and Voluntary Market Rental derived from C2 density will generally follow the RM5uv-a unit mix in each associated phase.
2. Remaining density in the RM5r zoning designation can be provided as 1:1 CMHC Median Rental/ Market Rental as outlined in the RUZP.

E3b6. General Built Form Strategy

The Building Heights described in the Burnaby Lake Village Master Plan have been established through urban design guidelines and general height ranges set out in the Bainbridge Urban Village Community Plan Character Areas, and in conjunction with the Bainbridge Urban Village Design Guidelines. Building Heights to conform with Maximum Heights permitted in the Bainbridge Urban Village Community Plan.

Burnaby Urban Village Design Guidelines

Urban forms set out in the Design Guidelines describe a varied Urban Village skyline with gentle transitions and varying Building Heights that are distinctly lower than Town Centres. Articulation, broken down building massing and a variety of building forms is achieved by varying podium heights, step-backs and setbacks that terrace up from the rich public realm and green spaces to active landscaped roofs.

Bainbridge Urban Village Community Plan

The Community Plan Character Areas describe Urban Design principles that influence the Master Plan built form, typology, and design of buildings and their relationship to the public realm.

Per the Character Area guidelines, Master Plan heights range from 12 to 25 storeys (see p. 122 - 127 for detailed diagrams). Building Heights transition up to Burnaby Lake Village from surrounding precincts in the Bainbridge Urban Village to a highpoint at the Sperling - Burnaby Lake SkyTrain Station at Lougheed and Sperling. Along Lougheed, the height strategy is for a clear but gradual transition from 25 storeys at Building A to 14 storeys at the centre of the urban village (west tower of Building G), tapering very slightly back up to 7000 Lougheed. Heights along the Forest Walk are fairly consistent at 12 to 13 storeys, with buildings following the natural grade from Lougheed down to Greenwood. Heights then again gently transition along Greenwood and Winston from 12 storeys back up to 20 storeys closer to the SkyTrain Station. At the centre of the site, heights are lower than the perimeter and vary from 12 to 16 storeys. Two 12-storey jewel buildings, C and F, create focal points at key intersections, anchoring the Master Plan.

Building Heights Diagram

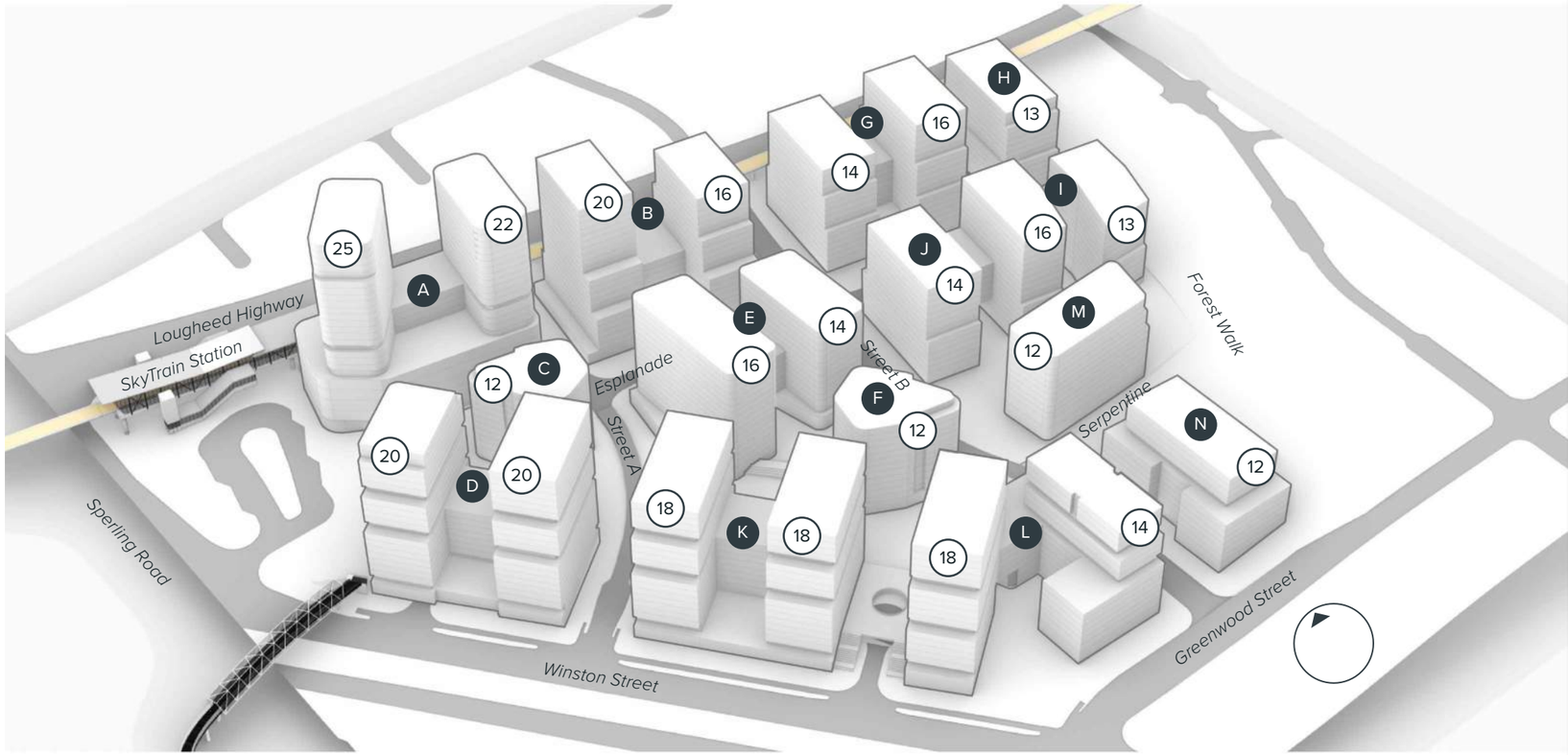


Diagram Illustrating General Building Heights Strategy

Heights

A — Building Number

12 — Number of Levels

Notes:

For Buildings B, G and H there is a one-storey height difference between the Esplanade and Lougheed resulting in a partially buried level. For these buildings, the number of storeys will be counted from Lougheed. Counting the first storey from the first level that isn't partially buried will be explored during site specific Rezonings in instances where buildings are situated on parcels that have considerable gradients.

Building heights may be subject to minor refinements at site specific Rezonings subject to compliance with heights and densities outlined in the Community Plan.

Urban Village Architectural Forms Transition

Down to the Ground and Frame the Public Realm.

Road Statutory Right-of-Ways

SRWs are proposed to facilitate public movement over private lands including the Gateway Plaza, Serpentine, and Forest Walk. Details for SRWs to be worked through at site-specific rezoning.

Road Dedications

Proposed roads as shown are to be dedicated to the City. However, publicly accessible roads and or back of curb elements will be reviewed during site specific design to determine whether these improvements can be privatized while maintaining public accessibility via SRWs where it benefits the Master Plan.

Loading, Waste Management,Parkade Entrances

(Image on facing page)

The Gateway Plaza, Serpentine, Esplanade, and Forest Walk are designed as publicly accessible private lands with diverse, unique spaces – quiet, active, and natural with greenways, pathways, and open spaces. Active mobility networks, such as walking and biking are layered with gathering, pedestrian and village high street retail experiences, connecting to nature, and creating green connections to the surrounding community.

As a result, the parkade entrance, loading, and waste management strategies were designed with the following priorities in mind:

- Ensuring safety for all users.
- Keeping these public realm areas free from servicing, and where possible, lined with active uses. Keeping the Serpentine entirely car-free.
- In some instances to maintain financial viability, using underutilized at-grade spaces with appropriate mitigation measures.
- On non-pick up days, waste being held in storage facilities located within the underground parkade structures.

Image: Indicative Road Statutory Right-of-Way

Image: Indicative Road Dedications shown

While site-specific design efforts will seek to incorporate loading and waste management within the building or parkade structures, should this prove not feasible, at-grade solutions will be developed ensuring sound dampening, screening from public view, and activation of the adjacent edge. See Lougheed Edge in Section E for an example of at-grade servicing with mitigation measures. In addition, site-specific design efforts will refine and seek to consolidate parkade entrances and waste management locations.

Firefighting Response Points

The Master Plan is situated adjacent to an existing SkyTrain Guideway and fire-fighting access to each building will be from the public and private roadways. There will be new internal public roads connecting to Winston Street, Greenwood Street and Lougheed Highway providing internal circulation through the site and access to each planned parcel for fire-fighting and fire truck staging.

For buildings fronting Greenwood Street and Winston Street access will be provided from the existing streets.

Image: Vehicular routes and indicative parkade entrance locations shown.

While the Master Plan features a unique public realm element which focuses on prioritizing pedestrians and bicycles over vehicles, the design allows for a service-oriented path for fire trucks and firefighting access through the Gateway Plaza to access the western tower.

Site-specific rezoning applications will resolve fire department access roadway design details associated with potential for layby at entrance lobbies, design for turning vehicles at traffic circle and radius at corners, and other City of Burnaby fire department criteria.

Image: Fire-fighting access to each building will be from the public and private roadways. Lobby entry locations shown in red.

March 21

E3b8. Shadow Studies

By creating a lower building height in the site's central precinct, the aim is to minimize shadow in the site's core, bringing light into the heart of the development.

Time of day shown in Pacific Standard Time (PST).

10:00 PST

14:00 PST

12:00 PST

16:00 PST

June 21

10:00 PST

14:00 PST

12:00 PST

16:00 PST

A strong, connected, and well-served community supports a neighbourhood's resiliency and capacity to respond to future challenges or adversity. In general, resiliency is the capacity of people, communities, organizations, and the built and natural environments to prepare, withstand, adapt, and bounce forward regardless of social, environmental, and economic changes, uncertainties, and challenges.

(Source: Bainbridge Urban Village Community Plan)

Image Source: Adobe Stock Images

E3c. Sustainability & Resilient Communities

The first part of this section outlines the Big Ideas at the foundation of the Burnaby Lake Village Master Plan's approach to environmental, economic and social sustainability, complementing Burnaby's Sustainability Checklists which are appended to this document. By incorporating a number of mutually supportive sustainability initiatives, the Master Plan will truly achieve a three-pillared approach to sustainability, supporting a strong economy, healthy environment, and resilient and inclusive community.

The Three Pillars of Sustainability

As further detailed in the Community Benefits section:

1. A Mixed-Use, Transit-Oriented, Complete Community

2. Introducing a Comprehensive Mobility & Public Realm Network

3. Enhanced Natural Environmental & Efficient Buildings

Project statistics, figures and ideas are related to all three pillars of sustainability and are notionally referred to throughout as the Big Ideas for environmental, economic and social sustainability set out in the following section.

E3c1. Big Ideas - Environmental Sustainability

The primary big ideas underlying the Master Plan's approach to environmental sustainability are related to sustainable placemaking, connectivity and reduced vehicular travel; greening of a former industrial site; and the environmental performance of highly efficient new buildings and systems. Together these also help position that site to address the changing climate over time.

Sustainable Placemaking, Connectivity and Reduced Vehicular Travel

Sustainable placemaking is a core value for the Bainbridge Community, established in the Bainbridge Community Plan. Sustainable placemaking seeks to integrate a diverse range of public spaces, natural assets, housing options, and local employment, retail services and amenities, all within a well-connected complete community.

The Burnaby lake Village Master Plan clearly embodies this notion, blending a range of new open spaces and connections with a range of new housing, retail and employment uses, and community facilities and amenities that seek to meet residents' needs locally. Comprehensively planned with the redevelopment of 7000 Lougheed, the 6800 Lougheed Master Plan contributes to the creation of an extensive new mobility network, ensuring residents on both sites and in the broader Bainbridge Urban Village can all easily access the full range of housing, employment, retail, services, amenities and public spaces that will be introduced on these two sites. This will support and encourage a shift to more sustainable lifestyles, supporting a major reduction in the need for vehicular travel and related emissions, and contributing to related targets in the City's Climate Action and Transportation Plans.

Greening a Former Industrial Site

The former Saputo Dairyland factory covered the vast majority of the 18.8 acre site with industrial buildings and paved areas to accommodate truck activity, with very little vegetation remaining.

When considering the environmental performance of the site today, the predominance of buildings and concrete results in poor permeability and stormwater retention, and contributes to the urban heat island effect. The few small vegetated areas are fragmented and compromised by the presence of invasive species. And some legacy contamination is present on the site, presenting a risk to ecological and hydrological systems.

The Master Plan presents an opportunity to green the site and enhance all aspects of its environmental performance through a high-quality landscape and public realm, including improved stormwater management, reduction in the urban heat island effect, and reconnecting fragment natural systems in the surrounding areas.

Efficient Buildings and Systems

Just as new mobility improvements, land uses, and public realm improvements will enhance environmental performance of the site, new building envelopes and systems will similarly follow best practices for environmental sustainability, following BC's progressive Step Code. This will significantly reduce the carbon footprint of the community, and contribute to achieving related Climate Action goals.

Climate Adaptation

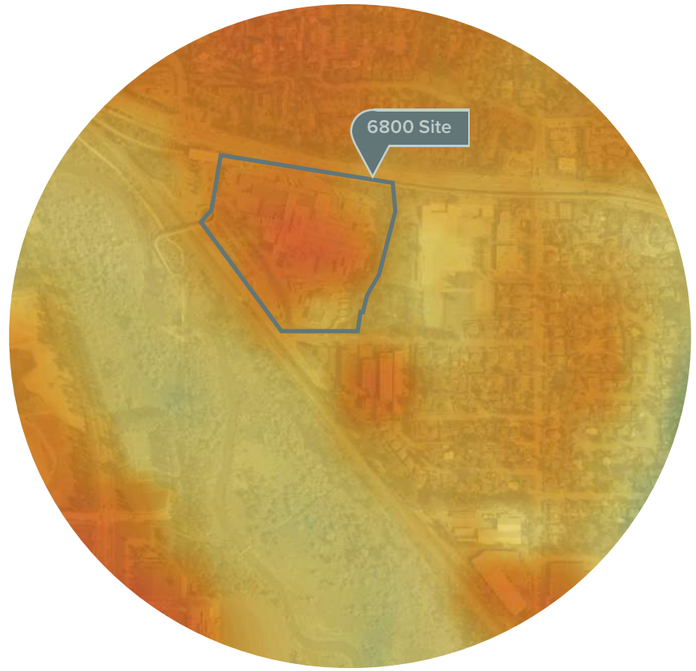
The City of Burnaby continues to work to ensure that new development contributes to communities that are resilient to climate change. This includes addressing not only the impacts of development on the emissions that contribute to climate changes, but also ensuring that new buildings, public spaces, and the community as a whole are designed to be able to adapt to inevitable changes in climate over the long term.

With regards to new buildings, the project will be designed to ensure highly efficient units and buildings that utilize low-carbon systems, following step code requirements that will help to ensure buildings are able to maintain user comfort and lower-carbon footprints as the climate shifts over time. Similarly, the extent of new landscaped open spaces, with plantings selected to ensure adaptability over time, will significantly increase the quantity and quality of soft-landscaping on the site, helping to have a cooling effect on the area, as well as improving permeability and on-site rainwater management.

Also of note, by introducing a range of local services and amenities alongside extensive new walking and cycling connections, the project makes a major contribution to creating a more complete community that promotes active and public transportation uses, and reduces reliance on vehicular travel. Not only does this lower related emissions, it also helps to support a more resilient and adaptable community, where residents can meet needs locally utilizing more efficient, affordable and reliable forms of transportation.

Of note, these strategies were inspired by and are well aligned with the Happy City workshop that was held with the City in November 2019, and the resulting report. Specifically, the report points to evidence that during natural disasters and other shocks associated with climate change, walkable communities are better able to recover. This is because residents are more likely to know one another, and thus benefit from the support systems that accompany a strong sense of community. For similar reasons, shared green space amenities and gardens, and local stores are also tied to resilience, adaptability, and sense of community.

Together, all of these elements position the project and broader community to be able to adapt and even thrive in the face of environmental challenges and a changing climate over time.



Existing Heat Islands: Red = Hot Spots. Green = More Natural, Cool Environments

Low Carbon Building Systems using low carbon energy source equipment will be delivered to meet increasing Step Code requirements up to Step Code 4 over time, supporting the City of Burnaby's Climate Action Framework. Relative to Step Code 1, this results in substantial carbon offsets at Burnaby Lake Village.

E3c2. Big Ideas - Social Sustainability

The primary big ideas underlying the Master Plan's approach to social sustainability are related to introducing significant new non-market housing and purpose built rental within a diverse housing mix; sustainable placemaking, community health and wellbeing; and new community facilities, amenities and services.

Prior to advancing the Master Plan, Sperling LP held a workshop with the City of Burnaby and Happy City to explore opportunities to support community health and wellbeing in the Bainbridge Village, which has helped to inform the project's response to a broad range of social sustainability objectives and opportunities.

1. Happy City Wellbeing Principles

In particular, the eight Wellbeing Principles established through the Happy City workshop have provided a foundation for the Master Plan's approach to social sustainability.

A Vibrant Social Life

Opportunities to bump into people and spaces for meaningful community connections to flourish

Convenience and Ease

An urban village that fulfils people's needs and frees up their time to focus on what they love

A Healthy Lifestyle

A place that encourages healthy choices and enables people to revel in nature and experience a sense of calm at home

A Place to Thrive

An environment that lifts people up and helps them realize their dreams for their community, their families and for themselves

A Model of Social Inclusion

A multi-generational Urban Village that is built on a foundation of dignity and inclusion for people of all incomes, genders, and diverse backgrounds

A Sense of Belonging

A unique community identity by expressing gratitude to previous generations, reflecting the site's natural and human history while nourishing community expression today

Moments of Joy

Places that surprise, delight and intrigue people to explore their urban and natural environment

A Resilient Community

A self-sustaining urban village that continuously improves through community collaboration, entrepreneurial spirit and environmental stewardship

New Non-Market Housing and a Diverse Housing Mix

Burnaby has exhibited leadership in responding to the lower mainland's housing crisis, stemming from the Mayor's Task Force on Community Housing and resulting policy initiatives. As a large redevelopment site located at the SkyTrain within an Urban Village, Burnaby Lake Village is well positioned to advance new policy directions and initiates. Specifically, the Master Plan will introduce significant new non-market housing and purpose built rental, all within a diverse housing mix that includes a range of typical market units, opportunities for work-live units, larger family oriented units, and accessible/adaptable units that can accommodate multi-generational living and aging in place. This diverse housing offering is well aligned with some of the more specific priority strategies that were identified with Happy City to achieve the 8 Wellbeing Principles.

2. Happy City Strategies

- Offer a variety of housing forms to suit a wide array of family and household sizes
- Design integrated work-living or commercial-living spaces to ensure local artists and producers" have an opportunity to thrive

Sustainable Placemaking, Community Health and Wellbeing

While provision of affordable and diverse housing units is important in and of itself, the type of community and built environment that these units are provided within is also critically important. This is related to the Bainbridge Community Plan's notion of sustainable placemaking – designing places that encourage social interaction, collaboration, connectivity, and a strong local economy to meet residents needs. In conjunction with 7000 Lougheed proposal, the Master Plan's distinct building typologies and network of new public spaces and active transportation connections provide exactly the type of inclusive environment where residents of all backgrounds, abilities and income levels can thrive and live a vibrant social life, in keeping with a number of the priority strategies identified in the Happy City workshop.

3. Happy City Priorities

Design spaces to create gradual transitions between private and public realms

Ensure each public space supports a diverse range of activities for a diverse range of users

Include a sense of play when designing urban public spaces

Ensure variety in scale and identity of public spaces throughout the site that connect main destinations:

Esplanade

- Locate commercial spaces and seating opportunities in pedestrian thoroughfares
- Limit the height of the street wall and the width of the street to ensure human scale

Forest Walk

- Design spaces that integrate built and natural environments to foster joyful and stimulating experiences
- Ensure that people can see or touch nature in their home and throughout the development
- Include recreational, educational and social opportunities that foster connections between people and nature
- Use vegetation in public space design to capture rainwater runoff and create appealing shared spaces

Mobility

- Ensure high quality active transportation connections from the site to surrounding destinations
- Create comfortable convenient and universally accessible pedestrian connections from surrounding communities to the site
- Prioritize active mobility modes and slow travel in streets within the site

New Community Facilities, Amenities and Services

Accompanying the range of new housing, public spaces, and connections highlighted in the previous sections, the Master Plan will also introduce integral new local employment, retail, and community amenities to ensure a truly complete community that can address residents and workers daily needs, in keeping with sustainable placemaking and wellbeing principles.

- Provide office spaces, local business spaces and appropriate light industrial spaces to increase local employment opportunities
- Nurture opportunities and unique local character by supporting small scale business and retail
- Establish a neighbourhood hub that is accessible and embodies the community's cultural identities
- Co-locate services and activities for seniors and children to create multi-generational connection spots

4. Burnaby's Sustainability Checklists

In connection to the big ideas in the previous section, the 6800 Lougheed Master Plan a number of specific directions identified in Burnaby's Environmental, Economic, and Social Sustainability checklists. These checklists have been completed and attached as Appendix G, further outlining the specifics of how the Master Plan works to advance the full range of sustainability priorities identified by the City.

E3c4. Resilient Communities

The City of Burnaby has been proactive in their approach to resiliency in communities, especially in response to climate change. **Resilient Communities** are envisioned to absorb, recover and prepare for future impacts. Protection, flexibility and adaptability are key factors for creating sustainable and resilient communities for the future.

Eight **Resilient Community Strategies** how we can influence natural and built environments towards measurable and adaptive change outlining climate mitigation and protection measures.

Planning for a resilient future is at the heart of sustainable placemaking at Burnaby Lake Village. This section will provide a broader response to resiliency in this unique Urban Village context.

Carbon Reduction

"In 2022, 18 billion-dollar climate disasters occurred incurring over $165 billion on total damages." (Source: WNDRCTY) Reductions in greenhouse gas emissions, towards decarbonization, through reduced reliance on fossil fuels for mobility, industry-leading green building technologies (such as mass timber and low embodied carbon). the future.

Complete Communities

Connected, compact, equitable communities. Inclusive, intergenerational communities - including groups most affected by climate change - with a variety of housing, services, amenity and employment, providing economic stability, a variety of buildings, public and private spaces, all connected to nature.

Healthy Communities

Our health is key for a positive physical, behavioural and social response to change and adversity. Healthy communities focus on healthy environments (air quality, safety and security, natural light and materials, and green spaces) and reflect wellbeing design (inclusive design, flexible, accessible spaces, shared spaces, social spaces, access to daylight, nature, and green open spaces).

Nature and Ecosystems

Adaptable, year-round green spaces, natural spaces, green roofs and terraces with opportunities for urban agriculture. Urban landscapes interlaced with mobility – pedestrian and bicycle – active outdoor spaces, trees, natural features and green infrastructure.

Transportation

Transportation is the single largest source of greenhouse gas emissions, accounting for approximately 45% of the regional total (Source: Metro Vancouver Climate 2050). The Burnaby Lake Village Vision is for community as a hub, a multi-modal system, close to transit and the Skytrain, that is walkable, with active transportation and bicycle facilities.

Infrastructure

Consideration for resilient waste and water systems, sewage and drainage, green infrastructure for rainfall and stormwater drainage, flood protection, protecting drinking water, sewage treatment, solid waste transportation, and energy to residents and businesses.

Energy

Higher and higher requirements for energy efficiency towards decarbonized energy systems. Focusing on renewable and clean energy, low carbon energy and fuels, reduced electrical demands, reduced energy waste to heat and cool water and buildings, and shading and passive cooling.

Technology

New technologies and innovations to find efficient and affordable solutions to urban challenges on topics such as environmental sustainability, public safety, traffic congestion, and social equity and inclusion.

Canadian Climate Institute (Ongoing)

(climateinstitute.ca)

Canada needs to reduce carbon emissions to 440 MT by 2030 (Source: 440 Megatonnes). The Canadian Climate Institute helps shape and track progress on public policies; to help Canadians be resilient in the face of climate change. Includes data, research, case studies and publications on climate change focused on:

- Mitigation – Achieving net zero emissions by 2050.
- Adaptation – Improving and protecting our health and well-being, and ensuring buildings and infrastructure will stand up to new risks.
- Clean growth.

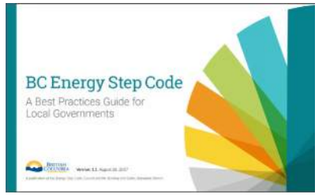
Action: The Vision for Burnaby Lake Village, through it's planning and placemaking, is for a community poised for the future. From the scale and walkability of the Urban Village, the spatial planning and land use, supporting infrastructure, mobility systems and public realm, to the design of low carbon buildings and the abundant green spaces, moments and connections – in particular the Forest Walk and Esplanade. Resilient communities protect themselves against hazard, promote self-sufficiency, and aim to become more sustainable. A compact, complete, healthy community with a variety of use, housing, services and amenities, connected to the greater region will support those who live and work at Burnaby Lake Village to adapt, grow, and change to our ever-changing future.

Carbon Reduction

Healthy Communities

Infrastructure

BC Energy Step Code (2017)



The Province of British Columbia has set a goal that all new construction must be a net-zero energy ready by 2032. The BC Energy Step Code is a series of steps or levels of energy-efficiency performance. The Step Code serves as a policy pathway to allow local governments to increase building performance requirements with a level of energy efficiency for new construction that goes above and beyond the requirements of the base BC Building Code. The City of Burnaby currently requires buildings to be Step 2 with Low Carbon Energy Systems with a goal to increase energy efficiency to Step 3 by the end of 2023.

Action: The Vision for Burnaby Lake Village supports the targets of the Step Code towards a resilient, net-zero future through efficient building and envelope design, efficient energy and mechanical systems, passive techniques such as building orientation, shading to reduce solar heat gain and consideration for embodied carbon by considering materials that sequester carbon and minimizing waste through prefabrication.

Image: Demonstrating the path to Step Code compliance (for homes) to net zero ready for new construction by 2032.

Carbon Reduction

Energy

Infrastructure

Metro Vancouver Climate 2050 - Strategic Framework (July 2019)

Metro Vancouver has committed to 3 broad roles in the fight against climate change: deliver core services, plan for the future, and act as a regional forum. The Climate 2050 Strategic Framework outlines targets to reduce carbon emissions as a measured response to climate change:

- Target a 45% reduction in emissions from 2010 levels, by 2030.
- Carbon neutral region by 2050.

Creating a carbon neutral region by 2050 will require unprecedented greenhouse gas reductions throughout the region. Climate 2050 is organized around ten issue areas, to logically group climate goals, strategies, and actions. The areas are focused around the functions and responsibilities under Metro Vancouver's mandate and the range of climate-related challenges and initiatives affecting the region. Ten issue areas include: nature and ecosystems, infrastructure, human health and well-being, buildings, transportation, industry, energy, land-use and growth management, agriculture and waste.

Action: Mitigation strategies at Burnaby Lake Village include improving energy efficiency, providing low carbon energy systems for heating and cooling, trees can be used to reduce the energy required to heat and cool buildings, improved indoor air quality, reducing loads on infrastructure through stormwater infrastructure and reducing water consumption, and reducing waste by recycling and transitioning to more efficient, circular economies, such as composting.

Energy

Infrastructure

Carbon Reduction

Complete Communities

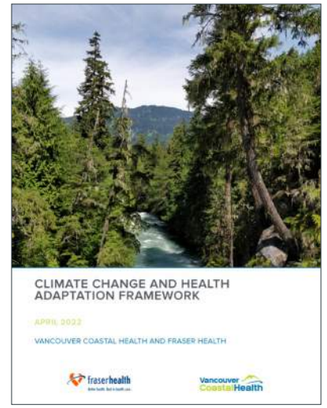
Nature and Ecosystems

Transportation

Vancouver Coastal Health and Fraser Health: Climate Change and Health Adaptation Framework (2022)

To support health-focused climate change adaptation in the region, Vancouver Coastal Health, Fraser Health, Health Emergency Management BC, and VCH/FH Facilities Management partnered to create a climate change and health adaptation framework after a comprehensive climate change and health vulnerability and capacity study. The Framework initiatives include contributing to policy advances in relation to climate change, promoting health equity and updating the Climate Resilience Guidelines for BC Health Facility Planning and Design, maximizing low carbon resilience opportunities and identifying applications beyond hospitals.

Action: Of importance to resilience at Burnaby Lake Village is the study's guiding principle of Low Carbon. Ensuring that greenhouse gas reduction actions are considered and maximized in the planning of the community, buildings, infrastructure, public realm and landscapes.



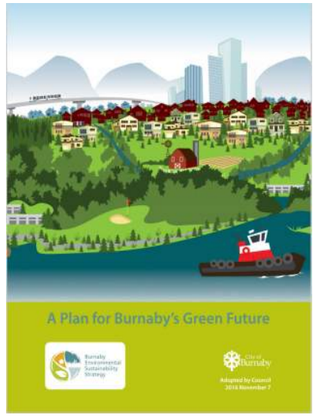
Carbon Reduction

Healthy Communities

The City of Burnaby Climate Action Framework (2020)

The goal of the Carbon Action Framework is to reduce carbon emissions and mitigate climate change and its negative social, environmental and economic impacts through key actionable Quick Starts identified on page p.47. The Quick Starts provide the ongoing and adaptive groundwork to forward the City of Burnaby's transition to a carbon neutral community with the goal of carbon neutrality by or before 2050. Of the seven Big Moves identified in the Climate Action Framework, the four identified below are most relevant to the Bainbridge Urban Village.

- Transportation Mode Shift – Reduce reliance on cars. Prioritize pedestrian, bicycle and transit modes.
- Towards Net Zero – Reducing emissions through prioritizing low carbon building systems towards zero emissions for heating, cooling and hot water.
- Healthy Ecosystems – Healthy green spaces, natural systems and green infrastructure.
- Resilient Neighbourhoods – Adaptable and thriving communities and residents.



Action: The development of Burnaby Lake Village is an opportunity to pilot actionable Quick Starts identified in the Climate Action Framework that relate to resiliency – such as complete communities with low carbon building systems, active, multi-modal transportation prioritizing bicycle and pedestrian, close to a SkyTrain station, providing for public and private electric vehicles, accessible and inclusive housing, services and employment, public realm prioritizing green spaces, such as the Forest Walk that mimics the urban forest, and trees.

Energy

Carbon Reduction

Complete Communities

Nature and Ecosystems

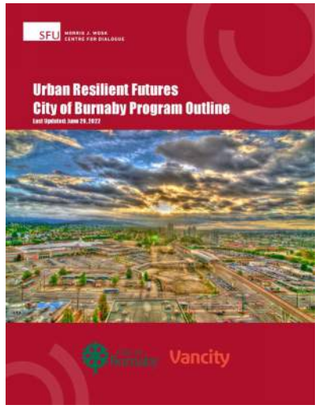
Transportation

SFU Urban Resilient Futures Burnaby (Ongoing)

"The Urban Resilient Futures Initiative will work with the City of Burnaby, residents and stakeholders to accelerate climate action and to co-create a new, locally developed narrative for a resilient, low-carbon future." (Source: sfu.ca/dialogue/programs/urban-sustainability/urban-resilient-futures)

In order to create forward momentum to overcome systemic barriers to climate action and support Canada's transitions towards its goal of net-zero emissions by 2050, the Urban Resilient Futures initiatives will provide broad, ongoing engagement, in order to provide evidence-based recommendations for policy on climate adaptation and mitigation issues. As a part of this initiative, the City of Burnaby held a series of resiliency workshops with SFU. During these workshops, resiliency, as it relates to planning and development, was defined as having five key pillars:

- Engineering Resilience
- Ecological Resilience
- Socio-Economic Resilience
- Natural Disaster Resilience
- Community Resilience



Carbon Reduction

Complete Communities

Action: This is an ongoing initiative, demonstrating the City of Burnaby's leadership in the fight against climate change by fostering resilient communities and neighbourhoods through policy and design. Burnaby Lake Village supports the resilient planning and development of it's Urban Villages through creation of a more scaled sustainable community. Urban Villages, with supporting infrastructure, amenity and services, prioritizing connectivity and nature in the public realm, a variety of housing types and zoning options including commercial for employment and economic development, all support a more resilient urban typology that can better adapt to change and future challenges.

Infrastructure

Resilient neighbourhoods are carefully developed to be able to withstand, adapt to, and rebound from a series of changes through time and continue thriving and functioning in a sustainable manner. (Source: Bainbridge Urban Village Community Plan)

By 2040, Burnaby will create a network of low-carbon, resilient neighbourhoods with housing diversity and affordability.

Burnaby has a network of urban villages noted for their potential to evolve into complete and resilient neighbourhoods. They're identified for redevelopment that delivers residential growth, commercial services, employment opportunities, public green space and multi-modal transportation options. Burnaby's urban villages are typically located near a SkyTrain station. Renewable energy projects can supply energy locally and efficiently and will be evaluated on a project-by-project basis within neighbourhoods. (Source: https://www.burnaby.ca/our-city/strategies-and-plans/climate-action/resilient-neighbourhoods)

Bainbridge Urban Village Community Plan (2022)

The Bainbridge Urban Village Community Plan states that resilient neighbourhoods are carefully developed to be able to withstand, adapt to, and rebound from a series of changes through time and continue thriving and functioning in a sustainable manner. The Bainbridge Plan is organized into key topic areas that fall under a core value of sustainable placemaking that is unique to Urban Villages. Through sustainable placemaking, the City recommends actions to increase our capacity to respond to future challenges - from site development designs that mimic natural processes to mitigate flooding or urban heat island effects, to equitable public spaces and housing options, to neighbourhood services, amenities and programs that increase social connections and supports.

The Bainbridge Urban Village will serve as a benchmark for how Urban Villages can contribute towards Burnaby's Climate Action Framework goal of achieving carbon neutrality by 2050. Bainbridge Urban Bainbridge Urban Village Community Plan Policy Directions focus on key community functions such as housing options, local economy uses, public services and amenities outside of Burnaby's Town Centres. Policy Directions from the Bainbridge Urban Village Community Plan include the following themes:

Flexibility

Flexibility that allows community to navigate and positively adapt to technological, environmental, climate and socio-economic changes.

Action: The planning for Burnaby Lake Village allowed for flexibility for future land use, housing options, and development of public spaces, public amenities and services.

Connectivity

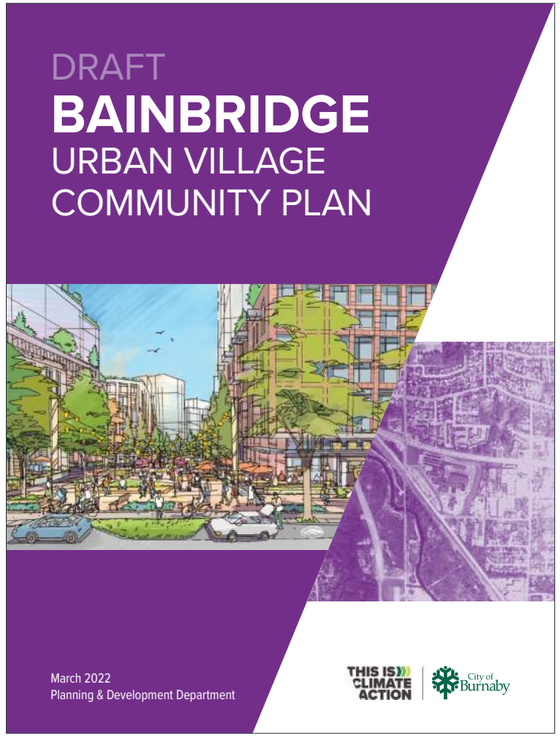
An Urban Village is a compact, energy-efficient and well-connected mixed-use community, connected within the neighbourhood by a variety of mobility modes while providing greater access to employment, and the community and commercial services and amenities of Burnaby and the Metro Vancouver Region.

Action: Burnaby Lake Village is a transit-oriented development connected to the greater region via SkyTrain, public transit and major transportation routes like Lougheed Highway. Bicycle connections include the Central Valley Greenway, the future shared bicycle and pedestrian route along Lougheed, and new pedestrian and bicycle connections to the surrounding Urban Village and natural assets such as Burnaby Lake Regional Park. In addition to a variety of public spaces, from urban plazas and nature trails, connecting Burnaby Lake Village are three key public realm features - the Esplanade, and the more nature-forward Serpentine and Forest Walk. Central public gathering spaces such as like the Gateway Plaza and the proposed community provide opportunities for socializing and community events, but also provide somewhere to go in case of emergency.

Equity, Diversity and Inclusion

A key aspect of a resilient society is safety, access, and inclusivity for all. From equitable public spaces and housing options with employment to neighbourhood services, amenities and programs that increase social connections and support, including respecting our First Nations and supporting our more vulnerable populations.

Action: Burnaby Lake Village provides a variety of use, a variety of housing options (including market rental and non-market rental), local employment (live-work, retail and office), local amenity and public services (such as community centre, childcare), accessible to all.



Planning

Public and private site planning and design that maximizes use of indoor and outdoor space and provides opportunities for urban cooling, sustainable infrastructure, and enhancing the resiliency and health of natural ecosystems.

Action: The future planning for Burnaby Lake Village could explore opportunities to support our ecosystems through the use of indigenous, drought resistant plants, exploring deeper soil depths to allow for water retention within the soil which helps to cool the natural environment (including areas within the site that have no parkade below such as part of the Forest Walk), capturing rainfall through stormwater storage or allowing for infiltration through green roofs and bioswales, and providing community or residential urban agriculture to foster food security.

Nature

Celebrate and emphasize the natural environment as key to placemaking and resiliency in Bainbridge.

Action: The Burnaby Lake Master Plan connects to nature with landscaped streets, public and private realm with vegetation to help clean air pollutants, an urban tree canopy to provide shade and landscape features and infrastructure that mimic natural processes to abate flooding or urban heat islands.

Protecting Nature

Protect and enhance streams and riparian areas and explore opportunities for restoring streams (daylighting) that were historically diverted below ground.

Action: The Burnaby Lake Village Master Plan strategies to daylight Pollywog Creek, as shown in the Pollywog Addendum.

Design

Resilient design is the intentional design of buildings, landscapes, communities, and regions in order to respond to natural and man-made disasters and disturbances, as well as long-term changes resulting from climate change, including sea level rise, increased frequency of heat waves, and regional drought. (Source: resilient-design.org/what-is-resilience/)

Where possible, provide redundancy, use passive design strategies, use vernacular design features, use natural resources, where possible, mitigate stormwater the impacts of climate change.

Action: In tandem with codes and policy, the Burnaby Lake Master Plan will deliver more resilient building designs in consideration of:

- Exploring passive design strategies such as daylighting, natural ventilation and solar energy.
- Reducing solar heat gain during peak summer seasons (such as trees, recessed windows, overhangs, screens or exterior blinds).
- Providing shaded public spaces (such as courtyards), seating areas, mobility routes with natural airflow.
- Implementing stormwater strategies.
- Exploring opportunities to connect to future energy sharing systems.
- Flexibility in mind (such as providing spaces to work and exercise from home)
- More robust ventilation systems better equipped to handle wildfire smoke events (such as HVAC and air conditioning)

Smart City Technology

Smart cities use IoT devices such as connected sensors, lights, and meters to collect and analyze data. The cities then use this data to improve infrastructure, public utilities and services, and more. (Source: insiderintelligence.com/insights/iot-smart-city-technology)

As cities get smarter, they are becoming more livable and more responsive. The Bainbridge Community Plan challenges us to explore opportunities to implement Smart Cities innovations and technologies in Burnaby's Urban Villages.

There is an opportunity to pilot Smart City technologies such as:

- Dynamic guidance and parking way-finding. Optimized traffic signals.
- Adaptive lighting standards.
- Water conservation and quality through infrastructure, stormwater.
- Waste reduction and recyclables sorting.
- Power-smart technologies with sustainable energy sources.

Action: To create a neighbourhood more resilient to change, the proposed development of Burnaby Lake Village could explore technologies for wayfinding or to produce energy, or monitor waste, energy use or air quality, or provide on-demand lighting. Stormwater strategies such as detention and infiltration, public and private electric charging infrastructure, opportunities for public car-share and a robust waste and recycling program are already required under current Burnaby policy.

Carbon Reduction

Complete Communities

Healthy Communities

Nature and Ecosystems

Transportation

Infrastructure

Energy

Technology

Guiding Principles

A place to live, work, and play. Design an experience that's urban in offering but suburban in feel. Enhance people's connection to their private, social, natural, and built environments.