Director	Municipal Manager/Deputy Municipal Manager

COUNCIL AGENDA

Date: December 1, 2025 Item: 7.

DISTRICT OF WEST VANCOUVER
750 17TH STREET, WEST VANCOUVER BC V7V 3T3

COUNCIL REPORT

Date:	November 12, 2025
From:	Heather Keith, Senior Manager, Climate Action & Environment
Subject:	Community Wildfire Resiliency Plan
File:	0332-04

RECOMMENDATION

THAT the Community Wildfire Resiliency Plan, attached as Appendix A to the report titled Community Wildfire Resiliency Plan, dated November 12, 2025, be approved.

RECOMMENDATION

THAT staff be directed to incorporate the recommendations in the Community Wildfire Resiliency Plan into annual workplans and request supportive funding as part of the annual budget process and through external funding sources.

1.0 Purpose

To provide the final Community Wildfire Resiliency Plan (the "CWRP", **Appendix A**) for Council consideration and receive direction to begin the implementation of the plan. The CWRP is an update to the 2019 Community Wildfire Protection Plan (CWPP).

2.0 Legislation/Bylaw/Policy

A Community Wildfire Resiliency Plan is a policy framework to assist the District in reducing the risk of wildfire impacts to the community.

3.0 Council Strategic Objective(s)/Official Community Plan

Council Strategic Objective

Objective 1.1 of the priority titled 'Environment and Climate Change' in Council's 2024-2025 Strategic Plan is to "Create and implement a Climate Action Plan with a reporting framework to track progress towards GHG emission reduction targets and net zero goal for both community and corporate sectors in alignment with the Clean BC Roadmap", with the following relevant deliverable:

- Deliverable 1.1.2: Community Wildfire Resiliency Plan completed.

Objective 1.4 of Council's 2024-2025 Strategic Plan is to "Take steps to protect against the threat of wildfires, with the following deliverables:

- Deliverable 1.4.1: Implementation of the Community Wildfire Protection Plan is completed.
- Deliverable 1.4.2: Completion of WV portion of North Shore fire break.
- Deliverable 1.4.3: Complete five-year review of Community Wildfire Protection Plan and update.

Official Community Plan

The Official Community Plan recognizes the importance of enabling infrastructure and community resilience amid climate change impacts such as increasing regional wildfire risk and provides high-level policies that facilitate adaptation and mitigation of wildfire hazards to increase community protection. These include:

- Policy 2.2.4(h): An environmental plan—including stormwater management, energy efficiency and reduced greenhouse gas emissions, risk management (e.g., forest fire), and other mitigation and adaptation strategies to achieve a sensitive and sustainable development scheme.
- Policy 2.6.18: Review development requirements to address risks of natural hazards (e.g., landslide, flood, debris flow, forest fires and human-wildlife conflicts).
- Policy NE1: Wildfire Hazard Development Permit Area (DPA) Guidelines: To protect development from the risks of wildfire hazard by taking appropriate precautionary measures, informed by professional studies and assessments to guide safe development, forest management, building design, construction, and long-term maintenance and monitoring.

4.0 Financial Implications

The CWRP is a framework of recommended actions to guide Council and staff on wildfire risk mitigation for the community. While some of the planning, partnership, and policy actions may be integrated into existing programs and initiatives at a relatively low cost, other actions have significant costs, such as the wildfire fuel management program, wildfire equipment and training, and FireSmart programs. There are several funding strategies that the District has been using and will continue to draw on to support wildfire management including the use of the District’s Environmental Levy, grant programs available from the federal and provincial governments, and annual capital budget requests. If the updated CWRP is approved, staff will continue to implement the recommendations based on priority and as funding allows.

5.0 Background

5.1 Previous Decisions

At its July 8, 2019, regular meeting, Council recognized that climate change constitutes an emergency for West Vancouver.

At its November 18, 2019, regular meeting, Council approved the Community Wildfire Protection Plan (CWPP), which included recommendations to update the OCP to incorporate a Wildfire Hazard DPA with development guidelines based on FireSmart principles.

At its December 14, 2020, regular meeting, Council adopted the Wildfire Hazard DPA.

5.2 History

Wildfire events in the province have been increasing, particularly due to prolonged periods of drier summer seasons and drought conditions. There have been several recent wildfires within the vicinity of West Vancouver, including the Whyte Lake fire (2018), Lions Bay fire (2018), Strip Creek fire (2019), Cypress Falls fire (2022), and the Horseshoe Bay fire (2023). The steep terrain in these locations made these fires difficult to access and control, causing damage to recreational and forested areas. With the proximity of these fires to the community, there needs to be continued efforts by the District and residents to increase mitigation measures to reduce the risk of fires and impacts to the community.

The District approved a CWPP in 2019 to guide wildfire management, with a recommendation to review and update the plan every five years to ensure continued progress on wildfire resiliency. As background, CWPPs were introduced in 2004 as part of BC's Strategic Wildfire Prevention Initiative (SWPI) and served as the primary wildfire risk reduction planning mechanism for communities in the province. To better ensure that CWPPs consistently take a comprehensive approach toward wildfire management, including risk reduction and resiliency measures, the BC Wildfire Service (BCWS) partnered with the BC FireSmart Committee to develop a new framework for community wildfire resiliency planning, with the following key provincial goals:

- Increase a community's capacity and understanding of wildfire risk;
- Foster greater collaboration within and across administrative boundaries;
- Be more responsive to the needs of different types of communities throughout British Columbia in terms of their size, their capacity, and the threats they face; and
- Develop achievable and accountable action items.

To support the implementation of these goals, the province updated to a new CWRP template and developed associated guidance for communities.

To develop a CWRP for West Vancouver, a review of the 2019 CWPP was completed to determine the progress made on wildfire risk mitigation, the current threat of wildfire to the community, and outstanding actions that continue to be a priority. Since adopting the CWPP in 2019, the District has made considerable progress on many of the recommendations, including the following key activities:

- Adopted a Wildfire Hazard Development Permit Area.
- Strengthened emergency response capabilities of West Vancouver Fire & Rescue through continued training, purchase of new wildfire equipment, and mutual aid response drills.
- Completed over 140 Home Ignition Zone (HIZ) Assessments, 30 Critical Infrastructure Assessments, and four FireSmart Neighbourhood Assessments.
- Established the North Shore FireSmart and Resiliency Committee.
- Launched a FireSmart educational campaign, through social media and in-person events.
- Completed fuel management prescriptions for four high priority areas and implemented fuel management treatments on 18.6 hectares of public land.

The CWRP was built on the progress made on the 2019 CWPP with a focus on updated fuel type mapping, fuel treatment identification, and recommendations with each of the seven FireSmart disciplines (education, vegetation management, legislation and planning, development considerations, interagency cooperation, cross-training emergency planning) to provide a comprehensive and adaptative approach to wildfire planning.

6.0 Analysis

6.1 Discussion

CWRP Goals and Objectives

This CWRP is intended to serve as a framework to guide the implementation of specific actions and strategies to:

- Increase the efficacy of fire suppression and emergency response;
- Reduce potential impacts and losses to property and critical infrastructure from wildfire; and
- Reduce wildfire behavior threat within the community.

To help guide and accomplish the above goals, this CWRP provides the District with:

- An assessment of wildfire risk to the community;
- An assessment of values-at-risk and potential consequences from wildfire;

- Maps of fuel types and recommended areas for fuel treatments;
- A review of emergency and interface wildfire response and recovery capacity; and
- Options and strategies to reduce wildfire risk in each of the seven FireSmart disciplines.

The CWRP can be used to inform updates to community plans, expand emergency response capacity and FireSmart education programs, and help direct fuel management. Although the entire municipality is considered the 'Area of Interest' (AOI), the planning for the CWRP was based on the Eligible Wildland Urban Interface (WUI) defined as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Within the WUI, various values-at-risk were identified to be protected through proactive measures, including:

- Critical infrastructure (e.g., fire halls, water reservoirs and pump stations, electrical substations);
- Residential structures and other community buildings (e.g., schools, operations buildings, museums, medical services, community and senior centres);
- Archaeological sites (e.g., ones within Horseshoe Bay and Ambleside areas), culturally significant sites (e.g., culturally modified trees), and other heritage buildings or sites;
- Environmental values (e.g., known critical habitat, species at risk locations, and community watersheds); and
- Recreational values.

<u>CWRP Recommendations</u>

Field surveys were conducted on public lands within the WUI to assess wildfire threat across the municipality, which generally ranged from low to moderate based on fuel type, terrain, and weather (i.e., the Fire Triangle). It is important to note that the scope of the assessment did not include private lands, which account for approximately 40% of the area and contains most of the community's infrastructure and highest-value assets. Conditions observed on many private properties, both developed and forested, showed higher fire hazard than nearby natural areas. This makes private land the most critical area for wildfire risk reduction. In addition, the wildfire threat assessment does not factor threat of human-caused fires, which is an important component for wildfire risk management given the significant use of the forest interface by humans.

Accounting for the identified values-at-risk, the wildfire threat assessment, the significant proportion of private lands, and the high-use of the forested areas of the District, 45 recommendations were included in the CWRP with the following recommendations identified as highest priority:

- Maintaining and expanding FireSmart outreach in the community. Focusing on the education of community members as to how they can reduce risk on their own properties and prevent fires.
- Staffing FireSmart positions permanently to help host events, communicate initiatives, and assist with the mitigation of fire risk in strategic areas.
- Assessing the fire hazard to critical infrastructure and mitigating this hazard where feasible.
- Enforcing FireSmart landscaping throughout the District (i.e., avoiding the continued planting of highly flammable vegetation).
- Managing parks and forested areas proactively to reduce their fire risk and improve their overall health and resilience. This will focus on the removal of dead trees, cleanup of deadfall, pruning of trees, and removal of invasive species.

Recommendations in the CWRP should be considered a toolbox of options to help reduce wildfire risk within the District. Recommendations have been given a priority ranking based on professional opinion regarding potential effectiveness, while considering cost effectiveness and potential timelines.

6.2 Climate Change & Sustainability

Studies have indicated that the frequency, intensity, severity, and duration of wildfires and other natural disturbances is expected to increase due to climate change. The purpose of the CWRP is to identify wildfire risks, understand the potential consequences of a wildfire impacting the community, and examine options and strategies to reduce wildfire risk to the community. The implementation of the CWRP would contribute to the protection and sustainability of the community by building resiliency over time.

6.3 Public Engagement and Outreach

The CWRP is an update to the 2019 CWPP. Public engagement was not completed for this update. If Council approves the CWRP, staff will continue to develop communications and outreach plans for actions in the plan when required to ensure continued understanding and support from the community.

6.4 Other Communication, Consultation, and Research

Blackwell Consulting Ltd. interviewed staff across various District departments (Planning, Development, and Environment Services, Parks, Engineering, and Fire and Rescue Services); BC Wildfire Service; BC Parks; and North Shore Emergency Management during the development of the CWRP.

The draft CWRP was provided to Skwxwú7mesh Úxwumixw (Squamish Nation), səÍílwətaɬ (Tsleil-Waututh Nation), and xʷməθkʷəýəm (Musqueam Nation) for review and collaborative input. Staff and the consultant met with staff from Tsleil-Waututh Nation and incorporated their comments into the CWRP. Staff will continue to seek input from the other Nations to ensure the District's CWRP aligns with their wildfire management planning and respective CWRPs.

The draft CWRP was provided to the District Environment Committee for review. The consultant and staff met with the Committee on September 9, 2025, to discuss the CWRP and comments from members were incorporated into the CWRP. On November 4, 2025, the Environment Committee passed the following resolution:

THAT:

1. *the summary of updates to the draft Community Wildfire Resiliency Plan be received for information;*
2. *the draft Community Wildfire Resiliency Plan be endorsed to support Council's direction to take steps to protect against the threat of wildfires; and*
3. *this endorsement be forwarded to Council by forming part of a staff report to be brought forward for consideration at an upcoming open Council meeting.*

7.0 Options

7.1 Recommended Option

THAT:

1. the Community Wildfire Resiliency Plan be approved.
2. Staff be directed to incorporate the recommendations in the Community Wildfire Resiliency Plan into annual workplans and request supportive funding as part of the annual budget process and through external funding sources.

7.2 Considered Options

Council may request further information or provide alternative direction (to be specified).

8.0 Conclusion

The CWRP is a localized risk assessment and action plan to improve wildfire resiliency and assist communities in improving safety and reducing the risk of damage to property and critical infrastructure from wildfires. Wildfire management requires a multi-faceted approach for the greatest efficacy and risk reduction outcomes. Recommendations and action items within this plan should be considered a toolbox of options to help reduce wildfire risk within the District of West Vancouver.

Author:

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Concurrence:

Jeremy Calder, Assistant Chief, Fire Prevention and FireSmart Coordinator, Fire and Rescue Services

Gord Howard, Fire Chief, Fire and Rescue Services

Appendices:
A – Community Wildfire Resiliency Plan

APPENDIX A

Community Wildfire Resiliency Plan 2025

District of West Vancouver

October 16, 2025

BLACKWELL

SUBMISSION INFORMATION

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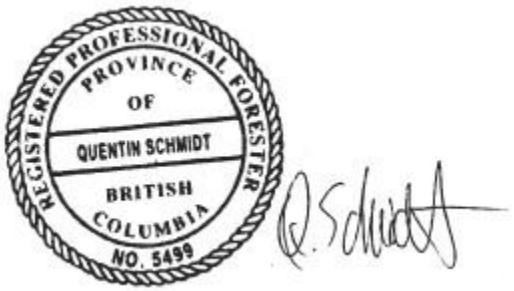
REGISTERED PROFESSIONAL SIGN AND SEAL

RPF PRINTED NAME	
Quentin Schmidt	RPF #5499
DATE SIGNED	
October 16, 2025	
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.	
Registered Professional Forester Signature and Seal	



Cover Photo Credit: Blackwell Consulting Ltd.

ACKNOWLEDGEMENTS

The authors would like to thank Heather Keith (Senior Manager, Climate Action & Environment), Gord Howard (Fire Chief – West Vancouver Fire & Rescue), Jeremy Calder (Assistant Fire Chief, Fire Prevention) and Tiffany Bentley (Parks Environmental & Ecosystems Manager) for their direct involvement with planning, reviewing, and contributing to this Community Wildfire Resiliency Plan.

The authors would also like to thank the following individuals for their input to the plan through information sharing and/or technical review:

- Christopher Monaghan, Climate Action Coordinator – West Vancouver
- Stephanie Louie, Planning Department – West Vancouver
- Andy Kwan, Engineering Department – West Vancouver
- John Wong, Facilities – West Vancouver
- Kevin Woodhouse, Parks – West Vancouver
- Grace Timney – Emergency Program Coordinator – Tsleil-Waututh Nation
- Lindsay Vandesteeg & Dylan Eyers – BC Parks
- Brian Davis, Wildfire Technician – BC Wildfire Service

This report would not have been possible without the Union of BC Municipalities (UBCM) FireSmart Community Funding & Supports (FCFS) program.

EXECUTIVE SUMMARY

In September 2024, Blackwell Consulting Ltd. ('Blackwell', previously B.A. Blackwell & Associates Ltd.) was retained to assist the District of West Vancouver ('West Vancouver', 'the District') in creating a Community Wildfire Resiliency Plan (CWRP). A CWRP is both a localized risk assessment and an action plan to improve wildfire resiliency in a region. CWRPs aim to develop strategic recommendations based on the seven FireSmart® disciplines (Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning, and Vegetation Management) to assist communities in improving safety and reducing the risk of damage to property and critical infrastructure from wildfires. The CWRP can be used to inform updates to community plans, expand emergency response capacity and FireSmart education programs, and help direct fuel management within the Eligible Wildland Urban Interface (Eligible WUI).

West Vancouver's previous Community Wildfire Protection Plan was completed in September 2019. West Vancouver has completed many of the recommendations of this previous plan and progressed along the FireSmart Roadmap.[7] An important milestone has been the incorporation of a Wildfire Hazard Development Permit Area (DPA) in December 2020 as well as the annual expansion of a wildfire fuel management program. Since 2019, the District has coordinated many FireSmart activities through a FireSmart Coordinator, including programs for FireSmart Home Assessments, Neighbourhood Assessments, Critical Infrastructure Assessments, a FireSmart Plant Program, chipping services, as well as delivering educational workshops, hosting community FireSmart events/programs, including at schools and the library, and launching a FireSmart Plant Program with local garden centres. The FireSmart Coordinator has also established a North Shore-wide FireSmart Committee. The District has also incorporated important FireSmart and forest health information into their new Urban Forest Management Plan (2024). Since 2019, West Vancouver Fire and Rescue Services has also expanded their capacity for wildfire response and has collaboratively discussed and practiced wildfire response at the regional level.

Field work for this CWRP found that wildfire threat across the municipality ranges from low to moderate, based on fuels, terrain, and fire weather. However, approximately 40% of the area is privately owned and was not included in detailed analysis—despite containing most of the community's infrastructure and highest-value assets. Conditions observed on many private properties, both developed and forested, show higher fire hazard than nearby natural areas. This makes private land the most critical area for wildfire risk reduction.

As a result, the highest priorities in this CWRP are FireSmart education, property assessments, and hazard mitigation at the homeowner and neighbourhood levels. To effectively support and sustain these efforts, permanent funding for a dedicated FireSmart Coordinator is strongly recommended. Additional high-priority actions include enforcing FireSmart landscaping guidelines and protecting critical infrastructure. These measures are essential to reducing wildfire risk and building long-term community resilience.

Wildfire management requires a multi-faceted approach for the greatest efficacy and risk reduction outcomes. Recommendations and action items within this plan should be considered a toolbox of options to help reduce wildfire risk within the District of West Vancouver. The District will need to further prioritize implementation based on resources, strengths, constraints, and availability of funding, and regularly update the prioritization of actions as variables change over time. Securing grant funding for future initiatives is a critical role of the FireSmart Coordinator. A total of 45 recommendations and action items are presented in Table 1 below and are more thoroughly discussed in their appropriate sections within the plan. Recommendations have been given a priority ranking based on professional opinion regarding potential effectiveness, while considering cost effectiveness and potential timelines.

Table 1. Community Wildfire Resiliency Plan Recommendations

Item	Priority	Recommendation	Rationale	Lead (Involved)	Timeframe (FireSmart Roadmap Phase)	Metric for Success	Funding Source[1]
Education - Section 5.1							
Objective: To provide information to West Vancouver residents and visitors empowering them to adopt and conduct FireSmart practices to mitigate the negative impacts of wildfire to their homes, businesses, and communities.							
#1 Maintain and Expand Current FireSmart Outreach	High	Continue to host annual FireSmart workshops and preparedness days throughout the community. Continue to involve West Vancouver Fire & Rescue Services (WVFR) individuals and the BC Wildfire Service (BCWS) to join or lead these events and provide insight from a first responder point of view.	FireSmart outreach events (e.g., workshops, preparedness days) are a vital way to integrate FireSmart practices into the community. Hosting events in various neighbourhoods should increase the uptake of FireSmart activities. The District of West Vancouver (DWV) has been hosting multiple educational FireSmart events annually since the previous Community Wildfire Preparedness Plan (CWPP).	West Vancouver FireSmart Coordinator (WVFR, BCWS)	Annually (Engagement / Initiative)	Annual hosting of multiple community FireSmart events focused on education and preparedness, likely at the neighbourhood level.	CRI funding is available: Wildfire Community Preparedness Day, cost maximums for physical materials (tents, T-shirts, decals, FireSmart Magnetic Board, etc.)[2]
#2 Distribute FireSmart Materials	High	Continue to distribute FireSmart homeowner materials (e.g., FireSmart Begins at Home Guide / Homeowners Manual, "Tips to FireSmart Your Home" poster, FireSmart Landscaping Guide, FireSmart 101 & Wildfire Risk Reduction online course) at events, digitally, and through social media throughout the community. Consider distributing alongside yearly property tax mailings.	FireSmart BC homeowner materials provide helpful and easy-to-digest infographics on how a resident can reduce fire hazard on their property. Materials can be provided at community events, posted online, and/or delivered individually. Educational FireSmart materials are posted online on the DWV website and have been made available at community centers, fire halls, and community events.	West Vancouver FireSmart Coordinator	Distributed / posted throughout the fire season, available at community events. (Engagement)	Making these materials available at the municipal hall, fire hall, FireSmart events, online, and promoted through social media. Provide a link to free FireSmart courses on the West Van website.	Physical resources available at no cost (to a maximum amount) at https://firesmartbc.ca/resource-ordering-form Additional resources available at cost. CRI: Staff hours for administration
#3 Continue to Conduct HIZ / WMP Assessments	Mod-High	Continue to conduct HIZ Assessments or Wildfire Mitigation Program (WMP) Assessments for individual residential properties throughout the community, expanding the capacity of WVFR individuals to complete these assessments (see Recommendation #24). Target / notify homeowners that live in the Wildfire Hazard Development Permit Area (DPA) about this.	HIZ Assessments educate and inform residents as to their home's unique wildfire hazard and the risk associated and offer tailored recommendations on how their risk can be reduced. As of 2025, 140 HIZ Assessments have been completed in West Vancouver – largely by third-party consultants. These assessments and the resulting mitigation work can be demonstrated on municipally-owned properties. Formal HIZ or WMP Assessments also provide the basis for a local rebate program.	West Vancouver FireSmart Coordinator (WVFR / Consultants)	Continue in 2025, annually expand program. (Engagement)	1) Advertise the online portal for homeowners to sign up for HIZ / WMP assessments 2) Track the number of assessments completed annually, seeking an annual increase	CRI: Conduct HIZ or WMP Assessments
#4 Continue to Conduct Critical Infrastructure Assessments	High	Conduct Critical Infrastructure (CI) Assessments and follow-up mitigation work for municipally owned Critical Infrastructure or Community Assets (see Table 9 and Map 2 – Section 3.3), initially focusing on water utilities assets (e.g., Montizambert Creek water treatment plant, reservoirs, pumphouses, above-ground water mains – Nelson Creek bridge) and the municipal works yard.	The DWV had 30 CI Assessments completed in 2020-22 – focusing on fire halls, schools, and community buildings – with mitigation / upgrades completed to fire halls. CI and Community Assets provide important services for emergency response, day-to-day community activities and employment services. Assessments allow for mitigation efforts to be effectively tailored to the individual buildings, making community infrastructure more resilient. Assessments provide the basis for CRI funding for follow-up FireSmart mitigation treatments or material changes.	West Vancouver FireSmart Coordinator (Contractor / DWV Facilities)	Begin to assess vulnerable infrastructure in 2025, ensure that all CI / community assets with vulnerabilities or next to vegetation are assessed by 2027. (Expansion)	Have all vulnerable critical and community infrastructure assessed.	CRI: Critical Infrastructure and Community Asset assessments
#5 Mitigate Infrastructure Hazards	High	Perform recommended mitigation activities on Critical Infrastructure (CI) and Community Assets that have already had CI Assessments completed, and/or where future assessments are completed. Prioritize work by the hazard type, while also weighing objectively based on the importance of the asset. Establishing a dedicated contractor(s) for vegetation management in these areas will likely improve the efficiency and cost-effectiveness of mitigation.			Perform recommended mitigation activities ASAP after assessments are completed – have completed by 2028. (Expansion)	Complete material upgrades or vegetation treatments on all vulnerable assets.	CRI: Mitigation activities including building materials and labour.
#6 Expand FireSmart Neighbourhood Recognition	Mod	Continue to expand the FireSmart Canada Neighbourhood Recognition Program, by performing additional Neighbourhood Assessments (NAs) and creating Neighbourhood Plans (NPs) for various communities. Prioritize neighbourhoods that are within the current Wildfire DPA area (i.e., most intermixed with the forest) and/or where there are heightened emergency response concerns (Whytecliff, Horseshoe Bay, Eagleridge, Pasco Road, etc.). Ensure that a Community Champion is identified for each neighbourhood – or assign internal staff to this position. Additionally, communicate summarized results of previous Neighbourhood Assessments to individual homeowners or neighbourhood groups.	The DWV has completed NAs and NPs for British Properties East, West, and Cypress Park in 2022, though there have been difficulties with identifying Community Champions in any of these areas. NAs / NPs allow for coordinated neighbourhood-level mitigation activities to occur. Fire hazards within the Home Ignition Zone are often shared / overlapping between property owners and/or present on communal boulevards which can limit a home-by-home approach. As of 2024, FireSmart Canada is now offering incentive funding for recognized neighbourhoods to complete annual mitigation activities.	West Vancouver FireSmart Coordinator (WVFR / Consultant)	Engage communities and perform assessments / plans in 2025, expand annually. (Initiative)	1) Identify Community Champions and perform Neighbourhood Assessments and Plans 2) Host neighbourhood education and cleanup events.	CRI: Neighbourhood Wildfire Hazard Assessments; FireSmart Neighbourhood Plans; FireSmart Canada Neighbourhood Recognition Program Incentive

1 The listed funding sources provide examples of funding available in 2025, though West Vancouver should keep up-to-date with pursuing alternative funding sources for wildfire risk reduction / community resiliency work.
2 CRI funding has an annual maximum amount which affects the timing and level of implementation, if solely relying on CRI funding for wildfire resilience initiatives.

#7 Establish FireSmart Rebates	Mod	Establish the FireSmart Rebate Program – providing rebates (for up to 50% of the total cost of eligible activities) to residents that complete mitigation activities that have been recommended through a Home Ignition Zone / Wildfire Mitigation Program assessment.	Individual homeowners or strata owners may be more inclined to perform mitigation activities if they can have a portion of their time / materials compensated. Additionally, this ensures that the activities performed are in-line with recommendations that were provided by trained personnel.	West Vancouver FireSmart Coordinator	Establish the Rebate Program in 2025, expand the uptake annually. (Initiative)	Establish the Rebate Program, track the number of issued rebates and the type of activities that they correspond to.	CRI: Rebates limited to 50% of the total cost of eligible activities
#8 Incorporate FireSmart in Schools	Mod	Continue providing the FireSmart BC Education Program at all educational levels (e.g., West Van Secondary, Rockridge, Sentinel, Inglewood, Cypress Park, Caulfeild, Gleneagles Ch'axáẏ, etc.).	Having FireSmart awareness instilled in youth may provide a catalyst for their parents to perform mitigation activities around their home. In addition, instilling FireSmart principles in today's youth provides the foundation for a more FireSmart community in the future. West Vancouver has previously distributed FireSmart education materials to schools but the uptake / delivery has not been tracked.	West Vancouver FireSmart Coordinator (School District 45)	Contact SD45 / individual principals in 2025 (Integration)	1) Communicate program with SD45 / Principals 2) Have FireSmart materials integrated in lesson plans	CRI: Staff hours for administration
#9 Communicate FireSmart & Fire Hazard Internally	Mod	Increase the use of social media, physical signage, and/or the District of West Vancouver website to communicate FireSmart initiatives, fire hazard postings, and the planning / implementation of fuel management activities. Fire hazard postings are especially important when the local fire danger rating is high and/or extreme, and when there are restrictions via the *North Shore Interface Construction and Maintenance Protocol for High Risk Work*.	FireSmart information and links to various FireSmart resources are displayed on the District of West Vancouver website and have been displayed through WVFR accounts, but are limited in other social media channels. Social media and other internal postings can help display initiatives of the FireSmart program, and/or provide important real-time information regarding fire hazard / fire danger to West Van residents. In addition, communicating successes of the FireSmart program will make residents aware of these efforts throughout the municipality. Looking at novel ways to engage internal divisions and individual staff members will allow for consistent messaging and best practices.	West Vancouver FireSmart Coordinator (Communications, Climate Action & Environment)	Work with the communications department in 2025, roll out information ASAP and/or in conjunction with FireSmart initiatives. (All Phases)	1) Use of social media channels to distribute FireSmart information 2) Blatant fire hazard information online and via social media 3) Fuel management information transmitted	CRI: Staff hours for administration, targeted education for fuel management, FireSmart education
#10 Communicate Fire Hazard Externally	Mod	Work with the Ministry of Transportation and Transit (MOTT), BC Parks, BCWS, local recreation groups (e.g. North Shore Mountain Bike Association), local news outlets (e.g., radio, North Shore News) to expand the number of fire hazard postings in the community during periods of high and extreme fire danger.	Having strategic communication methods to notify and educate residents and tourists alike of fire danger ratings and prevention methods can increase people's situational awareness to wildfire and decrease the likelihood of human-caused fires.	West Vancouver FireSmart Coordinator / Communications (MOTT, BCWS, BC Parks, NSMBA, Radio, NS News)	Engage groups in 2025 – can be a regional approach. Roll out information ASAP and continue annually. (Engagement)	Use of various methods targeted at residents and tourists to communicate fire hazard or wildfire information.	Internal.
#11 Share the CWRP Publicly	Mod-Low	Make this CWRP and associated maps publicly available through the District of West Vancouver website. Use the WESTmap tool to display local fire threat, fuel treatment projects, and other FireSmart initiatives (e.g., HIZ assessments, CI assessments, neighbourhood assessments, etc.). Share CWRP information with First Nations, industrial groups (e.g. MOTI, BC Hydro), adjacent municipalities, and fire departments / emergency management organizations who may be interested in collaborating on FireSmart activities.	Showcasing FireSmart initiatives will allow West Vancouver residents to see the latest steps that the community is taking to become increasingly FireSmart. Working with local / regional partners and emergency response groups on achieving risk reduction goals can expedite the process. West Vancouver has publicly shared their previous CWPPs, FireSmart initiatives, and held public information sessions on community wildfire preparedness (e.g., Forum for Dialogue and Learning – Enhance West Van – April 2025).	Climate Action & Environment (GIS)	CWRP shared publicly and with stakeholders in 2025. WESTmap updates in 2025. (Engagement)	CWRP shared and maps available for viewing on the District of West Vancouver website.	Internal.
Legislation and Planning - Section 5.2							
Objective: To provide the means for the District of West Vancouver to implement wildfire risk reduction through laws and legislation by outlining government responsibilities regarding wildfire.							
#12 OCP Updates	Mod-Low	Incorporate considerations of wildfire risk during future OCP updates: • Develop a growth management policy which considers wildfire risk during area development (Section 2.2) • Strengthen existing natural hazard policies to include wildfire and interface fire – considering the potential impact on public health and safety, economics, ecosystems, habitat, and water quality among other values.	These ideas were detailed in the DWV's 2019 Community Wildfire Preparedness Plan (CWPP) and are still relevant for future OCP updates. While the goals of these recommendations have largely been achieved by the enactment of the DWV's Wildfire Development Permit Area in 2021, their incorporation into future OCPs is still relevant and important.[3]	Climate Action & Environment	Discuss at future OCP planning meetings. (Integration)	OCP updates to address wildfire risk.	Internal or CRI: Bylaw amendments / revisions.
#13 Enforce FireSmart Landscaping	High	Restrict the planting of highly flammable vegetation within the FireSmart Home Ignition Zone (minimum 10 m from a building, potentially up to 30 m) and prohibit the planting of all vegetation in the FireSmart Immediate Zone (i.e., within 1.5 m of a building), both wherever a Development Permit is required or where homeowners are updating their pre-existing landscaping.[4] This can be accomplished by enacting a District-wide FireSmart landscaping bylaw, or updating the landscaping requirements of the Wildfire Hazard DPA Guidelines if the DPA is expanded outside its current area (see Recommendation #18).	Landscaping choices have a considerable impact on the fire hazard on and between properties and is an ongoing concern of WVFR. While highly flammable vegetation (arborvitae, juniper, conifer species) is presently found as common landscaping throughout the District, proactively managing this potential risk in new developments can have a marked impact on future fire hazard continuity. The current landscaping guidelines in the Wildfire Hazard DPA allow for low-flammability plants in the Immediate Zone, and there is currently no restriction on high-flammability landscaping	Climate Action & Environment (West Vancouver FireSmart Coordinator)	Discuss in 2025, implement ASAP. (Integration)	West Vancouver has a legislative method to require FireSmart landscaping throughout the municipality.	CRI: Development considerations –bylaw amendments / revisions.

[3] By containing development within a specified area, the overall fire risk is less than when compared to areas of intermixed development, i.e. sprawl. In intermixed areas there is often the potential to have inadequate or unreliable water supply for suppression, as well as longer emergency response times and more difficult emergency access. By constraining development, the District can ensure that future development occurs where urban services, such as water for fire suppression, is available, reliable, and accessible. Overall intermix and rural areas are generally more vulnerable (at a higher risk) to interface fires.
Identification of natural hazards such as wildfire can allow for planning and policies to be put in place to increase District resilience, mitigate potential damages and increase public and official awareness of risk.
[4] Reference the FireSmart BC Landscaping Guide: https://firesmartbc.ca/resource/landscaping-guide/

#14 Communicate Bylaw Controls of Fire Risk	Mod-Low	Educate community members on portions of the Fire Rescue Bylaw that relate to fire risk on properties (*Section 9.4 – Outdoor Storage & 8.3 – Disposal of Material, Section 8.1 – Fire Hazards*), and provide clear messaging on how fire hazards from vegetation and woody debris impact the ability of first responders to safely and successfully respond to a fire. Can be incorporated with FireSmart information that is included in annual property tax mailings.	These portions of the Fire Rescue Bylaw prohibit the dumping and/or accumulation of combustible materials on a property and have been exercised but not in terms of woody debris or vegetation. High hazard vegetation and structural conditions were frequently observed in West Vancouver, especially on large, forested properties. Increasing communication around this bylaw (potentially combined with FireSmart communication) and making language clearer on what hazards this bylaw targets can make things clearer for residents and improve voluntary compliance.	Communications / WVFR Fire Chief (West Vancouver FireSmart Coordinator)	Begin in 2025, ongoing. (Engagement)	Education through public postings, North Shore News, and social media.	Internal.
#15 Stiffen Controls of Fire Ignitions from Industrial Activity	Mod	Review the *North Shore Interface Construction and Maintenance Protocol for High Risk Work During Periods of Extreme Fire Danger Ratings* with WVFR and the fire rescue services for the District and City of North Vancouver to better align with requirements of the Wildfire Act and Wildfire Regulation, and/or customize the restrictions in order to comprehensively reduce the threat of accidental ignitions from construction / industrial activities.[5] Include requirements for submitting a risk mitigation checklist and an exemption option.	Reducing fire ignitions in the forest interface during periods of high or extreme fire danger is critical for preventing unnecessary fire events and allowing WVFR to focus their preparedness. The current protocol does not meet the Wildfire Act/Wildfire Regulation is multiple ways (e.g., no shut-down restrictions or required fire-watch during days of *High* fire danger, 15:00 shutdowns for *Extreme* fire danger days instead of 13:00), and requirements of this protocol are advertised differently between the three jurisdictions (e.g., 17:00 shutdowns in the DNV).	WVFR / Climate Action & Environment	Discuss in 2025, implement ASAP (Integration)	Update of the protocol to better reflect requirements of the Wildfire Act & Regulation.	Internal or CRI: Bylaw amendments / revisions.
#16 Update the CWRP	Low	Complete or schedule periodic updates of this CWRP. The frequency of updates is highly dependent upon major changes which would impact local wildfire risk (e.g., development, forest health changes) or the rate at which wildfire risk reduction efforts are implemented. An evaluation of major changes (including funding program changes to may lead to new opportunities) and the potential need for a CWRP update should be initiated every 5 years.	An up-to-date (i.e., no more than five years old) CWRP is a current requirement for further funding under the CRI program, and allows for West Vancouver's FireSmart program to grow and adapt in response to previous successes / challenges.	Climate Action & Environment / West Vancouver FireSmart Coordinator	5 years from adopting this CWRP document. (Foundational Element)	West Vancouver always has an up-to-date CWRP and action plan.	Internal or CRI: Full CWRP document or update.
Development Considerations – Section 5.3							
Objective: To embed FireSmart practices and considerations into all development within the District of West Vancouver.							
#17 Amend Requirements of the Wildfire DPA	Mod-High	For the pre-existing boundaries of the Wildfire Hazard DPA, ensure that the following requirements are amended / incorporated: • Landscaping: Defensible space must require that no vegetation is planted or retained within the Immediate Zone (i.e., within 1.5 m of a structure) – unless this is a tree that has been modified acceptably at the discretion of a Qualified Professional (QP).	The current landscaping requirements of the Wildfire Hazard DPA refer to a 10-meter defensible space and provide requirements for this area, while not separately or strictly referencing the Immediate Zone. Research from recent interface fire events has displayed the importance of not having vegetation in the Immediate Zone to decrease structure vulnerability.	Climate Action & Environment	Discuss changes in 2025, implement ASAP. (Integration)	Amendments made to the Wildfire Hazard DPA Guidelines to reflect FireSmart recommendations for the Immediate Zone.	Internal or CRI: Bylaw amendments / revisions.
#18 Expand the Wildfire DPA	Mod	Recognize the pre-existing boundaries of the Wildfire Hazard DPA as a Primary DPA and establish a Secondary DPA to address interface fire hazards for the remainder of the municipality. For the *Secondary DPA* area, the following requirements (at minimum) should apply: • Class A or B Fire Resistant Roofing • A FireSmart Immediate Zone (see Recommendation XX) • Landscaping guidelines for a 10 m defensible space.	While properties outside of the current Wildfire Hazard DPA are > 100 meters from a forested area, there remains an inherent spotting risk to these properties from a nearby structure or forest fire. Additionally, structure to structure fire spread (often through pathways of vegetation) is a concern for WVFR and has been displayed in many recent urban conflagration fires in various jurisdictions. Breaking the continuity of fuels and vulnerable structures can help increase resilience at the neighbourhood and community level.			Expand the spatial extent of the Wildfire Hazard DPA – creating a *Secondary DPA* area for the remainder of the municipality.	Internal or CRI: Bylaw amendments / revisions.
Interagency Cooperation - Section 5.4							
Objective: To broaden from a single-jurisdiction approach to a risk driven, multi-agency, multi-scalable approach to a wildfire emergency.							
#19 Collaborate Externally	Mod	Continue to meet with the North Shore FireSmart Committee / Working Group to discuss fire risk concerns and collaborate on regional FireSmart initiatives and messaging. Additionally, continue to work with local First Nations, including Squamish, Musqueam, and Tsleil-Waututh Nations, on alignment of respectively resiliency plans and wildfire management on the North Shore.	Having this working group creates opportunities for synergies and information sharing of wildfire risk reduction activities across jurisdictions, and results in unified communications during the fire season. Pre-establishing this relationship can also expand the efficacy of mutual aid agreements and sharing of apparatus. Additionally, having a functional Community FireSmart Resiliency Committee ([CFRC] or equivalent) is an ongoing requirement for accessing CRI funding.	West Vancouver FireSmart Coordinator / Fire Chief (and participating partners)	Continue to engage in 2025, meet bi-annually at least. (Engagement)	Meetings held and collaborative initiatives implemented.	Internal and CRI funding: CFRC meetings & integrated fuel management tables.
#20 Collaborate Internally	Mod	Continue to discuss fire risk concerns and FireSmart initiatives across municipal departments.	Fire risk concerns are often shared and understood across different internal groups (i.e., WVFR, planning, engineering, development services, facilities, emergency program, parks, etc.), which requires collaboration among these groups to ensure that operations and budgeting are cognizant of this and that communication in the community is consistent. Mitigating fire risk proactively spans the knowledge of multiple departments and requires decision-making to be collaborative.	West Vancouver FireSmart Coordinator (and municipal departments)	Start a roundtable or have individual meetings in 2025, continue annually. (Engagement)	Meetings held and collaborative initiatives implemented.	Internal.

[5] Regional examples are available, see: Whistler Fire Rescue Service Interface Construction Regulations and Construction Exemption Application or the District of Squamish's Fire Danger Rating and High Risk Activity Regulations.

#21 Discuss Right-of-Way Management	Mod	Discuss right-of-way vegetation management with West Vancouver operations staff and relevant industrial groups (e.g., Ministry of Transportation and Transit, railway corporations, BC Hydro, FortisBC, etc.). Works towards reducing fine fuel accumulations or hazardous vegetation on rights-of-way prior to and during the wildfire season, aiming to maintain these areas in a low hazard state in order to serve as fuel breaks.	Many of the rights-of-way and adjacent areas in the DWV are vegetated and unmaintained, and often contain hazardous accumulations of fuel – including but not limited to: dead standing trees, conifers with low crowns, deadfall accumulations, thickets of Himalayan blackberry, scotch broom, etc. These areas also often have higher ignition potential due to industrial activity or recreational usage. The boundary of these rights-of-way and resulting vegetation management responsibilities are often poorly understood.	West Vancouver Municipal Staff (Industrial Operators)	Engage with groups in 2025, develop improved vegetation management practices ASAP.	Vegetation management practices discussed in 2025 and collaborative initiatives implemented.	Internal and CRI funding: integrated fuel management tables
#22 Collaborate with Metro Vancouver	Mod-Low	Discuss vegetation management initiatives with Metro Vancouver (Parks and Watersheds staff) for interface areas.	A considerable number of private residences and critical infrastructure within West Vancouver abut forested areas that are under the jurisdiction of Metro Vancouver – e.g., Capilano Water Supply Area, Capilano River Regional Park. Portions of these forested areas have experienced severe forest health impacts in recent years which has elevated wildfire risk. Metro staff are actively reducing this risk in a number of locations.	West Vancouver Municipal Staff / FireSmart Coordinator / Metro Vancouver	Engage with supervisors from Metro Van in 2025, discuss collaborative plans moving forward.	Discuss and implement collaborative fuel management / FireSmart programs with Metro Vancouver.	Internal and CRI funding: integrated fuel management tables
#23 Attend the Wildfire Resiliency and Training Summit	Mod-Low	Have staff attend the Wildfire Resiliency and Training Summit.	The Wildfire Resiliency and Training Summit is an annual event where FireSmart programs and initiatives are discussed at the provincial scale, providing an up-to-date learning experience and networking opportunity for West Vancouver staff. Staff have been attending this event since its inception.	West Vancouver FireSmart Coordinator / Fire Chief (or alternative employees)	Attend in 2026 and annually thereafter.	Have minimum one West Vancouver staff member attend the summit.	CRI.
Cross Training & Fire Department Resources - Section 5.5							
Objective: To expand the preparedness and qualifications of West Vancouver Fire & Rescue Services and municipal emergency staff.							
Training							
#24 Staffing FireSmart Positions	High	Dedicate funding for the FireSmart Coordinator position and consider hiring incremental FireSmart positions based on internal capacity and community need. Example positions include: -FireSmart Crew Member -Wildfire Forest Professional (WFP) -Wildfire Mitigation Specialist (WMS)	The FireSmart Coordinator position in West Vancouver has been established for numerous years but is currently a part-time role for the Assistant Fire Chief in Fire Prevention. Establishing this as a more dedicated role will allow more time and effort to be placed into FireSmart initiatives, and a steady source of employment in which one individual can oversee an annually evolving program. Suggested specific needs for additional positions are as follows: -Crew Member: Perform mitigation work and assist in community events. -WFP: Oversee fuel management programs, collaborate, provide wildfire risk reduction advice. -WMS: Facilitation of the Wildfire Mitigation Program – perform detailed WMS/WMP assessments and support the implementation of the FireSmart Rebate Program.	West Vancouver FireSmart Coordinator (Consultant)	Dedicate funding for a permanent FireSmart Coordinator and consider hiring other labour positions, expand annually as required. (Initiative)	1) Fund the FireSmart Coordinator position and dedicate this position. 2) Hire additional dedicated FireSmart staff based on community need and funding approach.	CRI funding available for FireSmart positions and for FireSmart training; LFR training is free (with funding available for staff time to attend the training)
#25 Expanding FireSmart Training	Mod-High	Pursue expanded FireSmart training for West Vancouver Fire & Rescue and municipal Parks staff: -Wildfire Mitigation Specialist (WMS – for WVFR) -Local FireSmart Representative (LFR – for WVFR) -FireSmart 101 (for WVFR or Parks) -Wildfire Risk Reduction Course (for WVFR – select modules for Parks)	A limited number of individuals (4) in WVFR have LFR training, and none have WMS training. Expanding this training allows WVFR staff to better understand interface fire concerns and mitigation strategies. WVFR staff are respected and trusted figures in the community which may increase the uptake of FireSmart programs. Specific needs for the following positions are as follows: -WMS: Oversee HIZ / CI Assessments and mitigation work. More in-depth knowledge and assessment than an LFR, can establish the Wildfire Mitigation Program and support the implementation of the FireSmart Rebate Program. -LFR: Perform FireSmart Assessments, establish the Neighbourhood Recognition Program.	West Vancouver FireSmart Coordinator / WVFR (Parks)	Expand training in 2025 and beyond if necessary. (Initiative)	Expand and track the number of trained LFRs and/or WMS' in the community.	CRI: LFR training is free and virtual. WMS training is eligible for funding through a WMP workshop.
#26 Continue & Expand Wildfire Training	Mod-High	Continue to train West Vancouver Fire & Rescue staff in interface wildfire response. Courses include: Wildfire Risk Reduction Basics, WSPP-WFF1 (Wildland Firefighter), S-231 / Engine Boss, WSPP-115 (Wildland Structure Protection Program), Task Force Leader, etc.	All individuals within WVFR are currently trained in WFF-1 (i.e., S-100 and S-185) and WSPP-115. Continuing this trend and expanding training opportunities will increase the department's experience and response capacity, and allow for provincial deployment opportunities where staff will gain invaluable wildfire experience.	WVFR	Formulate a training plan in 2025, continue annually. (Engagement)	1) Continue training all staff in WFF-1 and WSPP-115. 2) Increase the number of trained individuals as Engine Bosses / TFLs, and in WRR Basics. 3) Have an individual as a "train the trainer" for WSPP-WFF1.	CRI: Training for fire department members, cost varies by course
#27 Demonstrating Structure Protection	Mod-High	Host an annual structure protection demonstration in the community with West Vancouver Fire Rescue, the BCWS, and/or other mutual aid partners. This can involve the clearing of combustible materials and setup of a sprinkler system. A summary / timelapse video of the demonstration could be produced to expand the community reach.	This activity can demonstrate to residents how they can make conditions easier for first responders to set up structure protection equipment, and how WVFR has increased structure protection capabilities (i.e., equipment and training).	WVFR (BCWS)	Host in 2025 during fire season – repeat annually. (Initiative)	Host an annual structure protection demonstration within West Vancouver.	CRI: Cross-jurisdictional meetings and/or tabletop exercises.
#28 Hosting Scenario-Based Training	Mod-High	Continue to annually host / participate in regional wildfire suppression drills between West Vancouver Fire & Rescue, BCWS crews, and/or mutual aid fire departments. Crews should familiarize and practice with each other's equipment and address any incompatibilities. Focus on communications capabilities and equipment compatibilities between response groups.	WVFR has met with BCWS crews or staff from the Fraser Fire Zone in previous years, familiarizing with each other's equipment and conducting tabletop exercises for the crews. Continuing to practice these scenarios ahead of time will allow for a more seamless deployment of crews and equipment in an emergency scenario.	WVFR, BCWS (Mutual Aid Departments)	Host in 2025, practice annually. (Initiative)	Aim to hold one drill annually.	Internal / CRI: Cross-jurisdictional meetings and/or tabletop exercises.

Water & Equipment							
#29 Increase Water Shuttling Capacity	Mod	Increase the capacity for shuttling water to areas of West Vancouver Fire Rescue's Fire Protection Area not covered by hydrants, including the transport of water to off-pavement areas (e.g., Hollyburn Cabins, Hollyburn Lodge, Cypress Mountain Road, Highway 1 / 99, etc.). This could include the procurement of an additional water tender in West Vancouver – potentially part of the engineering fleet – and advocacy for an additional tender in North Vancouver, and/or the procurement of additional off-highway / all-terrain vehicles equipped with water and fire suppression gear.	Portions of WVFR's Fire Protection Area do not have a consistent/reliable fire hydrant system in place and rely on water shuttling by tender. Multiple recent wildfire events (e.g., Highway 99, Eagle Ridge) have also challenged WVFR / BCWS in these locations where suppression water was not readily available. WVFR has recently procured a Type 6 wildland truck (though these generally only have 300-500 gallon tanks) for water delivery to off-road areas and they have two Type 5 engines (~ 500-1000 gallons each) which can be limited to pavement, though they do not have a dedicated water tender for truck refill, filling portable bladders, or direct action. Shuttling services are currently established with local companies.	WVFR	Ongoing Process (Expansion)	Increase from present – can be measured through an equipment inventory and/or grant money spent over five years.	Community Emergency Preparedness Fund: Volunteer and Composite Fire Departments Equipment and Training.
#30 Water Tank Installation	Mod-Low	Discuss the installation of water tanks in areas that are not serviced by the municipal water system (e.g., Hollyburn Cabins, Hollyburn Lodge).	Water tanks are another option for having available suppression water in areas without hydrants, decreasing the amount of water shuttling required.	WVFR (Engineering)	Ongoing Process (Expansion)	1) Discuss feasibility / effectiveness of having permanent water tanks in isolated locations – weighed against alternate water delivery methods. 2) Install water tanks in isolated locations.	Internal.
#31 Reservoir Upgrades	Mod-Low	Discuss the installation of larger water reservoirs in areas most prone to seasonal droughts or where there are concerns with overall capacity (e.g., Madrona Reservoir – Horseshoe Bay).	Concerns have been raised regarding total water availability in parts of the community during periods of seasonal droughts. While the amount of water required during an interface fire scenario is extremely complex to estimate, total available volumes and potential upgrades can be discussed between WVFR and District engineering staff.	WVFR (Engineering)	Ongoing Process (Expansion)	1) Discuss water availability concerns at the District level and potential upgrades. 2) Pursue material upgrades to the system.	Internal.
#32 Expand Wildfire Response Capacity	Mod-Low	Increase the physical capacity for wildfire fighting in West Vancouver directly through WVFR, in collaboration with Parks staff, and/or with hired contractors on standby during periods of high fire hazard. If not already in place, example roles include: • Basic chainsaw operators; • Wildlife danger tree assessors; • Certified tree fallers, including danger tree fallers.	BC Wildfire Service crews are provincially allocated staff and are available for wildfire response based on the Resource Sharing Wildfire Allocation Protocol (RSWAP) – which does not guarantee their availability during a forest fire event in West Vancouver. Improving the internal capacity for wildfire response in West Vancouver can reduce uncertainties and improve first responder safety and effectiveness.	WVFR (Parks, Contractors)	Discuss capacity in 2025 – annually identify areas for improvement (Expansion)	1) Review the current capacity for wildfire response in West Vancouver. 2) Improve this capacity annually, track dedicated staff and positions.	Internal.
Emergency Planning - Section 5.6							
Objective: To provide for a quick and effective wildfire response from West Vancouver Fire & Rescue Services and emergency management personnel through pre-incident planning and community preparedness.							
#33 Develop a Fire Rehabilitation Framework	Mod-Low	The District should develop a proactive plan for post fire assessment and rehabilitation, following a protocol similar to the Burned Area Emergency Response (BAER) assessment. The focus of initial rehabilitation efforts should be on identifying high-risk areas for erosion, debris flows, or water contamination, with actions focusing on slope stabilization, erosion control, and water source / infrastructure protection. Pre-planning for seeding and replanting of native vegetation and the control of invasive species in burned areas is key. The plan should also address the need for long-term ecosystem recovery monitoring.	While wildfire effects are highly variable and difficult to predict, having a framework in place to perform post-fire assessments and rehabilitation is important for any interface fire event that can have negative environmental impacts. Post-fire assessments should occur within days of the burned area being safe to access. The opportunity to conduct meaningful rehabilitation post fire will likely be limited to a short fall season as heavy fall rainstorms will likely present the highest risk conditions for erosion, landslides, debris flows, and/or flooding.	Climate Action & Environment / Parks	Discuss plan development in 2025, develop framework by 2027 (Expansion)	Develop a post-fire assessment and rehabilitation framework.	Internal.
#34 Finalize a Total Access Plan	Mod	Finalize a *Total Access Plan* for WVFR's Fire Protection Area that maps and inventories the trail and road network – including the location, widths, and condition of access features. Maps should also include the location of all known structures and critical infrastructure, as well as known water access points. Local fire threat layers from this CWRP can also be incorporated to help identify lower hazard fuel types, rights-of-way, and areas less prone to fire spread (i.e., lower slopes). This information should be continually updated and provided to NSEM and the BCWS.	Mapping known access features and their condition can considerably increase the effectiveness of first responders in a wildfire event. Many municipal and privately owned forested areas are accessible by gated roads, ATV trails, and/or hiking / biking trails – all of which provide first responder access and offer potential fuel breaks.	WVFR (Operations / GIS)	Finalize in 2025 / 26, share with other emergency response agencies ASAP. (Expansion)	1) Finalize the access portion of a *Total Access Plan.* 2) Incorporate infrastructure, water access, and fire threat information. 3) Share with various emergency response agencies.	Internal.
#35 Increasing First Responder Access	Mod-Low	Look into potential ways to improve or establish first responder access to forested areas within the District that currently have no or unreliable access. Priority areas to target include: • Upper Hydro right-of-way from Capilano Lake • Lower Hydro right-of-way: between the Brothers Creek trailhead and the Glenmore Substation, and from Cypress Bowl Road to Brothers Creek • Cypress Bowl Road to Cypress Falls Park • Eagle Lake Road to Highway 1 • Additional decommissioned Forest Service Roads.	Improving access for ground-based first responders will allow for more effective emergency response. There are recognizable challenges with improving access into many of these areas, notably due to topography (e.g., ravines, drainages, steep slopes) or private property. Costs of improving access in these areas should be weighed against potential benefits, given the vehicle / equipment allotment of West Vancouver Fire Rescue.	WVFR (Engineering and Parks)	Discuss potential locations in 2025, improve as desire and funding permit. (Expansion)	1) Discuss access limitations and potential improvements. 2) Develop a plan for improving access. 3) Improve access to priority locations.	Internal.

#36 Assess Vulnerabilities of Critical Infrastructure	Mod	Complete a vulnerability assessment of all critical infrastructure, including their secondary power sources and fuel availability. Identify vulnerabilities and prioritize needs in the case of prolonged or extensive power outages – upgrade or realign resources, as prioritized.	The reliable functioning of critical infrastructure during an emergency event is paramount – particularly those pieces that directly assist with emergency response (e.g., fire halls, water systems, communications, etc.). FireSmart-specific vulnerabilities of 31 pieces of critical infrastructure were assessed in 2020, with mitigation works partially completed for the four fire stations, though these assessments did not assess the adequacy of backup power and/or fuel storage. Further assessment and mitigation of critical infrastructure hazards are high-priority recommendations in this CWRP (see Recommendation #4 and #5).	WVFR / Facilities (Engineering)	5 Years (Expansion)	1) Decide on scope of vulnerability assessments and complete assessments. 2) Update or realign resources.	Internal
#37 Pre-Plan Incident Response	Mod-Low	Consider developing a Tactical Plan specific to wildland-urban interface (WUI) fire events that describes and maps unique geographic areas by the following: -Infrastructure and values at risk; -Emergency access (informed by a *Total Access Plan*); -Water supply and potential distribution; -Forest and vegetation conditions; -Safety conditions.	Discussing a wildfire-specific incident plan ahead of time can support effective emergency planning, highlight areas of increased vulnerability, and discuss where potential fire guards / control lines can and cannot be located – minimizing the risk of fire guards damaging any culturally or environmentally sensitive areas.	WVFR	5 Years (Expansion)	WUI Tactical Plans and associated maps created, available, and discussed.	Internal
#38 Communicate Evacuation Materials	Mod-Low	Continue to work with North Shore Emergency Management to distribute and communicate the *North Shore Evacuation Guide* and PreparedBC's *Emergency Wildfire Preparedness Checklist* – online, through social media, and at community events.	Proactively improving homeowners' evacuation preparedness is paramount to an efficient and effective evacuation – leaving the community with more time to focus on last minute hazard reduction and providing more peace-of-mind that their property is better protected and that their safety is provided for. Information in these checklists can also be used to guide proactive FireSmart measures at the residential scale.	West Vancouver FireSmart Coordinator / NSEM	Communicate and provide checklists during the 2025 fire season, continue annually. (Engagement)	1) Advertise and distribute guide and checklist. 2) Increased participation in homes that develop/review an evacuation plan, and have "ready-to-go" kits prepared – tracked through competition entrants or similar.	Checklist available from FireSmart BC. Can use and promote through a Community Preparedness Day or in schools.
#39 Promote Emergency Communications Software	Mod	Continue to promote the usage of *Alertable* as a reliable information source during wildfire events – also use it to notify subscribers when wildfire risk is extreme (and potentially high).	*Alertable* provides a free, simple, and anonymous service to notify individuals with trusted and accurate information in the event of an emergency / evacuation. NSEM promotes the use of *Alertable,* and there are currently ~15,000 subscribers to West Vancouver emergencies.	West Vancouver FireSmart Coordinator / NSEM	Ongoing (Engagement)	Promote the usage of *Alertable* and track usage – aiming for an annual increase.	Internal
#40 Address Wildfire Smoke Exposure	Mod-Low	Look into installing Minimum Efficiency Reporting Value (MERV-13) filters (or equivalent) in various community buildings (especially those designated as emergency operation center, shelters, and areas of refuge) to provide clean-air spaces during smoke events. Additionally (or in the interim), have a supply of N95 masks that can be distributed to community members during smoke events, or research and communicate potential home-made solutions for affordable clean air filters.	There is a concern for the impacts of smoke on community health, and the community has a considerable proportion of potentially at-risk individuals (i.e., multiple retirement / senior living communities) and/or outdoor programs. HVAC systems in many West Vancouver municipal buildings are not designed for High Efficiency Particulate Air (HEPA) filters, and there have been efficiency reasons for not installing MERV 11 filters in the past. Currently few community buildings have proper air filtration systems to provide spaces free from smoke particulate matter ($PM_{2.5}$).	Facilities	Discuss in 2025 – implement ASAP. (Integration)	1) Ensure that prioritized community buildings have filters for $PM_{2.5}$. 2) Have a supply of N95 masks to distribute to "high-risk" community members.	Internal ESS / EOC funding through UBCM.
Vegetation Management - Section 5.7							
Objective: To reduce the potential wildfire intensity and ember exposure to people, structures, infrastructure, and other values through manipulation of both the natural and cultivated vegetation that is within the community.							
Fuel Management Treatments							
#41 Treat Previously Prescribed Areas	Mod	Continue to treat the remaining portions of Treatment Unit 1 of the *Cypress* Fuel Treatment Unit (FTU). Additional considerations for this treatment area may include: amending the Fuel Management Prescription to meet current BCWS guidance and improving access to the eastern portion of the unit (see Recommendation XX).	An FMP was created for the 36.6-hectare Cypress area in 2020, and a portion of the unit was treated in 2021/22 (Treatment Unit 1-B – 6.0 hectares). The remainder of the area has not been treated and still contains a moderate hazard forest type. Areas that are east of the previous treatment are closer to the direct interface with residential and community infrastructure and are recommended for treatment, covering 12.7 hectares – though there is currently no vehicle access to ~40% of this area. Treating these areas will decrease the potential in-stand fire behaviour and potential tree mortality in the event of a fire, and provide improved defensible space to first responders. Areas that are west of the previous treatment area are further from values at risk and have poor access, and are therefore not recommended for treatment.	West Vancouver FireSmart Coordinator / Climate Action & Environment	Discuss FMP amendments and/or improvements to right-of-way access in 2025. Treat these areas beginning in 2025/26.	1) Planning table engaged for implementing these treatments. 2) FMP amendments completed (as required). 3) Treatments implemented.	CRI: FMPs; Fuel Management Treatments
#42 Develop New Fuel Management Prescriptions	Mod-High	Perform a detailed reconnaissance of the Capilano View and Cypress Falls FTUs and develop Fuel Management Prescriptions (FMPs) for these two treatment areas (see Section 5.7.1, Map 10, and Table 25), as well as any additional assessments that are required. Final FMP sizes may either shrink or expand from the original FTU sizes as listed in this CWRP.	These two moderate hazard forest areas have been identified in the direct interface with homes and community infrastructure, both of which have access for operations and debris removal. Creating fuel management prescriptions for these areas will allow wildfire risk reduction treatments to be implemented while managing for all other forest values.		Have FMPs developed in 2025/26.	Develop FMPs and have additional assessments completed.	CRI: FMPs

#43 FireSmart Municipal Green Spaces	High	Perform FireSmart-style vegetation management in accessible areas of the community as a demonstration. The following areas have been chosen as example areas, but this program should be available on a request-basis where there are vegetated municipal parcels adjacent to private property – potentially for homeowners who have had Home Ignition Zone Assessments completed (see Section 5.7.2, Map 10, and Table 25). • Pasco • Whytecliff • Millstream • BP West • McKechnie • DougWood	There are numerous municipally owned parcels adjacent to private property which contain wildfire hazards – most commonly deadfall accumulations, low-branching conifer trees, regenerating conifer trees, dead standing trees, and decadent shrub accumulations (often with invasive species). In parts of the community where there is good pre-existing access, the DWV can perform vegetation management to demonstrate best practices to the community. This same basic level of work should be offered on an on-request basis to homeowners that have HIZ Assessments completed – given that access through their property is granted. The individual size of the units identified and the intensity of vegetation management required likely does not warrant the development of an entire Fuel Management Prescription.	West Vancouver FireSmart Coordinator / Climate Action & Environment / Parks	Have areas assessed in 2025/26, while co-developing a framework for treating additional municipal areas.	1) Have these six areas assessed and have follow-up mitigation completed in all six. 2) Offer program and complete mitigation in municipal areas that overlap home ignition zones.	CRI: FireSmart for Green Spaces Program; Municipal Parks Funding
#44 Manage Parks Proactively	High	Work with the Parks department to ensure that FireSmart principles of landscaping and vegetation management are embedded into the management of park areas. Establish a framework for having accessible parks maintained in a low-hazard state – e.g., regularly cleaning up deadfall, removing dead trees, removing high-flammability invasive species such as Himalayan blackberry, scotch broom, and holly, pruning mature trees, etc..	Municipal Park parcels are found throughout West Vancouver and many of these contain trail networks or are adjacent to areas with higher fire ignition potential (e.g., roadways, railway, etc.). Many of these areas contain overgrown vegetation, accumulations of debris, and/or a considerable number of dead standing trees, and are found adjacent to private or community values at risk. There is currently no policy in the Parks department to maintain areas in a low-hazard state, and very limited budget to perform any type of proactive vegetation management in these Parks. Recommendation 43 has identified specific example areas for vegetation management in the forest interface, but there are nearly countless municipal park parcels in West Vancouver which contain hazardous vegetation.	West Vancouver FireSmart Coordinator / Climate Action & Environment / Parks Department	Discuss policy / park management changes and a maintenance framework in 2025. Expand vegetation management capacity in parks in 2025 and beyond. (Engagement / Expansion)	1) FireSmart considerations incorporated into the future management of parks and open spaces throughout West Van. 2) Explore the FireSmart for Green Spaces program or increased internal funding, implement additional vegetation management in municipal parks.	Internal and CRI: Assessments and mitigation activities, bylaw updates / revisions.
Residential FireSmart							
#45 Assist with Debris Disposal	Mod-High	Increase the programs / services offered to residents to assist with debris disposal from their properties – for vegetative debris that was removed for FireSmart purposes (e.g., prunings, deadfall cleanup, removal of highly flammable shrubs, etc.). Potential services offered could be: • Community chipping days, where the District provides free use of a chipper and hauls the material to the transfer station; • Neighbourhood-level debris bins, where individuals can fill the bins with wood and garden waste and the District will haul the bins to the transfer station.	Other than residential green bins, there is no suitable alternative to debris disposal in West Vancouver (the nearest transfer station for green waste is in North Vancouver where tipping fees apply), and the required transport often makes removing flammable vegetation (e.g., trees, shrubs, prunings) from properties prohibitive to homeowners due to the physical work required and/or the inability to burn the material. Offering easy avenues for homeowners to dispose of non-FireSmart vegetation from their properties can increase the willingness of homeowners to complete this work. Currently, the West Vancouver FireSmart program offers free chipping services to all homeowners who have a Home Ignition Zone assessment completed.	West Vancouver FireSmart Coordinator (Parks / Operations)	Expand program in 2025 and annually as uptake increases. (Expansion)	1) Establish debris-disposal programs 2) Track the annual uptake of various programs and expand annually	Internal or through CRI: Off-site vegetative debris disposal

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FREQUENTLY USED ACRONYMS

AOI	Area of Interest
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CFFDRS	Canadian Forest Fire Danger Rating System
CFRC	Community FireSmart and Resiliency Committee
CI	Critical infrastructure
CRI	Community Resiliency Investment
CWPP	Community Wildfire Protection Plan
CWRP	Community Wildfire Resiliency Plan
DPA	Development Permit Area
DWV	District of West Vancouver
EOC	Emergency Operations Centre
ESS	Emergency Support Services
FBP	Fire Behaviour Prediction System
FCFS	FireSmart Community Funding and Supports
FSCNRP	FireSmart Canada Neighbourhood Recognition Program
HIZ	Home Ignition Zone
HVRA	Hazard, Risk, and Vulnerability Analysis
NDT	Natural Disturbance Type
OCP	Official Community Plan
SPU	Structure Protection Unit
UBCM	Union of BC Municipalities
WMP	Wildfire Mitigation Program
WRR	Wildfire Risk Reduction
WTA	Wildfire Threat Assessment
WUI	Wildland Urban Interface
WVFR	West Vancouver Fire & Rescue

SECTION 1: INTRODUCTION

1.1 OVERVIEW

In September 2024, Blackwell Consulting Ltd. ('Blackwell') was retained to assist the District of West Vancouver ('the District') in preparing a Community Wildfire Resiliency Plan (CWRP). This CWRP revisits much of the area assessed in the District's 2019 Community Wildfire Protection Plan (CWPP), but with a focus on updated fuel type mapping, fuel treatment identification, and a foundation in the seven FireSmart® disciplines.[6] A CWRP's foundation in FireSmart provides a more comprehensive and adaptive approach to community-specific wildfire planning. This CWRP accounts for progress along the FireSmart Roadmap[7] that has occurred in West Vancouver in the past five years and takes advantage of the most recent community wildfire planning framework in BC.[8]

The Community Wildfire Resiliency Plan (CWRP) is the latest evolution in community wildfire planning in British Columbia. A CWRP has its roots in the Community Wildfire Protection Plan (CWPP) framework, which was originally established in BC in response to the series of devastating wildfires in 2003. Since then, many communities in BC have continued to face an ever-increasing threat of wildfire with the 2017, 2018, 2021, and 2023 fire seasons proving to be four of the most historically damaging seasons on record. CWRPs are currently being developed at many jurisdictional and geographic scales and are individually tailored to address the needs of different communities in response to their size, their capacity, and the unique threats that they face.

1.2 CWRP GOALS

This CWRP identifies the level of interface wildfire risk in West Vancouver and gives the community a current and accurate understanding of the threats to human life, infrastructure, and values at risk from wildfire. This CWRP is intended to serve as a framework to guide the implementation of specific actions and strategies to:

- Increase the efficacy of fire suppression and emergency response,
- Reduce potential impacts and losses to property and critical infrastructure from wildfire, and
- Reduce wildfire behavior threat within the community.

To help guide and accomplish the above goals, this CWRP will provide West Vancouver with:

- An assessment of wildfire risk to the community,
- An assessment of values at risk and potential consequences from wildfire,
- Maps of fuel types and recommended areas for fuel treatments,
- A review of emergency and interface wildfire response and recovery capacity, and
- Options and strategies to reduce wildfire risk in each of the seven FireSmart disciplines.

[6] Education, Legislation & Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning and Vegetation Management
[7] The FireSmart Roadmap – FireSmart BC. Accessed from: https://firesmartbc.ca/resource/the-firesmart-roadmap/
[8] UBCM FireSmart Community Funding & Supports Program – see CWRP Template and Supplemental Instruction Guide: https://www.ubcm.ca/cri/firesmart-community-funding-supports

CWRPs are funded in BC by the Union of BC Municipalities (UBCM) through the Community Resiliency Investment's (CRI) FireSmart Community Funding and Supports (FCFS) program. Per funding requirements, this CWRP is completed according to the most recent 2024 FireSmart BC CWRP template.[9]

1.3 CWRP DEVELOPMENT SUMMARY

Although the entire municipality is considered the 'Area of Interest' (AOI), the planning for this CWRP was based on the Wildland Urban Interface (WUI) of West Vancouver. The WUI is generally understood as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.[10] For the purpose of this CWRP and to satisfy funding requirements of the FCFS program, the WUI represents a one-kilometre buffer from areas with structure densities exceeding six structures per square kilometre, within the AOI. In addition, consideration of critical infrastructure outside of the WUI is also important. This concept is explained in more detail in Section 3.1, and the WUI area for this plan is illustrated on Map 1.

Developing this CWRP consisted of the following five general phases:

1) Consultation with internal and external project stakeholders;
2) Review of relevant plans and legislation regarding emergency response and wildfire (Section 2);
3) Description of the community and identification of values at risk (Section 3);
4) Assessment of the local wildfire risk (Section 4), and;
5) Analysis and action plan for each of the seven FireSmart disciplines (Section 5).

[9] Union of BC Municipalities. (2024). 2024 Community Wildfire Resiliency Plan (CWRP) Template. https://www.ubcm.ca/sites/default/files/2024-07/LGPS_CRI_FCFS_2024_CWRP_TEMPLATE_2024-07.pdf
[10] FireSmart Canada. 'What is the wildland urban interface?' https://firesmartcanada.ca/about-firesmart-2/the-wildland-urban-interface-wui/

SECTION 2: RELATIONSHIP TO OTHER PLANS AND LEGISLATION

Wildfire resiliency is influenced by many aspects of community planning, from land use decisions to utilities servicing, development policies, parks and trails planning, bylaw enforcement, and more. As a result, there are multiple plans that relate to a CWRP. The intent of this section is to review relevant local and higher-level plans and legislation to identify any linkages and content that is relevant to community wildfire planning for West Vancouver. These topics, as well as recommendations to strengthen and improve municipal policies and bylaws, are further discussed in Section 5.2.

2.1 LOCAL AUTHORITY EMERGENCY PLAN

Emergency preparedness and response is guided by higher level emergency management legislation. In November 2023, the provincial *Emergency Program Act* was repealed by the *Emergency and Disaster Management Act* (EDMA). Like the *Emergency Program Act*, the *Emergency and Disaster Management Act* identifies the roles of the province and municipalities in implementing emergency plans, declaring states of emergency and coordinating post-disaster relief programs. The updated legislation addresses pandemics, security threats and climate change. It expands the focus of emergency programs beyond incident response to the four phases of emergency management: mitigation, preparation, response and recovery.[11]

Emergency preparedness and response in West Vancouver are managed jointly by the District and its two neighbouring municipalities – the City of North Vancouver and the District of North Vancouver – through North Shore Emergency Management (NSEM), which is a tri-municipal organization serving all three communities. NSEM maintains the District's Municipal Emergency Plan and Disaster Bylaw (No. 4486), which were developed to optimize the response, resources, and planning for major emergencies that may occur within the District. The Municipal Emergency Plan outlines the Department Operations Centre (DOC) and Emergency Operations Centre (EOC) functions and activation procedures, Incident Command Post (ICP) functions, guidelines for emergency response (communications, personnel identification, documentation, etc.), and hazard-specific roles and procedures. The primary EOC is located in North Vancouver at the NSEM office, though alternate EOCs may be established at the District's Operations Centre or Fire Hall #1. NSEM has also developed initial response guidelines specific to interface fires or wildfires, which provides a detailed decision-making key for tactical and strategic processes. Further details regarding wildfire specific emergency planning will be discussed in Section 5.6.

[11] Modernized Emergency Management Legislation, BC Government: https://www2.gov.bc.ca/gov/content/safety/emergency-management/emergency-management/legislation-and-regulations/modernizing-epa

2.1.1 HAZARD, RISK, AND VULNERABILITY ANALYSIS

As part of their emergency management program, local authorities have a mandate to evaluate relative risk. Emergency plans must reflect the local authority's assessment of the relative risk of occurrence and the potential impact on people and property of the emergencies or disasters that could affect all or any part of the jurisdictional area for which the local authority has responsibility. NSEM developed a North Shore Resiliency Strategy and Disaster and Climate Risk and Resilience Assessment (DCRRA – formerly known as a Hazard, Risk, and Vulnerability Analysis [HRVA]) in 2025, which identify relevant natural and anthropogenic hazards that can impact the North Shore communities.

Specifically, the DCRRA considers eight hazards that have the highest likelihood and consequence rating, with wildfires being one of the eight. Of the eight listed hazards, wildfire shares the highest "likelihood" rating, though is lower in potential consequence when compared to six of the hazards (earthquake, hazardous material spill, coastal flood, windstorm, landslide, and clearwater flood). The DCRRA describes wildfire as a risk to people, the forest interface, river canyons, and municipal parks due to hot dry summers, steep forested slopes, and urban development and recreation in forested areas. There is exposure to wildfire impacts given the extensive areas of wildland-urban interface in West Vancouver, whether due to a natural or human-caused wildfire or a structure fire that spreads to the surrounding wildland. Described in the DCRRA, the North Shore Emergency Support Services (ESS) Strategy for Interface Forest Fire Evacuations estimated in 2015 that exposure to wildfire hazards in West Vancouver was to 6,574 households and approximately 18,000 people. The most notable vulnerabilities to wildfire impacts for structures and people in West Vancouver are due to building material types, surrounding vegetation, proximity to forests, and poor air quality from prolonged smoke exposure. The DCRRA recognizes that wildfire risk will increase across the North Shore as the region experiences longer, hotter, and drier summers.

2.2 LINKAGES TO OTHER CWPPS /CWRPS

Table 2 below summarizes the community wildfire planning status and relationships between the District of West Vancouver and its neighbouring municipalities and First Nations. As fire resilience work is ongoing and collaborative, West Vancouver should continue to work with these municipalities and local First Nations, including Squamish, Musqueam, and Tsleil-Waututh Nations, on the alignment of their respective resiliency plans and wildfire management on the North Shore. Previous and ongoing wildfire resilience efforts within the District will then be detailed throughout the remainder of this section.

Table 2. Community wildfire planning relationships with neighboring jurisdictions

Community	Wildfire Plan	Relevant Information, Recommendations, and Initiatives
District of North Vancouver (DNV)	Community Wildfire Protection Plan (2019)[12]	• Fuel management has been completed in multiple municipal forest areas • Wildfire Hazard Development Permit Area (DPA) adopted in 2012 • Emergency response training and practice for mock wildfire events has occurred • There are trained Wildfire Mitigation Specialists in the DNV Fire & Rescue Services, offering free FireSmart home assessments through the Wildfire Mitigation Program
City of North Vancouver (CNV)	Community Wildfire Protection Plan (2020)[13]	• Fuel management completed in Greenwood Park • FireSmart information provided online and at public events
West Vancouver Fire & Rescue Services and the fire departments from the DNV and CNV have collaborated to develop the *North Shore Interface Construction and Maintenance Protocol for High-Risk Work During Periods of Extreme Fire Danger Ratings (2022).* This protocol will be further discussed in Section 5.2.		
Squamish Nation	Community Wildfire Resiliency Plan (2023)	• Fuel management prescription completed for a forest stand on Capilano 5, adjacent to Xwemelch'stn School • FireSmart home assessments offered throughout the community
Metro Vancouver – Electoral Area A	Community Wildfire Resiliency Plan (2024)[14]	• Wildfire Preparedness and Response guidelines for Regional Parks (e.g., Capilano River) • Information provided on regional wildfire smoke and air quality, including risk mitigation measures • Regulatory changes enacted for open burning for community wildfire risk reduction
Tsleil-Waututh Nation	Community Wildfire Resiliency Plan (date unknown)	• Includes fuel management treatment units for the 100 meters of WUI across TWN reserve land. • FireSmart assessments are offered throughout the community, and mitigation work in home ignition zones has been completed. • *The full CWRP developed by Tsleil-Waututh Nation was not able to be accessed and reviewed at the time of writing.*

District of West Vancouver CWPP (2020)

In September 2019, B.A. Blackwell & Associates completed a Community Wildfire Protection Plan (CWPP) for the District of West Vancouver, which was an update to the pre-existing CWPP developed in 2007. The geographic scope of the 2019 CWPP included all the area within the municipal boundary. A total of 54 recommendations were made in the 2019 CWPP using the following eight objectives as foundational pillars:

[12] District of North Vancouver CWPP: https://www.dnv.org/community-environment/community-wildfire-protection-plan
[13] City of North Vancouver CWPP: https://www.cnv.org/-/media/City-of-North-Vancouver/Documents/Fire/Community-Wildfire-Protection-Plan.pdf
[14] Metro Vancouver EA A CWRP: https://metrovancouver.org/services/regional-planning/Documents/community-wildfire-resiliency-plan.pdf

- Review and amend the current DWV regulatory framework to incorporate wildfire mitigation and preparedness considerations.
- Protect critical infrastructure and mitigate post wildfire impacts.
- Undertake fuel treatments to improve emergency access.
- Reduce wildfire threat through fuel management.
- Reduce wildfire hazard on public land.
- Increase public wildfire awareness.
- Reduce wildfire risk from industrial sources.
- Improve access/egress to enhance emergency preparedness.

Since adopting the CWPP in 2019, the District has made considerable progress on many of the recommendations, including the following key activities:

- Adopted a Wildfire Hazard Development Permit Area (DPA) in December 2020 – see Section 5.3
- Strengthened emergency response capabilities of West Vancouver Fire & Rescue through continued training, purchases of new wildfire equipment, and mutual aid response drills.
- Completed over 140 Home Ignition Zone (HIZ) Assessments, 30 Critical Infrastructure Assessments, and 4 FireSmart Neighbourhood Assessments.
- Established the FireSmart North Shore Committee / Working Group.
- Launched a FireSmart educational campaign online, through social media, and in person at local events.
- Completed fuel management prescriptions (FMPs) for four high priority areas and implemented fuel management treatments in 18.6 hectares of public land.

Individual recommendations from 2019 or their intended goals have been incorporated into most of the recommendations made in this CWRP. However, since 2019 new understandings of FireSmart principles have emerged, funding structures have changed, and new standards for CWRP writing and reporting have also been developed.

2.3 LINKAGES TO OTHER PLANS

Official Community Plan

The District's Official Community Plan (OCP) expresses the objectives and policies of the municipality and provides a long-range framework to guide, monitor, and evaluate future land use and development. All new bylaws and programs must be consistent with the policies outlined within the OCP. The District of West Vancouver's OCP was adopted in 2018 and was extensively reviewed for the 2019 CWPP. The findings of that review informed multiple recommendations within the CWPP. The District has made several changes to the OCP since 2019 to incorporate FireSmart principles into the plan, however, there will likely be no holistic update of the OCP for another 20 years or more. Table 3 below summarizes key objectives and policies within the OCP that are relevant to the objectives of this CWRP.

Table 3: Summary of Official Community Plan (2018) objectives and policies related to community wildfire resiliency planning.

OCP Section	Policy Description & Relationship to CWRP
Section 1.6: Action and Vision	This section of the OCP contains community-identified values and objectives to preserve long-term quality of life within the District. The Parks and Environment section looks to preserve the natural environment so that it can be enjoyed now and for future generations – by mitigating environmental impacts, enhancing ecological integrity, building long-term resilience, and preserving our parks and trails. Many of these community-identified directions align with recommendations within this CWRP that focus on proactive park management and improved forest health to decrease wildfire risk and increase ecosystem resilience.
Section 2.2: Future Neighbourhoods	This section of the OCP outlines the plans for continued development of the Upper Lands, which are defined as the undeveloped public and private lands above Highway 1. The spread of development above Highway 1, especially in low densities where structures are intermixed with forested areas, increases the overall wildfire interface risk of the District. Previous recommendations were made for Area Development Plans to incorporate wildfire risk analyses, consider natural and planned fuel breaks, and incorporate fuel management treatments – which is now required in interface areas through the Wildfire Hazard DPA. Future OCP updates can include a growth management policy that proactively considers wildfire risk and limits the amount of intermix within the community.
Section 2.6: Natural Environment	This section covers the policies and objectives surrounding the protection of the natural environment, particularly adjacent to developed areas within the District. Section 2.6.18 details the District's intention to review and update the development process to ensure that hazards such as wildfires are adequately addressed – which has been accomplished through the Wildfire Hazard DPA.

OCP Section	Policy Description & Relationship to CWRP
Section 2.7: Parks and Trails	This section of the OCP promotes the community's use of trails, access to nature, and acknowledges the risk of human-caused ignitions within municipal parks. The District's park system includes Destination Parks, Community Parks, Neighbourhood Parks, Natural Area Parks, Shoreline Access Parks, and open spaces, each of which have varying levels of maintenance, infrastructure, and focus from municipal park staff. Park spaces are being actively dedicated to this municipal network as the public portion of the Upper Lands (~780 hectares) and the Eagleridge Lands (106 hectares) were dedicated as municipal parkland in 2024 and 2025 respectively, while smaller parcels are passed to the District through subdivision and development. Reviewing park acquisition and long-term maintenance needs through a wildfire risk lens is a critical component of addressing community resilience. Many of these municipal park areas are not actively managed for wildfire risk or forest health, nor were their inherent hazards assessed and/or mitigated prior to dedication - this challenge is further addressed Section 5.7.1.

Other Local Plans

Table 4 contains other local plans and policies which are directly relevant to these community themes and to the goals and objectives of this CWRP.

Table 4. Summary of other local plans and policies relevant to community wildfire resilience planning

Plan	Description and Relationship to CWRP
Urban Forest Management Plan (UFMP – 2024)[15]	The UFMP provides a management guide for the urban forest in West Vancouver for the next 15 years – specifically park trees, boulevard trees, private residential trees, and the native forest in both parklands and the Upper Lands. The plan discusses how a *more proactive and informed approach to urban forest management can help municipalities balance benefits and disservices by targeting risk reduction and maximizing tree health and life expectancy*. This idea of proactive forest management to reduce wildfire risks is emphasized throughout this CWRP. Specific to wildfire, Section 4.13 of the UFMP states the following: "*While the actions required to reduce wildfire risk may sometimes require tree removals that can be at odds with urban forest management goals, there are many ways in which actions can be taken to reduce conflicts and maximize co-benefits, such as FireSmart landscaping, and maintaining and restoring healthy forest ecosystems (see next page for more information). For example, the planting of deciduous trees near homes can both support FireSmart objectives while providing important energy conservation benefits through cooling in the summer and passive heating in the winter."* Page 21 of the UFMP also provides a diagram of example wildfire risk reduction measures in West Vancouver that can foster a healthy urban forest – detailed by each FireSmart Zone (see Section 5.7.1 and Figure 14).
Climate Action Strategy (2024)	West Vancouver's Climate Action Strategy details a multi-pronged pathway to reduce community emissions and to address objectives and policies related to environmental protection in the OCP. Improved emergency management and wildfire resilience initiatives are outlined as two adaptation efforts to achieve the District's goals of a low

[15] Diamondhead Consulting for the District of West Vancouver – Urban Forest Management Plan (2024). Retrieved from: https://westvancouver.ca/government-administration/strategies-reports/strategies-plans/urban-forest-management-plan

Plan	Description and Relationship to CWRP
	carbon and resilient community – connected to avoiding / mitigating costly environmental and economic damages due to wildfires.
Parks Master Plan (2012)	The Parks Master Plan is a guiding document to how park spaces in West Vancouver are defined, utilized, and managed. The plan includes environmental goals of protection and education, community goals of increased support and awareness, and park management goals related to beautification, safety, and more. Park management is largely focused around infrastructure upkeep, landscaping, and trail maintenance, with important considerations for invasive species management. No mention is made in the Parks Master Plan regarding the reduction of wildfire risk, and no strict mention is made of proactively managing Natural Areas. Park spaces have been historically (and are actively) dedicated to West Vancouver without an assessment of the fire hazard or implication for long-term wildfire risk reduction – in the absence of a Wildfire DPA (see Section 5.3). Currently, there is little framework or funding for risk reduction activities in Park spaces outside of hazard tree management.
Plan for Trails on Public Land (2018)	The trails plan outlines pre-existing District policies and practices that are related to the management of more than 135 kilometres of trails that are found on public land in West Vancouver. The plan discusses the importance of retaining recreational trail experiences throughout the community and establishing new trails to improve connectivity, while looking to increase coordination and support for volunteer efforts in park stewardship. Trails provide increased access for the public into natural areas which can heighten the risk of fire ignitions, but they can also provide valuable access features and fuel breaks for first responders. Across the District it is currently common to find increased fuel loading adjacent to trails due to years of trail clearing and maintenance. Working with trail groups to avoid and/or abate these accumulations can allow these features to better function as access features and fuel breaks while simultaneously decreasing the risk of ignition.
Cypress Provincial Park Master Plan (1997)	Cypress Provincial Park is a major recreational destination for city-dwellers and tourists and contains one of the highest visitation rates of provincial parks in the province. The park's Master Plan describes the delicate balance of natural environment conservation with offering a variety of recreational opportunities. The highest elevation portions of the project area for this CWRP encompass areas zoned for *Intensive Recreation* within Cypress Provincial Park – namely roadside areas and much of the Hollyburn Nordic area. Much of the area west of Cypress Bowl Road is zoned as *Natural Environment* which contains lower-density and lower-impact recreational opportunities. Recreational areas inherently contain increased risks for human-caused fire ignitions. No specific fuel management recommendations are being made within Cypress Provincial Park through this CWRP, though ignition control measures (e.g., fire hazard signage and communication) can be implemented independently or in collaboration with WVFR. As of 1984 there is a 50-year lease held by Cypress Mountain Resorts (formerly Cypress Bowl Recreations Ltd.) for all the structures, sewer, water, and electrical infrastructure (50-year lease) in Cypress Provincial Park. Better protecting this infrastructure from potential wildfire impacts will help to preserve the long-term recreational offerings of the park. FireSmart assessments, mitigation activities, suppression preparedness, and

Plan	Description and Relationship to CWRP
	rights-of-way management are all recommended activities for Cypress Mountain Resorts.
Cypress Provincial Park Invasive Plant Management Strategy (2017)	This plan discusses occurrences of invasive species within Cypress Provincial Park and provides recommendations for their short and long-term management. Various invasive species are noted as creating a fire hazard or hazard trees (English ivy, Scotch broom), while Himalayan blackberry (where decadent) and English holly are commonly known to present fire hazards. The plan identifies that each of these four species can be controlled via manual treatments appropriate to volunteer involvement.

Higher Level Plans and Legislation

Table 5 lists higher-level plans and legislation relevant to wildfire planning and risk mitigation within West Vancouver.

Table 5. Higher level plans and relevant legislation

Plan/Legislation	Description & *Relationship to CWRP*
Metro Vancouver Open Burning Emission Regulation (No. 1355) & Air Quality Management Bylaw (No. 1082)	Open burning of vegetative debris is highly regulated throughout Metro Vancouver through either of these bylaws (open burning bylaws specific to West Vancouver will also be discussed in Section 5.2).[16] Through these bylaws, regulatory requirements for open burning that is tied to a *Wildfire Risk Management* project are relaxed, but the application processes and costs can be restrictive. Fuel management projects on municipal land in West Vancouver are often highly costly due to a number of factors, one of which are the restrictions to pile and burn material on-site. This factor also makes fuel management not feasible in various locations due to a lack of access for machinery or vehicles which are necessary to assist with debris disposal. These two bylaws restrict open burning much more than the provincial Open Burning Smoke Control Regulation, which applies on Crown land throughout the province.

[16] Open Burning Vegetative Debris, Metro Vancouver: https://metrovancouver.org/services/environmental-regulation-enforcement/air-quality-regulatory-program/open-burning-vegetative-debris

SECTION 3: COMMUNITY DESCRIPTION

This section defines the planning area and provides general demographic information about West Vancouver, plus additional context regarding the surrounding area. An understanding of population trends, land use patterns, and values at risk can help best direct FireSmart outreach and risk mitigation activities.

3.1 AREA OF INTEREST AND WILDLAND URBAN INTERFACE

The Wildland Urban Interface (WUI) is defined by FireSmart Canada as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.[17] This zone is more specifically defined for the purposes of the Union of BC Municipalities (UBCM) FireSmart Community Funding and Supports (FCFS) program, as the area up to one kilometre from structure densities greater than six structures per square kilometre, referred to as the 'Eligible WUI.' In contrast, the area of interest (AOI) is defined by FCFS as everywhere within a municipal boundary – which in West Vancouver, represents a total land area of approximately 100 square kilometres (10,000 hectares). The Eligible WUI is a standard parameter used to define the scope of all CWRPs funded through FCFS. CWRPs focus on conditions and issues that can be addressed in this Eligible WUI and for this purpose, the scope of this CWRP is contained to all the Eligible WUI that falls within the West Vancouver AOI, for a total area of 6,305 hectares.

The focus area (i.e., Eligible WUI) for the CWRP is illustrated on Map 1. The current Eligible WUI is adjacent to Squamish Nation's Capilano No. 5 Reserve and bounded to east by the District of North Vancouver, to the south and west by the Salish Sea, and to the north by the unincorporated area of Metro Vancouver (Electoral Area A), undeveloped forestland, and/or Cypress Provincial Park. A breakdown of land ownership within the Eligible WUI is provided in Table 6 below.[18]

Table 6. Land ownership within the DWV Wildland Urban Interface.

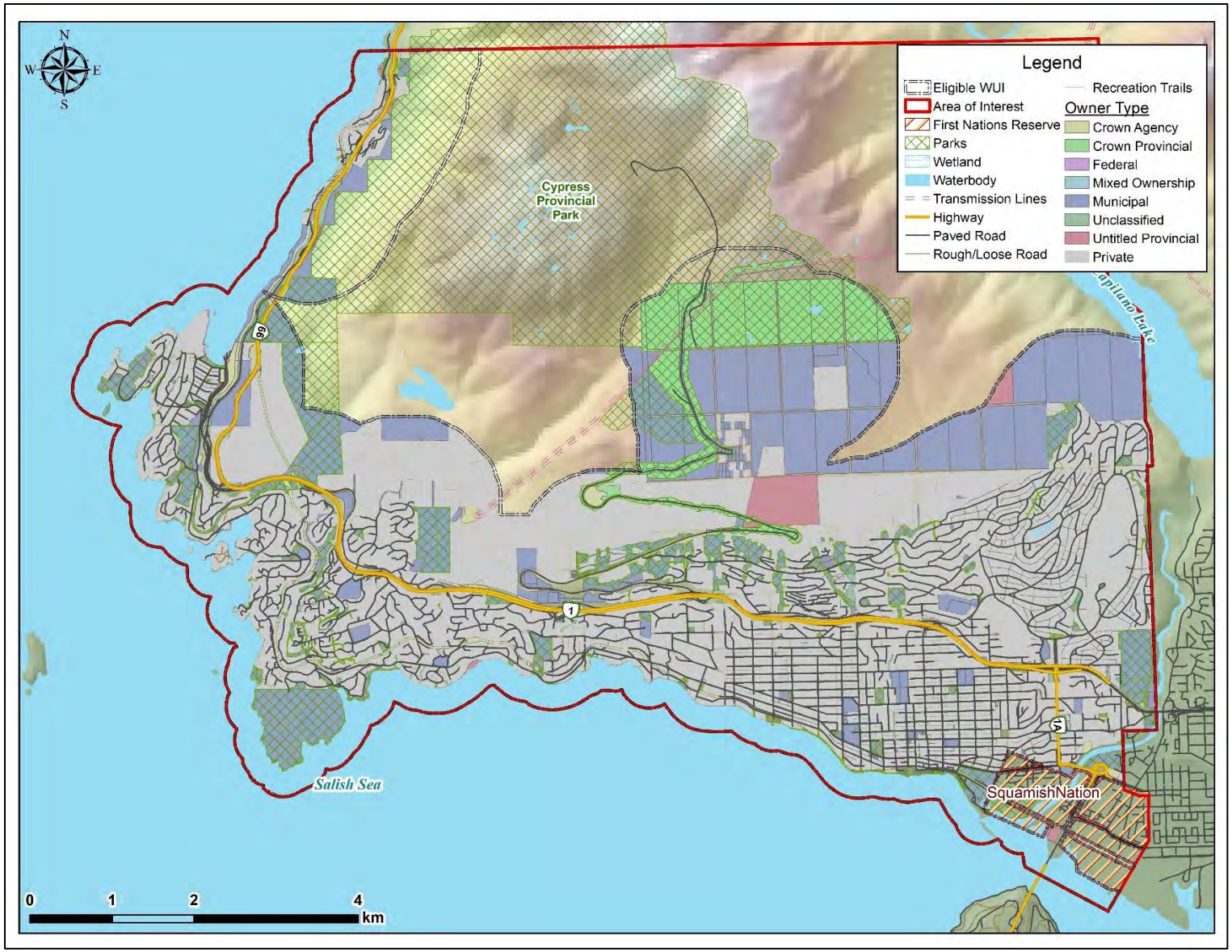
Land Ownership Type	Area (Hectares)	Percent of Eligible WUI (%)
Private	2,565	40%
Crown Provincial or Untitled Provincial	1,888	30%
Municipal	1,587	25%
Unclassified	166	3%
Crown Agency	97	2%
Federal	2	< 1%
Mixed Ownership	< 1	< 1%

[17] https://firesmartcanada.ca/about-firesmart/the-wildland-urban-interface-wui/

[18] These land ownership area estimates were derived from the BC Land Title & Survey ParcelMap BC data. Note, this data was accessed prior to the dedication of the Eagleridge lands to West Vancouver by British Pacific Properties. This dedicated area is approximately 104 hectares, which would change the percentage of private land and municipal land in the Eligible WUI to 38.4% and 26.6% respectively.

Much of the Eligible WUI within the District of West Vancouver is privately owned (~40% of the area), which includes small residential and commercial parcels as well as large undeveloped forested parcels. These larger forested parcels often exceed 20 hectares in size and result in a width of more than 100 metres of unmanaged forestland adjacent to homes or community infrastructure. For residential areas upslope of Highway 1 and west of McDonald Creek, riparian areas and steeper slopes have often been left undeveloped and have been dedicated as municipally owned and managed parkland. Conversely, private land that is east of McDonald Creek and/or downslope of Highway 1 often fully contains riparian areas or steeper slopes, much of which is continuously forested. Many of these forested areas have not historically been managed which has resulted in dead standing trees and accumulations of deadfall, accumulations of fine fuels and litter, and decadent shrub growth – many shrub species of which are not native to the area. In many instances, the fire hazard on developed private land considerably exceeds the fire hazard in adjacent forested areas. This is often due to historic landscaping decisions (e.g., planting of highly flammable vegetation and a lack of vegetation management) and/or construction decisions (e.g., cedar-shake roofing, wooden outbuildings, etc.).

The majority of Crown land found within the Eligible WUI is at higher elevations in Cypress Provincial Park – along Cypress Bowl Road and above Highway 99. Other than the Hollyburn Ridge Nordic area, much of the overlapping area in Cypress is forested, undeveloped, and has limited access. Crown Agency areas refer to rights-of-way or parcels that are owned and managed by a Crown corporation – e.g., BC Hydro substations, railways, and highway corridors. Municipal lands within the Eligible WUI contain a network of parks, open spaces, and natural areas, with recent large, forested land dedications in the Upper Lands and Eagleridge areas. Many of these municipal parks contain well-managed forest areas and/or sports fields, though there are many slopes and drainages in the British Properties, Eagle Harbour, and Caulfeild areas which are municipally owned and not actively managed. Park management for wildfire risk reduction will be further discussed in Section 5.7.



Map 1. Land ownership distribution within the Eligible WUI for the District of West Vancouver. Note – the Eagleridge lands were dedicated after project start-up. Lands north / east of Highway 1 in Eagleridge are now municipal. Additionally, Lighthouse Park is federally owned and leased to West Vancouver.

3.2 COMMUNITY INFORMATION

The District of West Vancouver is located on the north shore of Burrard Inlet, to the west of the District of North Vancouver. Rugged shorelines, steep terrain, numerous creeks and watercourses, and spectacular views provide an extremely attractive setting of international renown. West Vancouver is a popular destination year-round for outdoor recreation in many forms including hiking, skiing, boating, cycling, and mountain biking. The District's economy was historically driven by forestry, commerce, and water way transportation services. Although the Ambleside waterfront and its commercial area remain of importance to the local economy, in recent decades the economic focus has shifted to tourism and residential development.

Within the municipality there is a mix of residential, commercial, and waterfront properties as well as a large, undeveloped forested area. Most of the residential and commercial development in West Vancouver is located downslope of the 1200-foot contour line, with continuously forested areas above this. Below Highway 1, density and property distribution is variable across the District with many larger single-family properties and diverse lot sizes located to the west of 27th Street, and smaller and more tightly packed properties to the east of this. Neighbourhoods west of 27th Street often have more difficult and constrained access due to the general topography of the area, with multiple single access/egress zones and higher coverage of natural and unmanaged vegetation on private property. These narrow and forested corridors are an area of particular concern with respect to limited emergency egress and lack of an alternate evacuation route. This not only presents a challenge for emergency egress but also limits the ability of fire crews to respond to fires and to safely evacuate residents. Above Highway 1, the British Properties neighbourhoods were historically cleared and are heavily landscaped, while the Cypress Park area contains a higher proportion of natural vegetation including mature trees. Across the District, a common factor is the continuity of flammable vegetation and vulnerable structures – though this is less pronounced in the highest-density areas. FireSmart conditions across the District will be further detailed throughout Section 5.

Based on municipal growth estimates, the population of West Vancouver is expected to increase by approximately 10,000 people by 2041, and an additional 5,000 dwelling units will be required to accommodate this growth.[19] Developing and growing with wildfire resilience in mind has been stressed in previous iterations of community wildfire plans for the District, and continues to be a top priority in this CWRP (see Section 5.3 for further information). Various other socio-economic statistics and their implications for wildfire resilience are detailed in Table 7.

[19] District of West Vancouver Official Community Plan – Regional Context.

Table 7. District of West Vancouver socio-economic statistics.[20]

Metric		Value	Implication
Total Population		44,122	A growing population demonstrates the need for FireSmart growth and development. A high population density calls for collaboration (e.g., neighbourhood-level) in FireSmart initiatives.
Population Density (people/km^2)		506.1	
Population Percentage Change (2016 – 2021)		+ 3.9%	
Proportion of Population (Age, years)	5 – 19	18%	Importance of FireSmart education in schools.
	20 – 65	51%	Able bodied population to perform FireSmart activities.
	65 +	28%	Potential need for assistance programs to complete FireSmart activities, and potential challenges in emergency situations. This is a much higher value than the broader Metro Vancouver area (17%).
Employment Rate		47.4%	High proportion of individuals not in the labour force (9.4% unemployment rate in the community), which provides additional time for property upkeep / FireSmart initiatives.
Housing Units (# of Private Dwellings)		18,795	Large number of properties – scale of FireSmart communication and programs needs to recognize this.
Property Ownership – Non-Resident Percentage		7.9% (overall)	Can complicate community-wide preparedness efforts, as absentee owners may be less engaged in local mitigation activities, or from global regions in which interface fires and forest fires are not as prevalent.
		13.2% (recent builds)	

As members of Metro Vancouver, the District of West Vancouver is provided shared services for many of their roads and utilities. Partnerships also exist for recreation and emergency planning services. At the District level, services provided include land use planning, fire protection and police services, water distribution, wastewater collection, and bylaw development and enforcement.

3.2.1 FIRE DEPARTMENT RESOURCES

Fire protection throughout the District is the responsibility of West Vancouver Fire and Rescue Services (WVFR). Fire protection services of WVFR are generally restricted to areas accessible by road, which excludes backcountry areas and undeveloped forest lands. A shared services agreement (automatic aid) exists between WVFR and the City and District of North Vancouver Fire Departments, and WVFR provides emergency response to Squamish Nation on Capilano #5. WVFR has a standing agreement in place with the BC Wildfire Service (BCWS) and the Metro Vancouver Regional District (MVRD) Watershed Protection Team, which staff an Initial Attack (IA) team trained to respond to wildland fires. In the event of an interface fire or wildfire, BCWS aid is requested; however, BCWS may task Watershed Protection crews to action the fire on their behalf. Regarding BCWS, West Vancouver falls within the Coastal Fire Centre, more specifically the Fraser Fire Zone. The nearest BCWS Unit Crews are stationed in Haig, Cultus Lake, and/or Pemberton (all of which are a minimum two hours away). These crew types are generally reserved for response to large, expanded wildfire events. While Unit Crews can be highly effective in an expanding

[20] Unless otherwise noted, values are from Statistics Canada. *Census Profile*. 2021 Census of Population. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/index-eng.cfm (accessed April 16, 2025).

interface fire scenario, the availability of these crews for immediate response cannot be guaranteed as this is dictated by current wildfire activity throughout the province. This challenge was a reality in recent years (2018, 2019, 2021, and 2023) as the provincial wildfire situation overwhelmed available ground resources. Adjacent BCWS Fire Zones also station multiple IA crews, though flight time to West Vancouver is likely a minimum of 30-40 minutes from any adjacent base. IA crews typically consist of 3-5 people, and are more specialized in actioning smaller, more remote fires.

WVFR is actively expanding the level of wildfire training, experience, and equipment that is held within their department. Table 8 provides an overview of the fire services capacity in West Vancouver, which is further discussed in Section 5.5. A fifth fire station will be constructed near the new Cypress Village development, at the District's Operations Centre, which will include one additional engine and one additional Type-5 wildland truck.

Table 8. Capacity and equipment of West Vancouver Fire Rescue.

Equipment Category / Personnel	Value	Additional Details
Fire Stations	Four (with one additional to be constructed in Cypress Village)	Horseshoe Bay, Lighthouse Park, Ambleside, and Cross Creek Road.
Fire Personnel	96 Suppression staff 7 Command staff 1 Training staff 4 Fire Prevention staff	All Suppression staff trained in basic wildland firefighting (WFF-1) and structure protection (WSPP-115).
Suppression Vehicles	• Two Type-5 Wildland Trucks • Type-6 Wildland Truck • Five Fire Engines • One Rescue & One Tower (cross-staffed) • 2 command F350 • 1 Support F150	• Off-road capable, min. 400-gallon tank • Off-road capable, min. 150-gallon tank • Structural fire response, largely reliant on hydrant water supply • Miscellaneous-use vehicles
Suppression Equipment	• Two Type-2 Structure Protection Units (SPUs) • Miscellaneous wildfire equipment	• Each SPU is capable of protecting approximately 35 homes. • Water bladders, portable pumps, hand tools, forestry hose, chainsaws.

Over the previous five years (2020-2024), WVFR responded to an average of 62 confirmed fires per year which includes structural fires, forest fires, and/or unauthorized open burning – with an average of 19 structure fires per year. Structure to structure fire spread is an ongoing concern of WVFR, often due to continuous vegetation between vulnerable properties. The larger property sizes and complex home design throughout much of West Vancouver also complicate fire response and increase the potential for exposure fires and ember generation. Larger properties increase resource needs during the initial fire response, and controlling fire exposure becomes secondary to life safety. Historic fire occurrences and causation will be further discussed in Section 4.2.2.

3.3 VALUES AT RISK

Multiple types of values can be either directly or indirectly impacted by a wildfire event and; therefore, the identification of these values is an important consideration for effective emergency response and recovery. Values at risk considered within this CWRP include critical infrastructure, community assets, residential structures, commercial / industrial structures, and areas with high environmental or cultural value. Various values at risk will be discussed throughout the following sections.

3.3.1 CRITICAL INFRASTRUCTURE AND COMMUNITY ASSETS

Publicly or municipally owned critical infrastructure typically consists of infrastructure that is essential to the health, safety, security, or economic wellbeing of the community or for the effective functioning of government (e.g., fire halls, emergency operations centres, radio repeaters, cell towers, water, electricity, sewage, etc.). [21] Critical infrastructure and additional values at risk for the District are shown on Map 2, while Table 9 details the inventory of critical infrastructure and community assets within the WUI. This list may change as West Vancouver continues to grow and infrastructure is added to the inventory, which may need to be considered for FireSmart assessments or mitigation over time. Various emergency response infrastructure such as community shelter spaces are also identified by North Shore Emergency Management for future potential use, many of which are not directly presented in this CWRP.

The distinguishing factor between critical infrastructure and community assets is their function during a wildfire event. Critical infrastructure provides essential functions and services during emergencies—such as power, water, communications, and transportation—while community assets are physical spaces or facilities that support daily activities and important, though non-essential, government services, such as schools, parks, and community centres. Protecting critical infrastructure through proactive risk mitigation is essential to maintaining emergency response effectiveness, enabling coordinated evacuations when necessary, and ensuring that essential services can be sustained or quickly restored. Applying similar efforts to protect community assets helps build broader community resilience, preserving the facilities that support the regular operations of the District. Survival and continued functionality of these facilities not only support the community during an emergency but also determine to a great degree the extent and cost of fire recovery and economic and public disruption during post fire reconstruction.

During field visits, it was observed that much of the District's critical infrastructure (e.g., pump stations, reservoirs) and community assets (e.g., schools) are in various levels of compliance with FireSmart principles. While some structures may be relatively FireSmart with respect to their structural characteristics (i.e., predominantly brick or metal exteriors), there are often considerable vegetation and combustible hazards throughout their FireSmart zones.

The FireSmart program for the District of West Vancouver has proactively recognized hazards to critical infrastructure, completing 30 FireSmart Critical Infrastructure assessments in 2020 / 2021. These assessed all schools, community centres, fire halls, police station, and various community buildings. Follow-up

[21] UBCM FCFS. 2024 Community Wildfire Resiliency Plan Supplemental Instruction Guide. https://www.ubcm.ca/cri/firesmart-community-funding-supports

mitigation work was performed on all four fire halls in 2023, 2024, and 2025 based on recommendations from these assessments. This CWRP recommends that the District continue to assess their critical infrastructure and conduct recommended mitigation activities (Recommendations #4 and #5).

3.3.2 ELECTRICAL POWER

A large fire has the potential to impact electrical service by causing a disruption in network distribution through direct or indirect means. For example, heat from the flames or fallen trees associated with a fire event may cause power outages. Consideration must be given to protecting this critical service and providing power back-up at key facilities to ensure that the emergency response functions are reliable. Electrical service for the District is received through a network of wood pole and underground distribution infrastructure supplied by multiple BC Hydro transmission lines which run east-west through the District. These transmission lines connect to a large substation northwest of the District's Operations Centre, and smaller substations in Glenmore (located in Capilano River Regional Park in the DNV), Hillcrest (located between Highway 1 and Wentworth Avenue), and Horseshoe Bay (east of the Gleneagles Community Centre). As of 2024, Metro Vancouver staff have been performing hazard tree removal work and follow-up fuel mitigation in the forested area surrounding the Glenmore substation.

According to BC Hydro's integrated vegetation management plan, transmission line rights-of-way are regularly brushed and cleared.[22] Several variables are used to prioritize and schedule vegetation maintenance, which includes corridor and/or vegetation condition, reliability, and wildfire risk. Transmission corridors are patrolled annually to collect vegetation condition information. This data is used together with circuit reliability and wildfire risk data for scheduling and prioritizing work that promotes the safe and reliable delivery of power. BC Hydro uses similar variables to prioritize and schedule vegetation maintenance on and adjacent to distribution corridors, although distribution circuits are generally patrolled less frequently.[23] Residents can communicate directly with BC Hydro if there are concerns with vegetation that is surrounding distribution lines on their properties. Often due to a lack of access, or topography which makes debris removal difficult, it was observed in multiple transmission line corridors within West Vancouver's WUI that vegetation management has resulted in increased woody debris loads (Figure 1 – left).

[22] BC Hydro. (2023). *Integrated Vegetation Management Plan*. https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/safety/powerline-ivmp-2022-2027-confirmed-nov.2-2022.pdf

[23] Personal correspondence for an adjacent CWRP project – Tom Wells, Senior Strategic Principal for Vegetation Management, BC Hydro. December 12, 2024.

Figure 1: Examples of slashed material on a transmission line right of way (left) and unmanaged vegetation on a residential distribution line right of way (right).

Overhead distribution lines and poles are found throughout most neighbourhoods, which are particularly vulnerable to fire and are often located in tight street-side locations or easements and are often surrounded by landscaping and unmanaged vegetation (Figure 1 – right). It is recommended that utility right-of-way best management practices such as regular brushing and clearing of woody debris and shrubs be employed to help reduce fire risk, utility pole damage, and subsequent outages. Underground electrical infrastructure is found in the western portion of the British Properties and Cypress Park, which is now built into the guidelines for subdivision development through the Wildfire Hazard Development Permit Area (see Section 5.3).

Secondary power sources are important to reduce asset vulnerability in the event of an emergency which can cut power for days, or even weeks. Secondary power via diesel or natural gas is available for some critical infrastructure (Police Department, District Hall, Fire Halls, and the Emergency Operating Centre) via emergency backup generators. The District also possesses a portable tow-along generator which can be used on a temporary basis. Vulnerabilities for secondary power sources include mechanical failure, potentially insufficient power sources should a wide-scale outage occur, and fuel shortage in the event of very long outages or if a fire prevents access to the site. Refer to Section 5.6 for a recommendation regarding a vulnerability assessment of community infrastructure.

3.3.3 WATER AND SEWAGE

The District receives its potable water from three separate sources and systems: the Eagle Lake Reservoir, Montizambert Creek, and the Greater Vancouver Water District (Metro Vancouver) reservoirs. Nearly half of the District's drinking water is sourced and treated within West Vancouver, with the rest purchased from Metro Vancouver. From the source, there are two water treatment plants in West Vancouver (Eagle Lake and Montizambert) and a network of 23 reservoirs and 10 pump stations / pumphouses. West Vancouver's WUI overlaps the Montizambert and Nelson Creek Community Watersheds, as well as the Capilano Water Supply Area, which is managed by Metro Vancouver. Access is restricted throughout these

three areas and surrounding Eagle Lake, and there is minimal intervention within any of these watersheds. In 2024 / 2025, the District of West Vancouver has proactively reduced the wildfire risk adjacent to the water infrastructure and access road at Eagle Lake – which is further described in Section 5.7.1.

West Vancouver's potable water system also supplies water for fire suppression throughout the District, through a network of over 1,400 fire hydrants. Seasonal water supply and infrastructure within the water supply system is a shared concern between WVFR and District staff, with these specific vulnerabilities noted:

- Limited water supply to the Eagle Lake and Montizambert systems in the summer months –the District utilizes seasonal strategies to ensure that adequate supply is available during these periods.
- Limited water supply in off-road areas (e.g., Hollyburn Cabins, Hollyburn Lodge) or along road corridors (Highway 1 / 99, Cypress Bowl Road) – requiring water tenders or natural water sources for supply. Currently, WVFR contracts water tenders from local construction and/or road maintenance contractors.
- Limited water supply to the Cypress Village area until established.
- Limited reservoir sizes especially during drought conditions (e.g., Horseshoe Bay).
- The water supply line across the Nelson Creek bridge is vulnerable to damage from fire.

Water supply is critical for both fire response and community recovery. The functionality of water infrastructure can be impacted by an interface fire event because of disruptions to power supplies, or physical damage. Pump stations, for example, can be connected in a series and as a result if one station fails, the others upstream will also no longer function. Water supply may also be impacted by wildfire via disturbances to a watershed. A large loss of forest cover due to wildfire may influence water quality (sediment loading) and quantity (altered peak runoff rates and timing of flow).[24] Recommendations related to water supply, water source protection, and post-fire rehabilitation will be further detailed in Sections 5.5 and 5.6.

Finally, the majority of wastewater collection and treatment services in West Vancouver are part of the Metro Vancouver system. Several sanitary mains, trunk lines, and lift stations owned and operated by West Vancouver carry wastewater to the Metro Vancouver treatment plant. There is one independent wastewater transport and treatment system operated at Citrus Wynd, which is located within a forested area and intermixed with residential forest and landscaping. The majority of above-ground wastewater infrastructure in West Vancouver is at low risk of damage from fire as the structures are generally either metal or concrete.

[24] Jordan, P. (2015). *Post-wildfire debris flows in southern British Columbia, Canada*. International Journal of Wildland Fire 25(3)322-336.

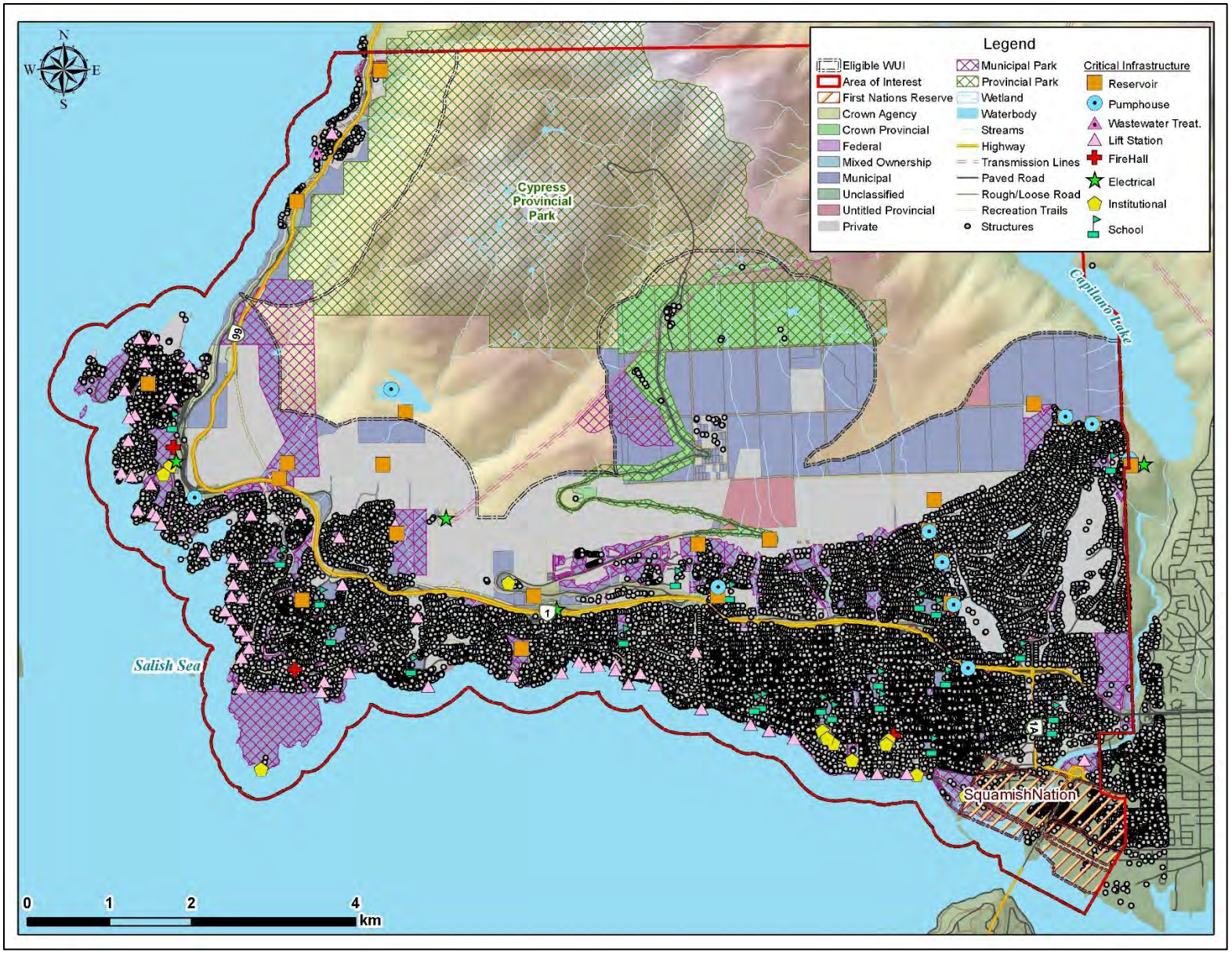
Table 9. Identified critical infrastructure and community assets within the District of West Vancouver.

Name (Jurisdiction listed if not West Vancouver)	Location	Risk or Resilience Factors
First Responders & Healthcare		
Fire Hall #1	760 16th St	Urban area, landscaping and vegetation on property and adjacent properties. FireSmart assessment (2021) and mitigation activities (2023-2025) completed.
Fire Hall #2	6272 Marine Dr	Conifer screens between property and golf course, unmanaged forested area (with unclear ownership) to the east. FireSmart assessment (2021) and mitigation activities (2023-25) completed.
Fire Hall #3	4895 Marine Dr	Area is intermixed with mature trees and vegetation. Railroad right-of-way is adjacent and contains unmanaged vegetation at its edges. FireSmart assessment (2021) and mitigation activities (2023-25) completed.
Fire Hall #4	965 Cross Creek Road	Urban area, landscaping and vegetation on property and adjacent properties. Large private forested area and Cross Creek Park to the east. FireSmart assessment (2021) and mitigation activities (2023-25) completed.
Police Station	755 16th St	Urban area, minor vegetation. FireSmart assessment completed (2021).
Community Buildings		
Inglewood Learning Centre	1735 Inglewood Ave	Urban area, low threat. Landscaping and vegetation on adjacent properties.
West Vancouver Secondary School	1750 Mathers Ave	Urban area, low threat. Landscaping and vegetation on adjacent properties. FireSmart assessment completed (2021).
Cypress Park Primary School	4355 Marine Dr	Urban area intermixed with landscaping and vegetation on adjacent properties. FireSmart assessment completed (2021).
Pauline Johnson Elementary	1150 22nd St	Urban areas, low threat. Landscaping and vegetation on adjacent properties. FireSmart assessments completed (2021).
Hollyburn Elementary School	1329 Duchess Ave	
West Bay Elementary	3175 Thompson Pl	Urban area with unmanaged mixedwood areas on a steep slope to the south, and unmanaged conifer areas to the north / northwest. FireSmart assessment completed (2021).
Irwin Park Elementary School	2455 Haywood Ave	Unban area, low threat. Well managed playground area to the northeast. FireSmart assessment completed (2021).
Collingwood School - Morven	70 Morven Dr	Urban area with unmanaged vegetation on privately owned slopes and municipal rights-of-way to the south and east. Mixedwood park area to the west. FireSmart assessment completed (2021).
School District No.45	1075 21st St	Urban area, low threat. Landscaping and vegetation on property and adjacent.

Name (Jurisdiction listed if not West Vancouver)	Location	Risk or Resilience Factors
Mulgrave School	2330 Cypress Bowl Ln	Large private parcel, majority of vegetation has been cleared. Unmanaged mixedwood on steep slopes to the south and drainages to the east and west. FireSmart assessment completed (2021).
Child Development Centre	2478 Haywood Ave	Urban area, low threat.
Collingwood School - Wentworth	2605 Wentworth Ave	Forested private properties to the south and east. Unmitigated mixedwood in drainages to the northwest (have been recommended for demonstration treatment – see Section 5.7). Moderate threat area given slope and aspect. FireSmart assessment completed (2021).
Sentinel Secondary	1250 Chartwell Dr	Urban areas, low threat. Strip of mixedwood stands to the south and landscaping throughout property. FireSmart assessments completed (2021).
Chartwell Elementary School	1300 Chartwell Dr	
Ridgeview Elementary School	1250 Mathers Ave	Urban area, low threat. Landscaping and vegetation on property and adjacent. FireSmart assessment completed (2021).
Westcot Elementary School	760 Westcot Rd	Urban area, landscaping on property and large private forested area to the west. Roadside area to the northeast is poorly managed with highly flammable shrubs and mixedwood vegetation. FireSmart assessment completed (2021).
St. Anthony's Elementary	595 Keith Rd	Urban area, low threat. FireSmart assessment completed (2021).
Ecole Cedardale Elementary	595 Burley Dr	Urban area, low threat. Private forested parcel to the east / northeast. FireSmart assessment completed (2021).
Rockridge Secondary School	5350 Headland Dr	Urban area but with conifer-dominant forests to the south and east. Gentle topography therefore low threat overall. FireSmart assessment completed (2021).
Eagle Harbour Montessori School	5575 Marine Dr	Urban area but considerably intermixed with forest. Mixedwood forest on the adjacent right of way and in park to the west. Railroad right of way and Sahalee Trail drainage to the east contain more moderate threat areas. FireSmart assessment completed (2021).
Gleneagles Ch'axáý Elementary	6350 Marine Dr	Urban area but intermixed with vegetation on adjacent road rights-of-way and between the golf course. FireSmart assessment completed (2021).
Caulfeild Elementary School	4685 Keith Rd	Urban area, lower-hazard mixedwood stand to the west and more conifer-dominant forest to the east. Surrounding properties are heavily landscaped. FireSmart assessment completed (2021).
District Operations Centre	3755 Cypress Bowl Rd	Cleared within centre of property, but dry conifer forest to the south and mixedwood forest on steep slopes to the north / northeast. Large conifer stand on municipal land north of the switchback but otherwise surrounded by large privately owned forested parcels. FireSmart assessment completed (2021).
Ferry Building Gallery	1414 Argyle Ave	Urban area, low threat.

Name (Jurisdiction listed if not West Vancouver)	Location	Risk or Resilience Factors
Seniors Activity Centre	695 21st St	Urban area, low threat. Vulnerable landscaping and vegetation management surrounding buildings. FireSmart assessments completed (2021).
West Vancouver Arena	786 22nd St	
West Vancouver Community Centre	2121 Marine Dr	
Municipal Hall	750 17th St	Urban area, low threat. FireSmart assessment completed on Municipal Hall (2021).
West Vancouver Museum	680 17th St	
Gleneagles Community Centre	6262 Marine Dr	Urban area, low threat. Unmanaged vegetation on many rights-of-way adjacent. FireSmart assessment completed (2021).
Gleneagles Golf Course & Clubhouse	6190 Marine Dr	Golf course area, manicured and irrigated. Low threat.
Point Atkinson Lighthouse	Lighthouse Park	Isolated location but high recreational usage. Minor vegetation around lighthouse building but adjacent structures are more vulnerable and more surrounded by forest. Lighthouse Park is low – moderate threat overall.
Ambleside Park Child Care Centre	1093 Par 3 Road	Manicured forest to the west and cleared parking / sports areas otherwise. Multiple highly flammable shrub thickets on railway right-of-way adjacent. Capilano #5 to the immediate east which has unmanaged mixedwood forest to the north of the tracks.
West Vancouver Memorial Library	1950 Marine Dr	Urban area, low threat. Well managed park space to the northeast. FireSmart assessment completed (2021).
Electrical Utilities		
Cypress Substation (BC Hydro)	Eagle Lake Access Rd.	Moderate hazard mixedwood stands surrounding the facility – extensive private forested properties in all directions.
Glenmore Substation (BC Hydro)	Cleveland Dam (DNV)	Moderate hazard conifer stands surrounding the facility, considerable mortality adjacent due to a recent hemlock looper outbreak. Within Capilano River Regional Park which is managed by Metro Vancouver and within the DNV. Active hazard tree removal and fuel management being performed by Metro Vancouver.
Hillcrest Substation (BC Hydro)	Wentworth Ave	Unmanaged vegetation on much of the highway right-of-way – parcel to the west is privately owned.
Horseshoe Bay Substation (BC Hydro)	Marine Drive	Crown Agency parcel with forested municipal land to the south and an unallocated right of way to the north and east. Unmanaged forest surrounding – moderate threat given the slope.
Water		
Water Treatment Plant (Eagle)	Eagle Lake	Mature conifer forest in the surrounding municipal land for > 200 metres. Area adjacent to the buildings and access road was fuel treated in 2024/25 and is very low hazard –

Name (Jurisdiction listed if not West Vancouver)	Location	Risk or Resilience Factors
		for approximately 50 metres either side of the road – remaining area is moderate hazard given the slope and forest type. Continuous conifer forest on private land to the east, southwest, and south.
Water Treatment Plant (Montizambert)	Highway 99 / Montizambert Creek	Mature conifer forest in the surrounding municipal land for 60 – 120 metres. Transitions to Cypress Provincial Park to the east, a transmission line right of way to the west, and private land to the north and south. Isolated and remote access to the area.
Reservoirs	23 Locations (includes three out of service)	Structures are generally FireSmart (i.e., metal or concrete), though may contain exposed electrical or vulnerable outbuildings. Often adjacent to highly flammable vegetation on private or municipal property, or in areas managed by DNV / Metro Vancouver. Particularly vulnerable locations are Eagleridge, Craigmohr, Bonnymuir, Chairlift, 11th Street, Chartwell, Burnside, Vinson Creek, Madrona, Nelson, Sprucefeild, and Montizambert.
Pump Stations	10 Locations	Comparable description to the reservoirs.
Sewage		
Lift Stations	54 Locations	Generally, FireSmart structures (i.e., metal). Often surrounded by highly flammable vegetation on private land or municipal land.
Treatment Plant	Citrus Wynd	Structural conditions could not be determined. Sliver of municipal conifer forest surrounding the building, and vegetation adjacent to the railway right of way. Private forested and developed land is found to the north and south.



Map 2: Community assets and critical infrastructure within the District of West Vancouver's Eligible WUI.

3.3.4 CULTURAL AND HERITAGE VALUES

The Squamish Nation has a present-day community within the CWRP area and has extensive traditional use of the North Shore mountains. People of the Tsleil-Waututh Nation have used, occupied, and governed Burrard Inlet and its surrounding catchment according to Coast Salish protocol for thousands of years.[25] The Musqueam Nation also holds Burrard Inlet and the North Shore mountains as core territory. In recent years, emergency staff and FireSmart Coordinators from both the Squamish Nation and Tsleil-Waututh Nation have communicated and coordinated with West Vancouver on FireSmart initiatives. As introduced in Section 2.2, both Squamish and Tsleil-Waututh have completed their own Community Wildfire Resiliency Plans, and are actively working toward improving fire resilience in their communities. In addition to three above-mentioned First Nations, additional Coast Salish groups have traditional territory which overlaps West Vancouver. Twelve additional First Nations with Aboriginal interests were identified in the AOI using the BC Consultative Areas Database. These include the following mainland-based First Nations: Kwikwetlem First Nation, Sto:lo Nation, Sto:lo Tribal Council, Soowahlie First Nation, Shxw'ow'hamel First Nation, Skawahlook First Nation, and Seabird Island Band. The following Vancouver Island based First Nations were also identified: Halalt First Nation, Stz'uminus First Nation, Cowichan Tribes, Lake Cowichan First Nation, Lyackson First Nation, and Penelakut Tribe.

Archaeological sites and remains in BC that pre-date 1846 are protected from disturbance, intentional and inadvertent, by the *Heritage Conservation Act* (HCA), which applies on both private and public lands. Sites that are of an unknown age with a likely probability of dating prior to 1846 (i.e., lithic scatters) as well as Aboriginal pictographs, petroglyphs, and burials are also protected. Under the HCA, protected sites may not be damaged, altered, or moved in any way without a permit.

There are known archaeological sites within the municipal boundaries,[26] as well as culturally significant sites. Prior to stand modification for fire hazard reduction and depending on treatment location, preliminary reconnaissance surveys may be undertaken to ensure that cultural heritage features are not inadvertently damaged or destroyed. Above ground archaeological resources may include features such as CMTs, which could be damaged or accidentally removed during fire hazard reduction activities. It is a best practice that cultural heritage resources such as culturally modified tree (CMT) sites be inventoried and considered in both operational and strategic planning. Fuel treatment activities should include consultation with all identified First Nations and include sufficient time for review and input regarding their rights and interests prior to prescription finalization or implementation.

Other sites recognized for their historic and cultural importance within the WUI include buildings, parks, properties and landmarks – many of which are captured in Table 9 or are registered as heritage properties through West Vancouver's Community Heritage Register.[27] These cultural and heritage values have the potential to be impacted by wildfire, wildfire suppression techniques, or vegetation management activities through physical damage or alteration.

[25] Kerr Wood Leidal, Burrard Inlet Action Plan (2025). Accessed from: https://twnation.ca/wp-content/uploads/2024/10/201711_Burrard_Inlet_Action-Plan_2017_Version_FINAL.pdf
[26] Site locations registered with the Provincial Archaeology Branch are not publicly available.
[27] West Vancouver Community Heritage Register: https://westvancouver.ca/business-development/heritage-conservation/community-heritage-register

3.3.5 ENVIRONMENTAL VALUES

Environmental values include sensitive ecosystems, wildlife habitat, and species-at-risk that may be impacted by wildfires, fire suppression activities, or fuel management. West Vancouver contains numerous environmental values, including four species / ecosystems at risk[28] and numerous occurrences of critical habitat for a federally listed species at risk (Table 10):

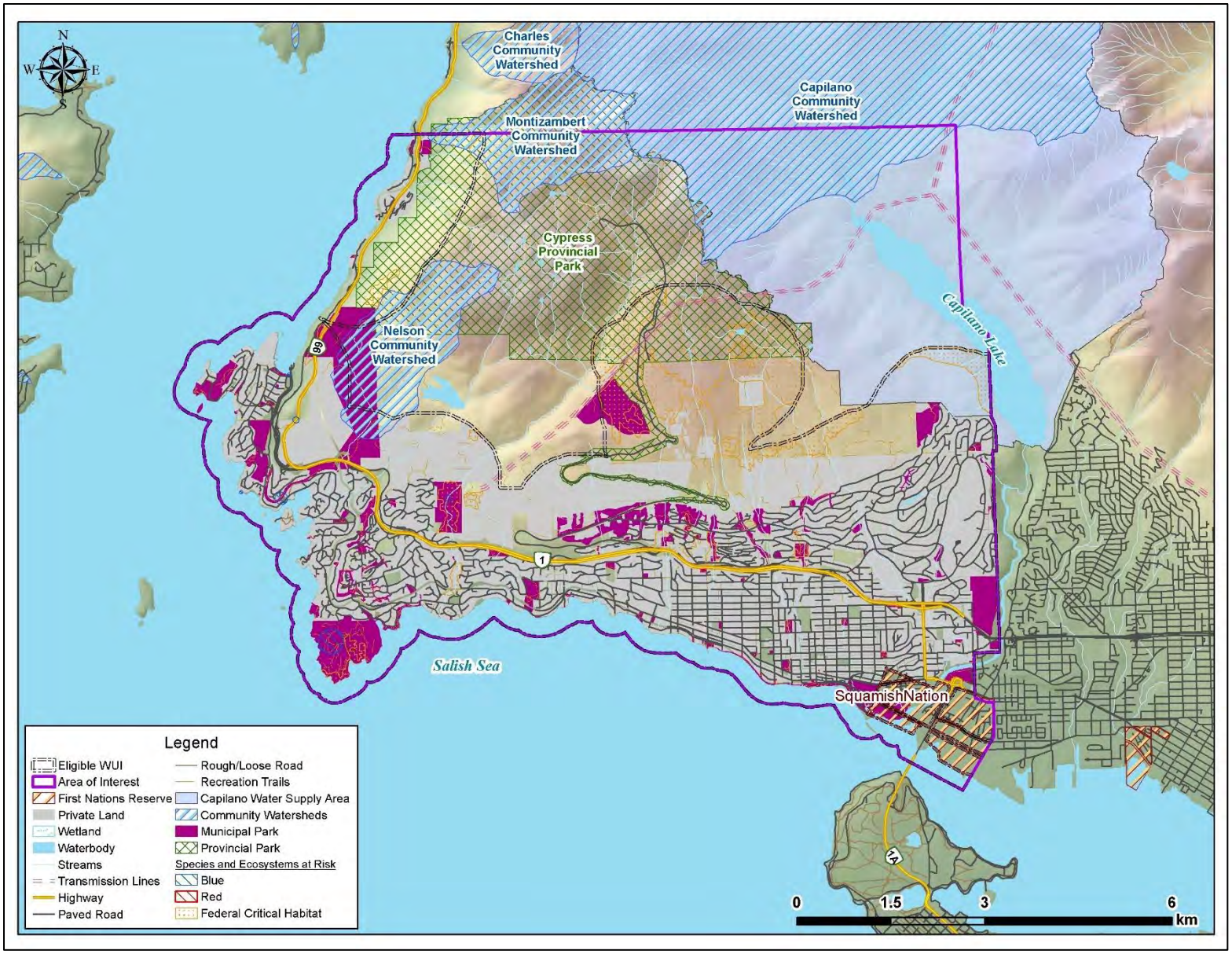
Table 10: Species at risk within the District of West Vancouver's Eligible WUI (does not include historical or extirpated species).

Common Name	Scientific Name	Category	List	Habitat Type
Arbutus / Hairy Manzanita	*Arbutus menziesii / Arctostaphylos columbiana*	Ecological Community	BC CDC: Red	Forest: Broadleaf - dry
Western Screech-Owl	*Megascops kennicottii kennicottii*	Vertebrate Animal	BC CDC: Blue	Terrestrial: Urban, Forest Mixed
Northern Red-legged Frog	*Rana aurora*	Vertebrate Animal	BC CDC: Blue	Riverine: Riparian, Creek; Terrestrial: Forest Needleleaf
Great Blue Heron, Fannini Subspecies	*Ardea herodias fannini*	Vertebrate Animal	BC CDC: Blue	Terrestrial: Woodland Broadleaf, Forest Needleleaf
Marbled Murrelet	*Brachyramphus marmoratus*	Vertebrate Animal	Federal	Terrestrial: Old growth conifer forest.

Municipal and provincial parks within West Vancouver's WUI protect many regionally significant areas containing mature and old growth conifer ecosystems. This includes the riparian and aquatic habitat of several lakes and stream corridors. Different forest types – ranging from open mixedwood arbutus stands, to dry and rocky Douglas-fir knolls, to large-diameter, complex old-growth conifer stands – are found throughout the WUI and have been delineated through Metro Vancouver's Sensitive Ecosystem Inventory.[29] Operational plans for fuel management treatments should identify and mitigate potential impacts to environmental values at risk. For identified wildlife, the guidance of a qualified professional may be required.

[28] Conservation Data Centre. (2018). Available online at: http://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre

[29] Metro Vancouver Sensitive Ecosystem Inventory Mapping Tool: https://gis.metrovancouver.org/mvmaps/SEI



Map 3. Environmental values in the District of West Vancouver. Note: Lighthouse Park is a Federal park managed by the Municipality.

3.3.1 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders. Protecting hazardous values from fires can limit the extent of interface fire disasters. Anywhere large quantities of combustible materials, explosive chemicals, gas, or oil is stored can be considered a hazardous value. Generally, the District does not have a considerable number of industrial sites or facilities that can be considered hazardous values at risk, nor is there a municipal database of these locations. Additionally, many of these values exist on privately-owned property (e.g., gas stations).

If not already completed internally, WVFR can pre-identify these hazardous locations to assist with structure protection triaging and/or proactive risk mitigation efforts. The management and treatment of fuels in proximity to hazardous infrastructure is critical to reduce the risks associated with both structural fire and wildfire. Specifically, appropriate management practices recommended for hazardous values include: 1) incorporating FireSmart planning and setback requirements for all infrastructure in this category; 2) educating property owners regarding FireSmart upkeep of their commercial properties; and 2) maintaining emergency fuel/propane emergency shut-off procedures to be enacted immediately in the event of an approaching wildfire or ember shower.

Fortis BC operates underground pipelines that traverse the extent of the municipality to transmit and distribute natural gas. In the event of a wildfire, FortisBC will work with local and provincial emergency responders and employ their own emergency response protocols, including shutting down compressor stations, if required.[30]

3.3.2 OTHER RESOURCE VALUES

Recreation is a highly important value in West Vancouver, both for residents and tourists. Key community goals and policies identified in the Official Community Plan and the Urban Forest Management Plan are closely tied to the preservation and expansion of recreational opportunities in West Vancouver. In addition to preserving environmental values, the municipal and provincial parks that make up much of West Vancouver's WUI hold significant recreational value as well.

Introduced in Table 4, Cypress Provincial Park has the highest visitation of any provincial park in British Columbia,[31] and overlaps with a considerable proportion of West Vancouver's WUI. The WUI overlaps lower elevation parts of Cypress including the Hollyburn Nordic area and areas adjacent to Cypress Bowl Road, though the core recreational area in Cypress is not within WUI. There are multiple larger municipal parks managed by West Vancouver located throughout the WUI (e.g., Whytecliff, Lighthouse, Cypress Falls, and the Upper Lands), as well as many smaller neighbourhood parks (e.g., Klootchman, McKenchnie, Douglas Woodward, Capilano View), the majority of which have hiking and/or biking trails throughout.

[30] FortisBC. *Wildfires and evacuations.* Retrieved from: https://www.fortisbc.com/safety-outages/preparing-for-emergencies/wildfires-and-evacuations

[31] BC Parks Reports – Visitors Attendance Data & Revenue: https://bcparks.ca/about/reports/#visitor-attendance-data-and-revenue

There are also large parcels of Crown land and British Pacific Properties owned land which currently have high recreational usage for hiking and mountain biking.

Municipal parks cover approximately 720 hectares within the WUI, with over 400 additional hectares in the WUI recently dedicated as parkland in the Upper Lands. With increased recreational traffic in many of these park areas, there is an inherent increased risk in wildfire ignitions (see Section 4.2.2). Additionally, if there is a lack of proactive fuel management in these park spaces, the potential fire severity can increase over time which decreases the potential safety and efficacy of first responders. Frequent observations were made in which fire hazard within recreational areas was higher than in adjacent natural forests, often due to fuel accumulations from trail clearing and/or hazard tree removal (in which the material had not been removed or scattered). Addressing fire hazard in municipal parks at the District level is not feasible in the short term given the extent of park areas, the lack of access into many of these park areas, and the physical workload required to manage hazardous vegetation. Conversely, proactive measures can be taken in strategic park locations to reduce the fire hazard adjacent to values at risk, and by incorporating the consideration and response to wildfire risk into municipal planning documents (see Section 5.7.1).

SECTION 4: WILDFIRE RISK ASSESSMENT

This section summarizes the factors that contribute to local wildfire risk in the District of West Vancouver's wildland-urban interface. The wildfire risk assessment provides a decision support tool to determine the most effective wildfire risk reduction actions and opportunities to increase community resilience.

The relationship between wildfire risk and wildfire threat can be summarized as follows:

Wildfire Risk = Consequence × Probability

Where:

Wildfire Risk is the potential losses incurred to human life, property, critical infrastructure, or other identified values-at-risk within a community in the event of a wildfire.

Consequences are the repercussions associated with fire occurrence in an area (higher consequences are associated with densely populated areas, water supply areas, etc.).

Probability is the likelihood of fire occurring in an area and that area's ability to ignite, spread, and consume organic material in the forest – its *wildfire threat*. Wildfire threat is driven by three major components of the wildfire environment, often referred to as the 'fire behaviour triangle':

- Topography – Slope and terrain features can influence rate of spread; aspect can affect pre-heating and fuel dryness
- Fuel – Loading, size and shape, vertical and horizontal arrangement, type, and dryness
- Weather – Temperature, relative humidity, wind speed and direction, precipitation

Figure 2: The fire behaviour triangle, and a subset of characteristics within each component.[32]

[32] Province of Alberta.

4.1 LOCAL WILDFIRE ENVIRONMENT

The ecological context of wildfire and the role of fire in the local ecosystem under both current and historical conditions is an important basis for understanding the current and future wildfire threat to a community.

4.1.1 FUEL

A primary factor in a community's wildfire threat is its proximity to the forest, which is the 'fuel' in a wildfire scenario. Natural areas, parks, and green spaces in West Vancouver's WUI are characterized by different types of vegetation, with some general patterns qualitatively assessed during field work.

Much of the undeveloped WUI in West Vancouver is dominated by mature, second-growth conifer-dominated forests which differ in their species composition. On zonal sites, as defined by the Biogeoclimatic Ecosystem Classification (BEC) system, the overstory primarily contains Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*), with a smaller component of western redcedar (*Thuja plicata*). Higher elevation areas have considerably more amabalis fir or Pacific silver fir (*Abies amabalis*). Surface vegetation in many areas is made up of moss and drought tolerant shrubs like salal (*Gaultheria shallon*) and dull Oregon grape (*Mahonia nervosa*), though many second growth stands have a high component of deadfall and litter and very little understory vegetation due to high levels of canopy closure. For stands that are denser and/or have accumulated more deadfall, the fire threat is higher – though the threat from fuel alone rarely exceeds *moderate* when utilizing provincially-accepted wildfire threat assessment tools (see Appendix B: WTA Plots and Photos). Wetter sites like gullies, ravines, and shaded lower slopes typically have more western redcedar, bigleaf maple (*Acer macrophyllum*), and a moist herb and deciduous shrub complex – conditions which lower the wildfire threat. While vegetation in these forests can burn under extreme fire weather conditions, the discontinuity in vertical and horizontal fuel loading and the absence of significant quantities of surface fuels mean that most stands with this structure represent a low wildfire hazard.

Vegetation differs on the driest sites – such as rocky hilltops, and exposed south- and west-facing slopes. These areas are often occupied by higher density young conifer stands and have a higher proportion of dead standing trees. Most notably in dry areas, western redcedar trees of various ages and size classes have experienced considerable dieback across West Vancouver, both in natural forests and developed areas. This dieback can likely be attributed to successive years of drought within the previous decade.[33] Additionally, there are biotic forest health agents which have resulted in considerable tree mortality in multiple areas. Outbreaks of the western hemlock looper (*Lambdina fiscellaria*) have caused severe mortality in western hemlock trees in the Capilano View area (Figure 3), and many south / east facing slopes in the Capilano Water Supply Area.

[33] Diamond Head Consulting for West Vancouver: Urban Forest Management Plan (2024) – Western redcedar decline.

Figure 3: Debris accumulations in areas with severe western hemlock mortality.

Much of the WUI contains developed areas in which forests have been heavily disturbed and spatially broken up, though there remains a high continuity of fuel across residential or commercial properties and any adjacent forested park areas. This continuity is often the result of historic landscaping choices, including highly flammable shrubs and hedges, or a lack of regular vegetation management near homes, between properties, along rights-of-way, and in municipal parks. This vulnerability is often exacerbated by the presence of highly flammable invasive species such as Himalayan blackberry – *Rubus armeniacus* and Scotch broom – *Cytisus scoparius*. In higher density neighbourhoods (e.g., east of 27th Street and downslope of Highway 1) there is considerably less vegetative fuel, and more of the park spaces contain sports courts, irrigated fields, lawns, and meticulously landscaped areas. With consistent irrigation and predominantly deciduous vegetation or maintained grass, these represent areas of low wildfire hazard.

Fuel Types

The Canadian Forest Fire Behaviour Prediction System was used to assess forest stand and structure characteristics as they relate to wildfire behaviour potential. This system outlines sixteen 'fuel types', which are distinctive forest structure types, each associated with different fire behaviour characteristics under defined conditions. Fuel types were confirmed or updated during fieldwork for all municipal and Crown land within the Eligible WUI. The results of this classification process, and the verified fuel types that were determined to compose the forests and green spaces within the Eligible WUI, are shown on the following pages on Map 4 and Table 11.

The most prevalent type of vegetation is mature stands of second growth conifer forests, which were mostly assigned a fuel type of C-5. In areas that are younger (less than 60 years old) and contain high density stands with high proportions of deadfall and dead standing trees, a fuel type of C-3 was assigned. This is a much more hazardous classification than C-5, however this fuel type is very limited within the Eligible WUI and often only occurs in isolated patches that are not able to be spatially delineated given the scope of this CWRP. Open canopy conifer areas with a surface vegetation of grass, Scotch broom, or decadent Himalayan blackberry were assigned a fuel type of C-7 – though these rarely occur within the WUI. A mixedwood fuel type (M-1/2) was assigned to areas that have mixed conifer and deciduous – often observed as younger deciduous stands that have a conifer understory, more open canopy stands that have a high deciduous shrub component, or conifer dominant areas which have had surface and ladder fuel loads completely removed.[34]

Non-forested areas with continuous unmanaged grass and/or decadent shrubs were assigned a fuel type of O-1a/b – to reflect faster potential rates of spread. In the more heavily developed residential areas throughout the municipality, vegetation between properties was most commonly assigned a M-1/2 or C-5 fuel type, based on the overstory composition and density. Pure deciduous stands and/or deciduous shrub areas were assigned a D-1/2 fuel type. Intensively managed District parks, regularly mowed/maintained areas, sprawling private properties, and many road rights-of-way were assigned a 'non-fuel' type.

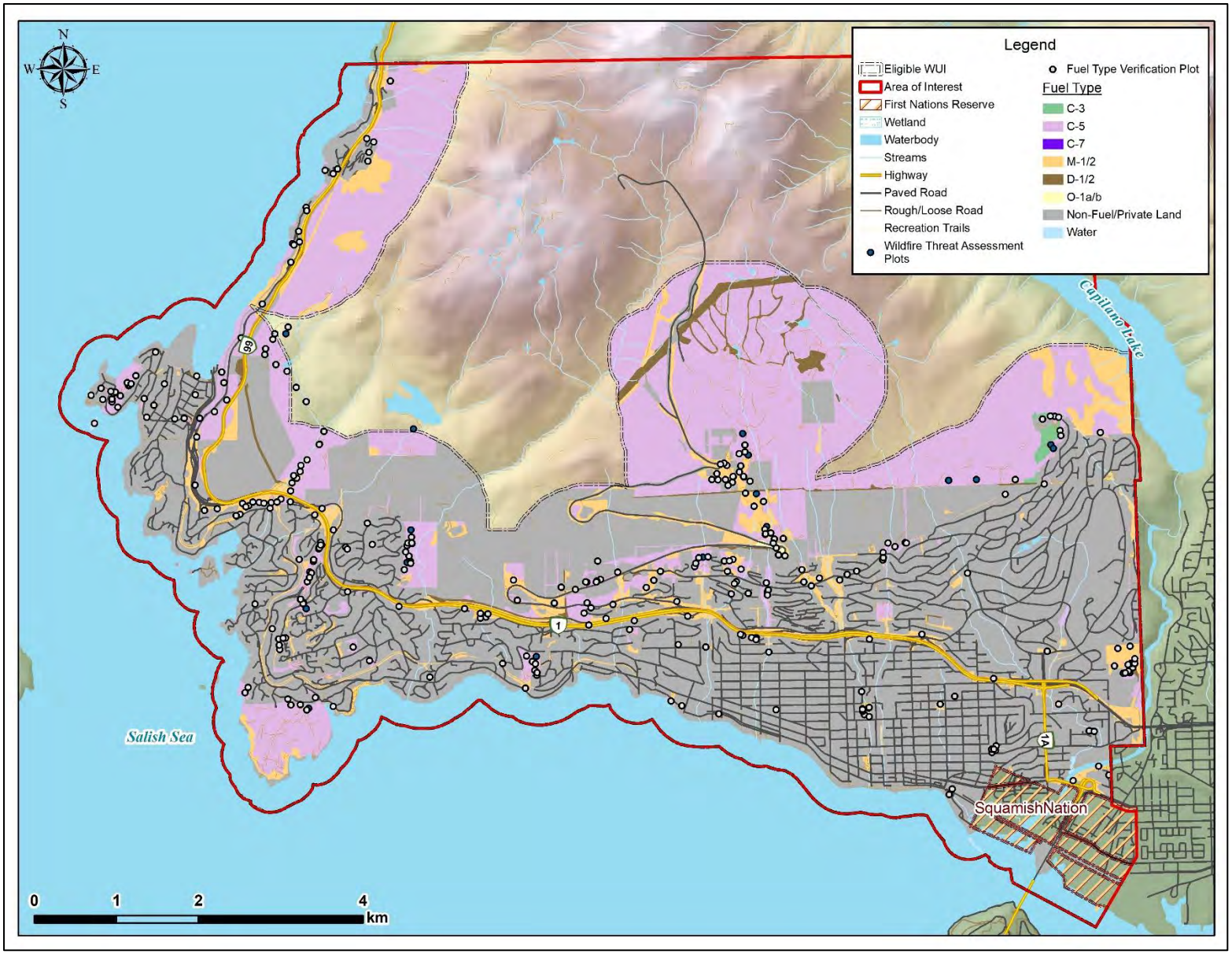
Finally, a significant proportion of area within West Vancouver is privately owned which includes large, forested parcels in the Upper Lands, and parcels which extend throughout drainages and along forested slopes below Highway 1. Assessing the fuel type of these and other private land holdings is outside the scope of this plan as the assessment of private property is not permitted through the UBCM FCFS funding program, and due to complications with landowner consent. Assessing risk on private property near homes is within the scope of Wildfire Mitigation Program assessments (formerly known as the Home Partners Program assessments), which can be completed by a certified Wildfire Mitigation Specialist (see Section 5.1).

[34] Given inherent limitations in the applicability of the FBP system to British Columbia fuel types, mixedwood stands were most often assigned a conifer percentage < 25% in order to ensure that the potential fire behaviour would not be over-estimated. 25 – 50% conifer was often assigned to mixedwood stands with high proportions of decadent Himalayan blackberry, and > 50% conifer was assigned to areas with severe looper mortality.

Table 11. Fuel types in the Eligible WUI (municipal and Crown land only).[35]

Fuel Type	Fuel Type Description & Implication	Area (Ha)	Percentage of Public Land
C-3	• High density stands, considerable deadfall. Highest horizontal and vertical continuity in the WUI. • Moderate to high wildfire threat. • Potential for high intensity surface fire and crown fire.	11	<1%
C-5	• Lower density, often more mature stands. High crown base heights and scattered ladder fuels, leading to lower continuity. • Low to moderate wildfire threat. • Variable potential fire intensity in response to surface and ladder fuel composition.	1,513	40%
C-7	• Open canopy conifer stands with highly flammable surface fuel (e.g., grass or decadent shrubs) Low to moderate wildfire threat mostly associated with rapid surface fire spread potential.	<1	<1%
D-1/2	• Pure deciduous stands or deciduous shrub areas. Low fire threat, potential spread during periods of drought or when wind driven.	70	2%
M-1/2	• Mixed conifer and deciduous stands, or open-canopy conifer stands with a low-flammability shrub understory. • Low to moderate fire threat, fire intensity is variable and in response to deadfall accumulations and low-drooping conifers.	388	10%
O-1a/b	• Continuous grass, Scotch broom, or Himalayan blackberry. • Rapid surface fire spread potential.	2	<1%
Non-fuel	• Irrigated or maintained areas, developed areas, or smaller boulevards.	923	25%
Water	• Large rivers, lakes, ponds, ocean.	834	22%

[35] Canadian Wildland Fire Information System. (2024). *FBP Fuel Types.* https://cwfis.cfs.nrcan.gc.ca/background/fueltypes/c1



Map 4. Fuel types in the District of West Vancouver's WUI.

4.1.2 TOPOGRAPHY

Topography has a varying influence on the wildfire environment of West Vancouver – from both a fire behaviour standpoint and an emergency response standpoint. Slope steepness influences a fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill. Other factors of topography that influence fire behaviour include aspect, elevation, and configuration of features on the landscape that can restrict (i.e., water bodies, rock outcrops) or drive (i.e., gulleys, exposed ridges) the movement of a wildfire.

The effect of slope on fire behaviour is shown annually with fires in coastal British Columbia, as was demonstrated with rapid upslope spread on the fires in the Squamish Valley (2020), Minnekhada Regional Park (2022), Flood Falls – Hope (2022), and along Highway 99 (2019 & 2023). In mountainous areas such as West Vancouver, fire spread is likely to be topography driven for an extended period of time until a short-term weather event pushes the fire into new terrain, after which topography again will become a primary driving factor. Table 12 shows the percent of West Vancouver's WUI by slope percent class and the associated fire behaviour implications, which is also displayed on Map 5.

Table 12. Slope percentage and fire behavior implications.[36]

Slope	Percent of Eligible WUI (%)	Fire Behaviour Implications
<20%	55	Very little flame and fuel interaction caused by slope, normal rate of spread.
20-30%	19	Steeper slopes tilt flames upward, beginning to preheat fuel and increase rate of spread.
30-40%	14	Flames are tilted upward, preheating fuels and directing flames towards fuels upslope. High rate of spread.
40-60%	6	Flames are tilted upward, preheating fuels and directing flames towards fuels upslope. Very high rate of spread.
>60%	6	Flames are tilted upwards, preheating fuels and directing flames towards fuels further upslope. Extreme rate of spread.

The majority of the WUI (55%) is on less than a 20% slope and will likely not experience accelerated rates of spread due to topography alone. Much of the developed area and the highest-density neighbourhoods of West Vancouver are on a consistent slope that is less than 20%. Considering slope-effect independently, 19% of the WUI is likely to experience an increased rate of spread, with an additional 14% experiencing a high, 6% a very high, and 6% an extreme rate of spread. Steep slopes are a considerably challenging factor for wildfire suppression – as these limit the ability of ground crews to access and work an area and often restrict the use of heavy equipment.

When slope percentage is considered in context with a value's slope position, that value's risk to increased fire behaviour can change dramatically – i.e., a value located in the upper 1/3 of a steep slope (>40%) will likely be exposed to fires that are located downslope, with the potential to quickly spread

[36] BC Wildfire Service: 2020 Wildfire Threat Assessment Guide and Worksheets

uphill towards it or be impacted by increased amounts of preheating (convective heat). Table 13 summarizes the fire behaviour implications of slope position.

Table 13. Slope position of value and fire behaviour implications.[37]

Slope Position of Value	Fire Behaviour Implications
Bottom of slope/ valley bottom	Impacted by normal rates of spread.
Mid-slope (bench)	Impacted by increased rates of spread. Position on a bench may reduce the preheating near the value (reduced exposure if the value is offset from the slope).
Mid-slope (continuous)	Impacted by fast rates of spread. No break in terrain features that are affected by preheating and flames bathing into the fuel ahead of the fire.
Upper third of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.

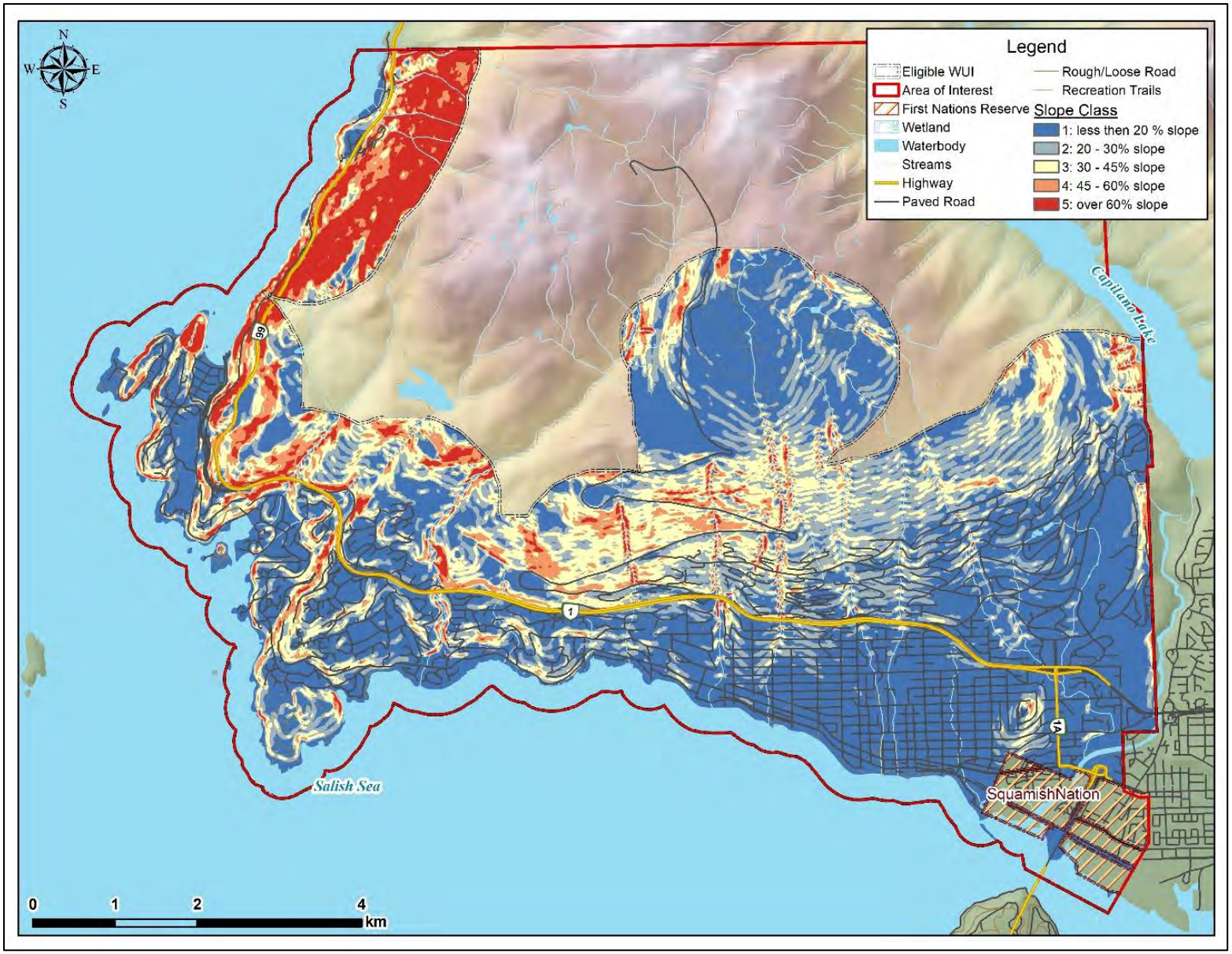
The highest density residential areas and community infrastructure in West Vancouver are located on gentler slopes nearer the valley bottom (i.e., downslope of Highway 1), and thus are associated with less slope-driven flame and fuel interaction. Multiple neighbourhoods in West Vancouver have broken topography and considerably steep slopes adjacent to developed areas (e.g., Eagleridge, Caulfeild, Bayridge, Gleneagles, Horseshoe Bay, Panorama), and most of these slopes are continuously forested and unmanaged. Vegetation on these steep slopes can be difficult to maintain due to operational restrictions or geotechnical concerns, which can result in heightened fire hazards that are difficult to reduce. Values (i.e., structures) in these areas are often located on mid-slope benches, on more continuous slopes, or at the top of the slope break, or there is continuous landscaping from a slope break to the structure itself. The steepest consistent slopes within the WUI are found above Highway 99 to the north of Horseshoe Bay, but the infrastructure-based values at risk along this corridor are often found at the bottom of the slope and therefore are not exposed to higher rates of spread. The community watersheds that overlap and are adjacent to the WUI have consistently steep slopes throughout their catchment areas which increases their exposure to fire spread and impacts from fire severity.

While fire behaviour may be intensified in these localized steep areas, there are several factors that moderate the influence of topography on wildfire behaviour at the landscape level. Terrain in many neighbourhoods across West Vancouver is generally broken and discontinuous with flat spots and changes in gradient that disrupt the potential interaction of flames and fuels. Slopes often ascend short distances, to low elevation hilltops. This reduces the opportunity for wildfire to gain intensity by burning continuously upslope. The many small hills create frequent changes in aspect, decreasing the overall area exposed to warmer conditions that can dry and cure fuels. Finally, there are many patches of unvegetated rock outcroppings that inhibit the spread of surface fires. As a result, while a significant proportion of the municipality includes slopes greater than a 20% gradient (Table 12), this does not translate to a high wildfire threat rating throughout the WUI.

[37] BC Wildfire Service: 2020 Wildfire Threat Assessment Guide and Worksheets

The aspect of a land base can also greatly affect the potential fire behaviour as the amount and timing of sunlight received affects temperatures, humidities, and fuel moisture amounts. Aspect is variable at a micro-topography scale throughout West Vancouver's WUI, but approximately one half of the area has a south or west facing slope greater than 16% (32% and 15% respectively). South and west facing areas have the most daily exposure to sun, especially during the peak burning period[38] which can result in hot and dry atmospheric conditions that combine with low fuel moisture amounts. Only one eighth of the WUI is located on a north (2%) or east (10%) facing slope, where potential fire intensity is moderated due to more shading and higher fuel moisture.

[38] Peak burning period is generally referred to as between 14:00 – 18:00, where fuel moisture conditions are at their lowest.



Map 5. Slope classes within West Vancouver's Eligible WUI.

4.1.3 WEATHER

West Vancouver has one of the mildest climates in BC, with warm summers and temperate winters. The community is situated in the windward side of the Burrard Inlet and North Shore mountains and; therefore, much of the area experiences slightly higher precipitation and a more temperate climate than areas that are further inland or at lower elevations. Higher elevation portions of the WUI (above approximately 650 metres) fall within the Southern Pacific Ranges Ecosection which has dry and warm summers with occasional precipitation and can experience Arctic air outflows which bring short-lived but extreme winds from the north. Below this elevation, the majority of the WUI falls within the Fraser Lowland Ecosection. These lower elevations are exposed in the summer to hot, dry air from the south which brings warm temperatures and very dry conditions.[39] This climate is conducive to periods of high fire danger during the summer.

The Canadian Forestry Service developed the Canadian Forest Fire Danger Rating System (CFFDRS) to assess fire danger and potential fire behaviour. Fire Danger Classes provide a relative index of the ease of ignition and the difficulty of suppression. The BC Government provides the following explanation of what the different Danger Class Ratings mean:[40]

- **Low:** Fires may start easily and spread quickly but there will be minimal involvement of deeper fuel layers or larger fuels.
- **Moderate:** Forest fuels are drying and there is an increased risk of surface fires starting. Carry out any forest activities with caution.
- **High:** Forest fuels are very dry and the fire risk is serious. New fires may start easily, burn vigorously, and challenge fire suppression efforts. Extreme caution must be used in any forest activities. Open burning and industrial activities may be restricted.
- **Extreme:** Extremely dry forest fuels and the fire risk is very serious. New fires will start easily, spread rapidly, and challenge fire suppression efforts. General forest activities may be restricted, including open burning, industrial activities and campfires.

'High fire danger' generally includes Danger Class ratings of 4 (High) and 5 (Extreme). Fire Danger Class days were summarized to provide an indication of the fire weather in West Vancouver's WUI. As fire danger varies from year to year, historical weather data can provide information on the number and distribution of days when the WUI is typically subject to high fire danger conditions, which supports an assessment of overall wildfire risk.

[39] Demarchi, D. (2011). *An Introduction to the Ecoregions of British Columbia.* https://www2.gov.bc.ca/assets/gov/environment/plants-animals-and-ecosystems/ecosystems/broad-ecosystem/an_introduction_to_the_ecoregions_of_british_columbia.pdfs

[40] BC Government, Fire Danger: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prepare/weather-fire-danger/fire-danger

Figure 4 below displays the average frequency of danger class days between the months of April and October, as recorded the Capilano GVRD weather station. At 400 m elevation and within the CWH vm1 biogeoclimatic zone (see Section 4.2.1), the Capilano GVRD station is on the north side of Healmond Creek which is a tributary to the Capilano River. The Capilano GVRD station is approximately 7.5 kilometres from West Vancouver's 1-kilometre WUI and in a wetter biogeoclimatic zone than much of West Vancouver but produces the highest-hazard fire weather indices of any nearby BCWS weather stations.[41] In addition to this station, Metro Vancouver operates the Lower Capilano weather station which is located near the base of Grouse Mountain. From 2015-2025, Lower Capilano has produced fire danger ratings that are near identical to Capilano GVRD. Metro Vancouver produces a Fire Weather Report throughout the fire season which utilizes data from eight fire weather stations within Metro Vancouver.

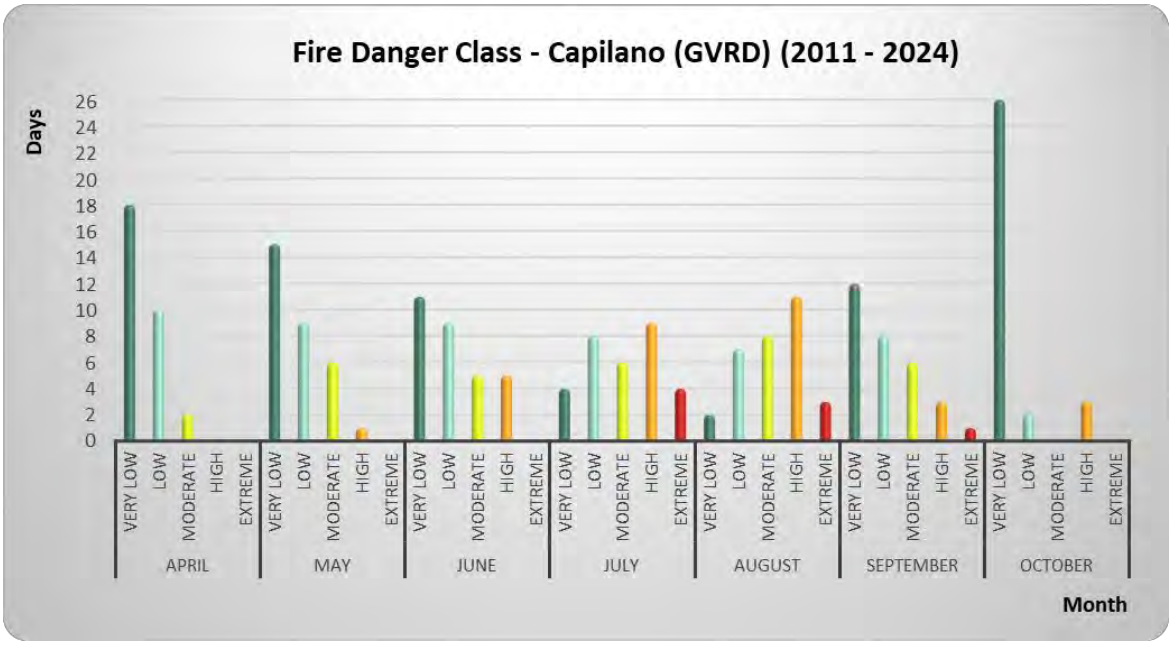


Figure 4: Average number of fire danger class days by month at the Capilano (GVRD) weather station.

The weather data shows that high fire danger class days have occurred from May through October, with extreme hazard conditions historically restricted to July, August, and September. For July through September, there have been an average of 31 days at either high or extreme fire danger, occurring on 34% of days. However, the occurrence of high fire danger days in May, June, and October indicate that the potential for fire starts begins early in the year and extends well into the fall. West Vancouver's 2019 CWPP utilized data from this same weather station between 2002 and 2018 and drew the following conclusions: there had been no high danger days in May and October, and approximately two less high danger days and two less extreme danger days in July and August.

[41] When comparing 90th percentile Fire Weather Indices from the TS Elphinstone, TS McNabb, and UBC Research weather stations.

Hourly wind speed and direction is also recorded at BCWS weather stations, which are critical components of fire behaviour. Data is publicly available in the form of Initial Spread Index (ISI) roses, though there is no ISI rose accessible for the Capilano GVRD station.[42] ISI is a numeric rating of the expected rate of fire spread that combines the effects of wind speed and fine fuel moisture (controlled by temperature and relative humidity). The ISI rose for the TS Elphinstone weather station is shown in Figure 5 . The length of each of the segments indicates the proportion of days where winds occur from that cardinal direction; the color indicates ISI value. A higher ISI value corresponds with a higher potential spread rate, where values less than 10 are generally associated with very little fire spread potential based on ISI alone. Though high ISI values are very infrequent, they are shown from every cardinal direction which is important to note. High fire spread due to wind is highly unpredictable and would likely be associated with the passing of a storm front or an arctic outflow, while local topography (e.g., presence of mountains, drainages, and the orientation of the coastline) can influence local weather patterns. Local BC Wildfire Service staff have shared a concern with fire spread potential in the West Vancouver area as a result of weather / wind events.

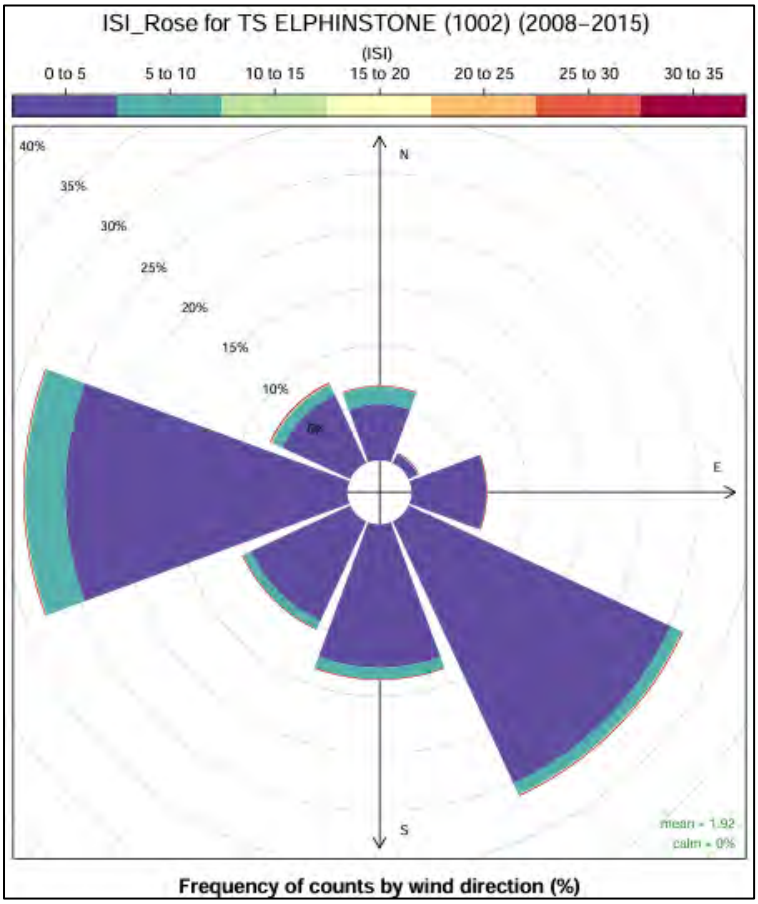


Figure 5. Average daily wind speed and direction during the fire season (April – October) for the TS Elphinstone weather station.

[42]BC Government – Tools for Fuel Management. Initial spread index roses: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/fire-fuel-management/fuel-management

Climate Change

Climate change is a serious and complex aspect to consider in wildfire management planning. Numerous studies outline the nature of climate change impacts on wildland fire across Canada, and globally.[43] Although there are uncertainties regarding the extent of these impacts on wildfire, the frequency, intensity, severity, duration, and timing of wildfire and other natural disturbances is expected to be altered significantly with the changing climate.[44] Despite the uncertainties, trends within the data are visible.

Climate scientists expect that the warming global climate will trend towards wildfires that are increasingly larger, more intense, and more difficult to control. It is likely that these fires will be more threatening throughout the wildland-urban interface due to increased potential fire behaviour, fire season length, and fire severity. Researchers studying the relationship between climate change and potential impacts of wildfires to Canadian forests have found that:

- Fuel moisture is sensitive to temperature change, and projected spring precipitation increases will be insufficient to counteract the impacts of the projected summer precipitation decreases and increases in temperature. Results conclude that future conditions will include drier fuels and a higher frequency of extreme fire weather days.[45]
- The future daily fire severity rating (a seasonally cumulative value) is expected to have higher peak levels, and head fire intensity is expected to increase significantly in western Canada. The length of fire seasons is expected to increase, and the increase will be most pronounced in the northern hemisphere. Fire season severity seems to be sensitive to increasing global temperatures; larger and more intense fires are expected, and fire management will become more challenging.[46,47]

West Vancouver's Climate Action Strategy,[48] Urban Forest Management Plan,[49] and Climate Projections for the Metro Vancouver[50] have reported on the current and anticipated impacts of climate change locally, including a potential increase in wildfire activity and vulnerability of forests due to drought. The following projected changes to climate in West Vancouver for the 2050s and 2080s have been noted:

- Average daily maximum temperature increases, with the largest increases in the summer (3.7°C and 6.0°C increases) – likely resulting in lower fuel moisture and higher fire danger.

[43] Flannigan, M.D et al. 2009. *Implications of changing climate for global wildland fire.* International Journal of Wildland Fire 18, 483-507.
[44] Dale, V., L. Joyce. S. McNulty, R. Neilson, M. Ayres, M. Flannigan, P. Hanson, L. Irland, A. Lugo. C. Peterson, D. Simberloff, F. Swanson, B. Stocks, B. Wotton. 2001. *Climate Change and Forest Disturbances*. BioScience 2001 51 (9), 723-734.
[45] Flannigan, M.D., B.M. Wotton, G.A. Marshall, W.J. deGroot, J. Johnston, N. Jurko, A.S. Cantin. 2016. *Fuel moisture sensitivity to temperature and precipitation: climate change implications*. Climatic Change (2016) 134: 59-71. Retrieved from: https://link.springer.com/content/pdf/10.1007%2Fs10584-015-1521-0.pdf
[46] Flannigan, M.D., A.S. Cantin, W.J. de Groot, M. Wotton, A. Newbery, L.M. Gowman. 2013. *Global wildland fire season severity in the 21st century*. Forest Ecology and Management (2013) 294: 54 - 61.
[47] Jandt, R. 2013. *Alaska Fire Science Consortium Research Brief.* 2013-3.
[48] District of West Vancouver – Climate Action Strategy (2024). Retrieved from: https://westvancouver.ca/government-administration/strategies-reports/strategies-plans/climate-action-strategy
[49] Diamondhead Consulting for the District of West Vancouver – Urban Forest Management Plan (2024). Retrieved from: https://westvancouver.ca/government-administration/strategies-reports/strategies-plans/urban-forest-management-plan
[50] Pinna Sustainability Inc. for the Capital Regional District – Climate Projections for Metro Vancouver (2016). Retrieved from: https://metrovancouver.org/services/air-quality-climate-action/Documents/climate-projections-for-metro-vancouver-2016.pdf

- Average nighttime low temperature increases, with the largest increases in the summer (3.2°C and 5.2°C increases) – likely resulting in less overnight recovery therefore sustained fire danger and intensity.
- Total summer precipitation decreases (19% and 29%) – likely resulting in more prolonged droughts, lower fuel moisture, increased tree stress and mortality, and higher fire danger.
- Dry spell increases (consecutive days in which the daily precipitation is less than 1 mm – 22% and 37% increases in duration).
- Increase in the number of days > 30°C (12 and 27 additional days).

Projected climate change impacts are also expected to increase the vulnerabilities of trees and forests. Less moisture availability for trees will result in drier soils and vegetation, forest pests may reproduce more rapidly and more often, and trees and ecosystems may be more vulnerable to attack[33] Regional climate change extension notes suggest that although many tree species in the Coast region appear physiologically resilient to the impacts of climate change, western redcedar and arbutus may decline in the region due to water stress.[51]

[51] Ministry of Forests. (2016). Adapting natural resource management to climate change in the West and South Coast regions: considerations for practitioners and government staff. https://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/nrs-climate-change/regional-extension-notes/coasten160222.pdf

4.2 WILDFIRE HISTORY

4.2.1 NATURAL DISTURBANCE REGIME

West Vancouver's WUI can be characterized using the Biogeoclimatic Ecosystem Classification (BEC) system, which classifies the province into zones by vegetation, soils, and climate. Regional subzones are derived from relative precipitation and temperature. These subzones define the climate of the area and are associated with a Natural Disturbance Type (NDT) that indicates the frequency and severity of pre-colonial disturbance events. The four BEC Zones found within the CWRP area are displayed in Table 14 and will be described in further detail below.

Table 14. Biogeoclimatic zones and natural disturbance types in West Vancouver's Eligible WUI.

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent of Eligible WUI (%)
CWHxm1: Coastal Western Hemlock; Very Dry Maritime; Eastern	NDT2	2,067	33%
CWHdm: Coastal Western Hemlock; Dry Maritime	NDT2	3,325	53%
CWHvm2: Coastal Western Hemlock; Very Wet Maritime; Montane	NDT1	758	12%
CWHvm1: Coastal Western Hemlock; Very Wet Maritime; Submontane	NDT1	155	2%

The CWH xm1 is the driest BEC zone within the West Vancouver area and occurs at the lowest elevations, generally west of 21st Street and downslope of Highway 1. The xm1 has warm, dry summers, with seasonal water deficits on zonal and drier sites.[52] Additional climate data from the CWH xm1 is displayed in Table 15, in comparison to the other three BEC zones found within the WUI. Upslope of the xm1, the CWH dm occurs and is also characterized by warm and relatively dry summers, though only minor water deficits are experienced on zonal sites. Mean summer precipitation is considerably higher than in the xm1, with a much lower summer heat to moisture ratio. The CWH dm BEC zone covers the majority of the WUI and the remainder of the developed areas within West Vancouver (with the exception of the Hollyburn Cabins and Cypress Provincial Park). The highest elevation portions of the WUI are characterized as CWH vm1 or vm2, which are separate variants of the Coastal Western Hemlock very wet / maritime BEC Zone. Both of these variants are characterized by high annual precipitation and much higher summer precipitation than the xm1 or dm, with relatively cool and humid summers.

[52] Province of BC – Land Management Handbook 28. A field guide for site identification and interpretation for the Vancouver forest region.

Table 15: Select climate data for the four biogeoclimatic zones within the West Vancouver WUI.[53]

Biogeoclimatic Zone	Mean Warm Month Temperature	Mean Summer Precipitation (June-July-August)	Summer Heat : Moisture Ratio
CWH xm1	17 °C	285 mm	62
CWH dm	16.7 °C	408 mm	42
CWH vm2	14.8 °C	624 mm	27
CWH vm1	14.8 °C	733 mm	22

The CWH xm1 and CWH dm are provincially recognized as having a NDT2 disturbance regime, which is characterized by infrequent stand-initiating disturbances by the BC Biodiversity Guidebook. The Guidebook describes occurrences of fire every 200 years are likely for this Natural Disturbance Type. Additional analyses have identified that the fire return interval in coastal ecosystems is highly variable, and overall, poorly studied. However, according to the literature that is available, fire regimes in drier coastal ecosystems such as West Vancouver were likely mixed severity – with a combination of low-, moderate-, and high-severity burns. Low severity fires will burn on the surface and may kill many small saplings, but only a few large trees; moderate severity fires can cause patchy mortality, while high-severity fires can cause mortality for many large trees.[54] As a result, forests may historically have been characterized by a combination of even-aged and uneven-aged stands. Overall, wildfire has historically been recorded as an infrequent, but not rare or undocumented, disturbance in this landscape. Numerous studies in coastal British Columbia have documented a much higher occurrence of fires in coastal temperate rainforests near known Indigenous habitation sites, displaying the presumptive use of fire as a land management practice.[55,56] Evidence specific to this land management practice on the North Shore is currently limited.

The upper elevation ecosystems (CWH vm1 / vm2) in West Vancouver's WUI are provincially recognized as having an NDT1 disturbance regime, which the BC Biodiversity Guidebook defines as being characterized by rare stand-initiating disturbance events. However, in the context of fire disturbances, recent literature has challenged this strict classification. Instead, it suggests that these ecosystems were historically shaped by low- and mixed-severity fires resulting in fine-scale gap dynamics in the forest.[57]

While recognizing natural disturbance regimes and natural forest types by BEC Zone within the WUI provides useful insight into fire risk and land management, it is important to consider the historic context of forests in West Vancouver. Many of the forest types currently found throughout the WUI, especially in and adjacent to developed areas, are not good representations of "natural" forest types that would be

[53] UBC Centre for Forest Conservation Genetics, Subzone/Variant Climate Data. Retrieved from: https://cfcg.forestry.ubc.ca/resources/cataloguing-in-situ-genetic-resources/subzonevariant-climate-data/#CWH
[54] Droner, B. and Wong, C. (2003). Prepared for the Coast Information Team, Natural Disturbance Dynamics in Coastal British Columbia. https://www.for.gov.bc.ca/tasb/slrp/citbc/b-NatDist-DornerWong-May03.pdf
[55] Hoffman, KM, Gavin, DG, Starzomski, BM. 2016. Seven hundred years of human-drive and climate-influenced fire activity in a British Columbia coastal temperate rainforest. *R. Soc. Open sci.* **3:** 160608. http://dx.doi.org/10.1098/rsos.160608
[56] Hoffman, KM, Gavin, GD, Lertzman, DJ, Starzomski, BM. 2016. 13,000 years of fire history derived from soil charcoal in a British Columbia coastal temperate rain forest. *Ecosphere*. **7**: 7. https://doi.org/10.1002/ecs2.1415
[57] Daniels, L.D., & Gray, R. W. 2006. Disturbance Regimes in Coastal British Columbia. Journal of Ecosystems and Management, Vol. 7(2). DOI: https://doi.org/10.22230/jem.2006v7n2a542

found in these ecosystems in the absence of human settlement. This is largely the result of historic land clearing practices (e.g., logging and development), the removal of natural disturbances (e.g., fire suppression), and the introduction of invasive species.

4.2.2 HISTORIC WILDFIRE OCCURENCES

Historical fire ignition and fire perimeter data for West Vancouver's WUI and the surrounding area are depicted on Map 6. Analyzing BCWS' historical fire ignition dataset (summarized in Figure 6), approximately 20% of fires have been lightning-caused, with decadal fluctuations in the number of human-caused fires. "Unknown" wildfires reported in the 2000s and 2010s are attributed to "smoke chases" or "nuisance fires" – though these are still shown as they involved an active response by BC Wildfire Service crews. There have been 228 recorded ignitions in the surrounding area (within 5 kilometres of West Vancouver's WUI) since 1950, with 53 of these having ignited inside the 1-kilometre WUI. Figure 7 displays the cumulative area burned in this same area between 1919 and 2019, showing that very little area has burned since the 1940s. Additionally, the vast majority of historic area burned has been from human caused ignitions.

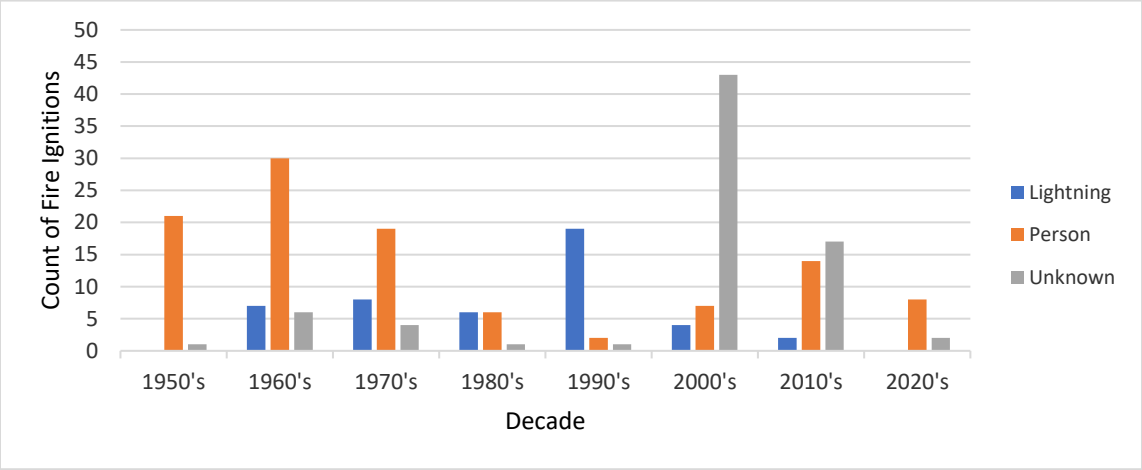


Figure 6: Historical wildfire ignitions within a 5-kilometre buffer of the West Vancouver area, categorized by ignition cause and decade. "Unknown" fires generally correspond to smoke chases or nuisance fires. Data from BCWS ignition dataset – Data BC.

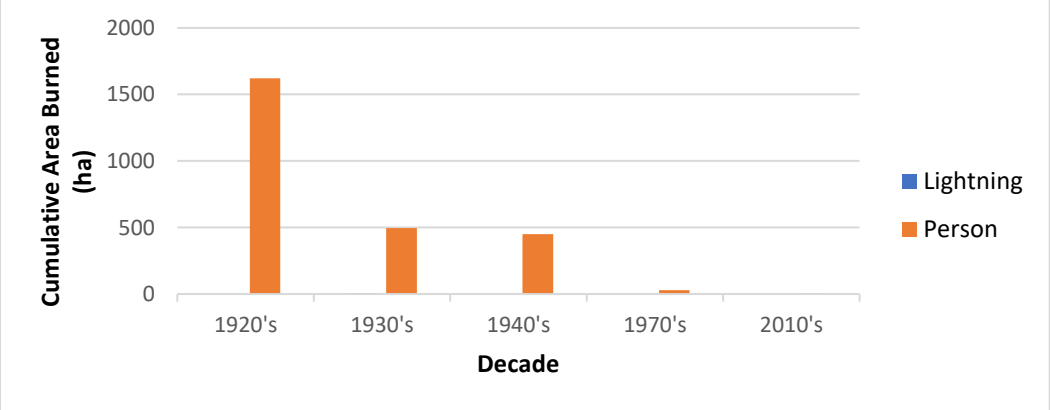


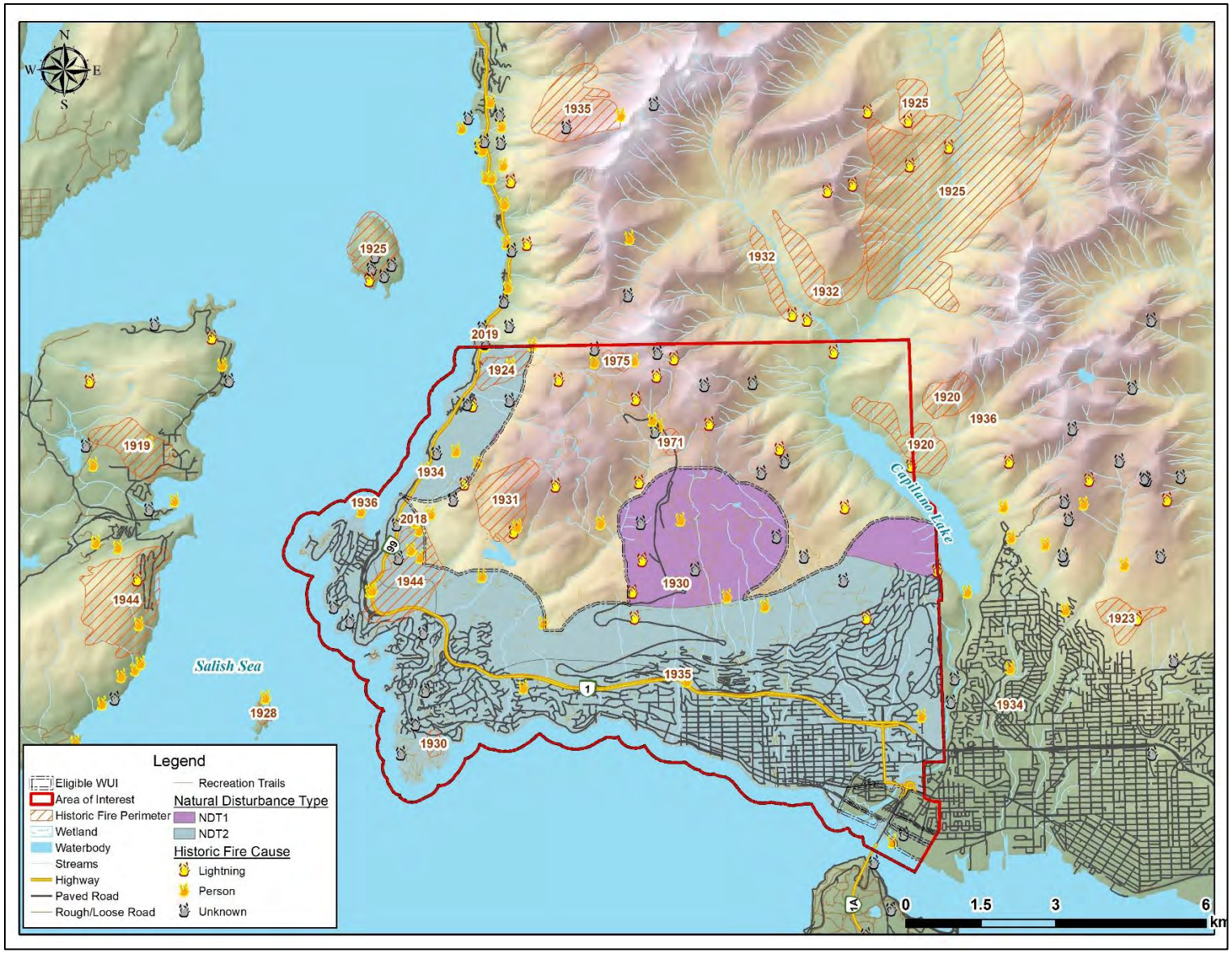
Figure 7: Historical cumulative area burned by wildfires originating within a 5-kilometre buffer of the West Vancouver WUI. Data from the BCWS fire perimeter dataset - Data BC.

The four most notable recent fires in the West Vancouver area are summarized in Table 16. Across multiple fire events in West Vancouver, the BC Wildfire Service has faced ongoing challenges coordinating with multiple agencies and ensuring the safety of both the public and first responders due to how easily people can access active wildfire areas.

Table 16: Summary of notable fire events in the West Vancouver area since 2018.

Fire Number - Year (Name)	Fire Size (Hectares)	Fire Information
2023 Horseshoe Bay / Highway 99	1.0	-Human-caused, adjacent to a parking / information area. -Mutual aid fire event with District of North Vancouver. -Identified the need for a Type 5 fire apparatus for WVFR.
2022 Eagle Ridge	2.0	-Human-caused, related to camping / cooking. -Mutual aid with the BC Wildfire Service and NSEM. -Water supply for helicopter bucketing was challenging, as the only nearby source was Eagle Lake (community drinking water supply).
V30699 – 2019 Highway 99	4.5	-Human-caused, resulted in highway closures for suppression and hazard tree removal. -Successful mutual aid between BC Wildfire Service and municipal fire departments. -Water access issues and steep and challenging topography made suppression challenging.
V12347 – 2018 Whyte Lake	3.2	-Human-caused, related to camping / cooking. -Continued to burn for a one-week period, resulted in trail closures and disruptions to Highway 99. -Mutual aid response with the BC Wildfire Service and Metro Vancouver crews.

Overall, human-caused fires (which includes escaped structure fires, industrial fires, vehicles fires, campfires, arson, etc.) pose the highest wildfire ignition risk within the West Vancouver WUI. Common ignition concerns from local officials are from improperly discarded smoking materials, individuals camping or experiencing homelessness in the interface, vehicle fires, construction fires, outdoor cooking appliances, backyard burning, fireworks, and structure fires that spread through landscaping or into the forest interface. The WVFR and municipal staff have worked to combat these concerns through educational postings and local bylaws (see Section 5.2). The WVFR has attended to an average of 62 confirmed fires annually since 2020, which does not include attended beach fires. In this same time period, there were 689 total burning complaints resulting in a Fire Department call out.



Map 6: Historical fire ignitions (1950 – 2022) and fire perimeters (1920 – 2023) within and adjacent to the District of West Vancouver. Fire perimeters are only shown for fires larger than one hectare (note – the Eagle Ridge fire from 2022 is not captured in this database).

4.3 RISK FRAMEWORK AND RISK CLASS MAPS

Differing risk levels require tailored risk management to minimize negative impacts from wildfires to communities and high value critical infrastructure. The intent is to enable cost effective wildfire risk reduction strategies that will mitigate wildfire threat to communities and values at risk, at local and provincial scales. Through the identification of risk level, priorities for mitigation and opportunities for increasing community resiliency are both enhanced.[58]

Provincial Strategic Threat Analysis

The Provincial Strategic Threat Analysis (PSTA) is a series of publicly available spatial layers that are designed to consistently assess and map different aspects of wildfire threat and risk around the province.[59] The PSTA is a starting place from which more detailed local threat assessments can be performed (Section 4.4), and can be used to support the development of FireSmart funding applications under the UBCM FCFS program. The PSTA Fire Threat Rating integrates coarse scale, provincially determined wildfire threat components such as fire likelihood (historical fire occurrence), potential severity (weather conditions and fuel type), and wildfire propagation potential (spotting). Notably, this threat analysis does not extend onto private land.

In addition to the PSTA, the BC Wildfire Service has developed the WUI Risk Class Framework, which defines the WUI based on a 2.75-kilometre buffer around a specified structure density. This Risk Class Framework combines with threat ratings from the PSTA to produce weighted risk class polygons – with "1" being the highest relative risk in the province and "5" being the lowest. The District of West Vancouver has a WUI Risk Class of "5". Although this represents the historic approach to defining the WUI in BC, this process doesn't account for the density or economic value of infrastructure, or any non-structural values that may be considered values at risk for a community. This highlights the importance of local community wildfire planning. The PSTA Fire Threat Rating throughout the WUI is displayed in Table 17, and shown spatially along with the WUI Risk Class Rating on Map 7.

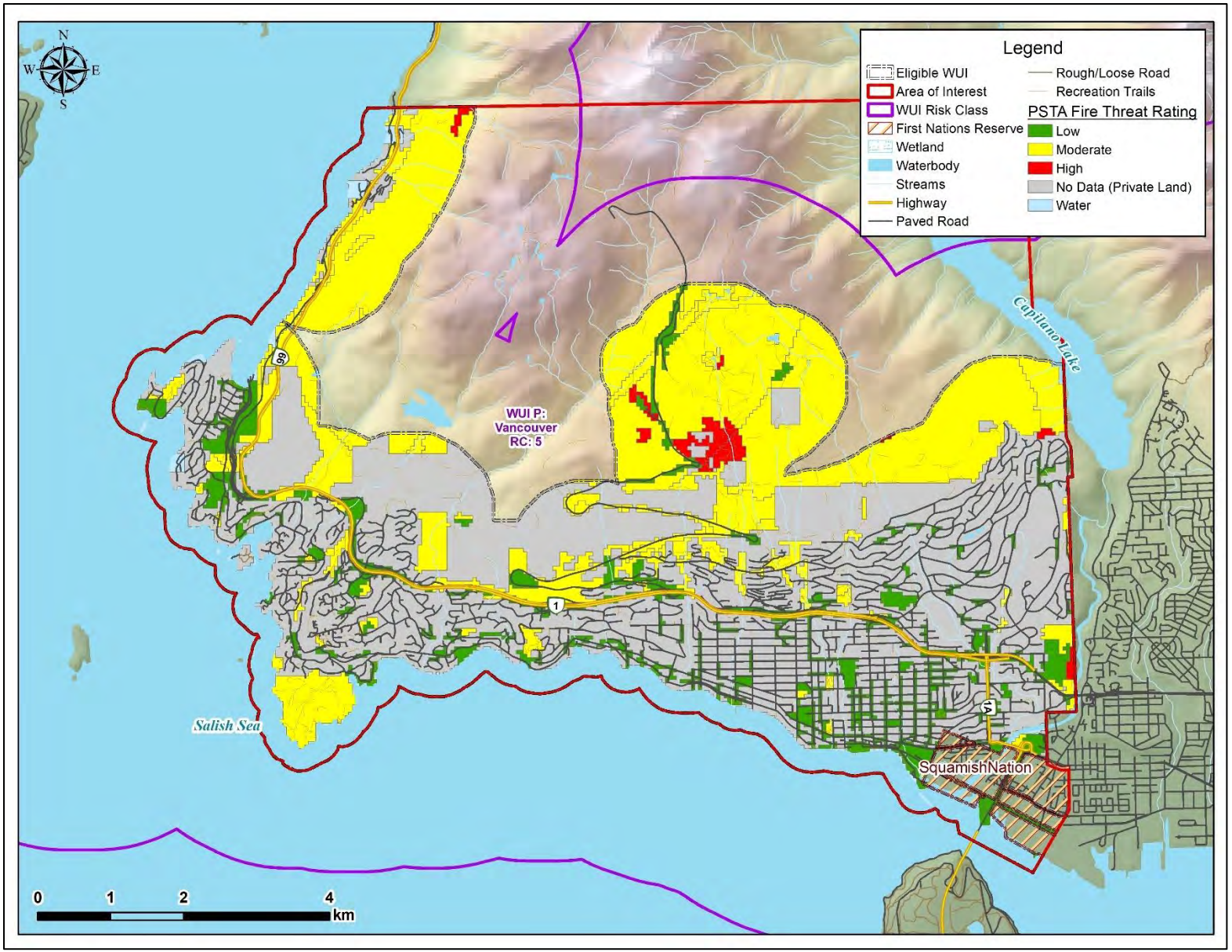
Table 17. Provincial Strategic Threat Analysis (PSTA) score for West Vancouver's Eligible WUI.

PSTA Fire Threat			
Threat Class	**Hectares**	**Percentage (%) of Eligible WUI[60]**	**Percentage (%) of Assessable Public Land**
Extreme	0	0%	0%
High	60	1%	2%
Moderate	1,858	29%	55%
Low	584	9%	17%

[58] Community Resiliency Investment. (2023). *FireSmart Community Funding and Supports Supplemental Instruction Guide.* Retrieved from: https://www.ubcm.ca/funding-programs/local-government-program-services/community-resiliency-investment/firesmart-0

[59] https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/fire-fuel-management/psta

[60] Areas represented as *Water* or *Private Land* through the PSTA database have been intentionally not shown in Table 17 to avoid inconsistencies with Table 18.



Map 7. District of West Vancouver PSTA Fire Threat Rating and WUI Risk Class Rating

4.4 LOCAL WILDFIRE RISK ASSESSMENT

There are two main components of the local wildfire risk assessment for this CWRP: the analysis of the Wildfire Threat Class (which contains fuels, weather, and topography sub-components) and the WUI Risk Class (which includes a structural sub-component). This process includes several key steps as outlined in and summarized as follows:

- Fuel type attribute assessment: Ground truthing/verification and updating as required to develop a local fuel type map.
- Consideration of the proximity of fuel to the community: Recognizing that fuel closest to the community usually represents the highest hazard.
- Consideration of topography in relation to values: Slope percentage and slope position of the value are considered, where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill.
- Stratification of the WUI: According to relative wildfire threat based on the above considerations, other local factors, and field assessment of priority wildfire risk areas.

It is important to note that the Local Wildfire Risk Assessment analysis did not apply to any areas outside of the eligible WUI, nor any private land. As well, the assessment quantifies threat as it relates to forest fuels and does not include the ignition potential of residential landscaping, structures, or other infrastructure. Structure fires and structure-to-structure spread in a wildfire scenario are largely attributable to hazardous conditions in the Home Ignition Zone of a structure (i.e., the area within 30 m of the principal building and/or its attachments) and are a concern of WVFR members. However, the analysis does provide relevant information regarding wildfire threat that should be considered for FireSmart and emergency management planning and preparedness.

Wildfire Threat Class Analysis

Twenty-one Wildfire Threat Assessment (WTA) plots were completed over several field days in October 2024 in conjunction with verification of fuel types to support analyses and the potential delineation of fuel management areas (see Appendix B: WTA Plots and Photos). In addition, approximately 450 field stops were documented (e.g., qualitative notes, fuel type verification, and/or photograph documentation) throughout the WUI in areas that had road or trail access, to build an accurate assessment of local fire risk. Field assessment locations were prioritized based upon:

- Proximity to values at risk: Field assessments were clustered in the intermix and interface, as well as around critical infrastructure.
- Local knowledge: Areas identified as hazardous, potentially hazardous, with limited access/egress, or otherwise of particular concern as vulnerable to wildfire, as communicated by local fire officials and community representatives.
- Observations: Additional areas potentially not recognized prior to field work were visually identified as hazardous and assessed during the week.

- Verifying provincial classification: Areas classified as higher threat in the Provincial Strategic Threat Analysis dataset, or with an uncommon fuel type, were assessed to ground-truth the fuel type and threat even if they were relatively far from values.

Based on the local wildfire threat analysis, classes of wildfire threat are as follows:

- High: Landscapes or stands of continuous forested fuels that will likely support intermittent crown fires or continuous crown fires. High threat areas were only found in continuous and dense C-3 fuel types on sloped terrain.
- Moderate: Forested or vegetated areas where there is a potential for rapid surface fire spread (due to fuel type or slope) and torching.
- Low: Developed and undeveloped land that will likely not support significant wildfire spread unless heavily wind driven.
- Very Low: Waterbodies with no forest or grassland fuels, posing no wildfire threat.

The results of the wildfire threat class analysis are shown on Map 8 and in Table 18. The local threat analysis shows that 37% of assessable public land in the Eligible WUI is classified as moderate wildfire threat, and 40% is classified as low wildfire threat.[61] Moderate threat areas are most associated with both conifer and mixedwood fuel types on steep slopes and/or on southern or western aspects, and continuous grass or blackberry thickets especially in lower elevation areas. Low threat areas are most associated with deciduous stands, low slope areas, eastern aspects, shrubby rights-of-way, or higher elevation areas. Less than 1% of the WUI has been classified as high wildfire threat, much of which is found in a consistent and higher density conifer stand on sloped terrain. This area is adjacent to a previous fuel treatment that is in the direct interface with private properties – in which the immediate ~50-meter interface forest now contains a low threat stand.

It should be noted that more than 40% of the Eligible WUI is not assigned any wildfire threat rating given that it overlaps private land. Assessment of private land is outside the scope of this CWRP.[62] Conditions on private property were frequently observed where the fire hazard was considerably higher than that in the surrounding rights-of-way or municipal parkland.

[61] 62% of this low-threat area (25% of the total Eligible WUI) are areas that were assigned a “non-fuel” fuel type. As discussed in Section 4.1.1, non-fuel was assigned to intensively managed District parks, regularly mowed/maintained areas, sprawling private properties, and many road rights-of-way were assigned a ‘non-fuel’ type.
[62] Per 2024 CRI Program & Application Guidelines.

Table 18: Local Wildfire Threat Class Analysis ratings.

Wildfire Threat			
Threat Class	**Hectares**	**Percentage of Eligible WUI**	**Percentage of Assessable Public Land**
Extreme	0	0%	0%
High	11	<1%	<1%
Moderate	1,381	22%	37%
Low	1,515	24%	40%
Very Low / No Threat (Water)	834	13%	22%
No Data (Private Land)	*2,564*	41%	-

WUI Risk Analysis

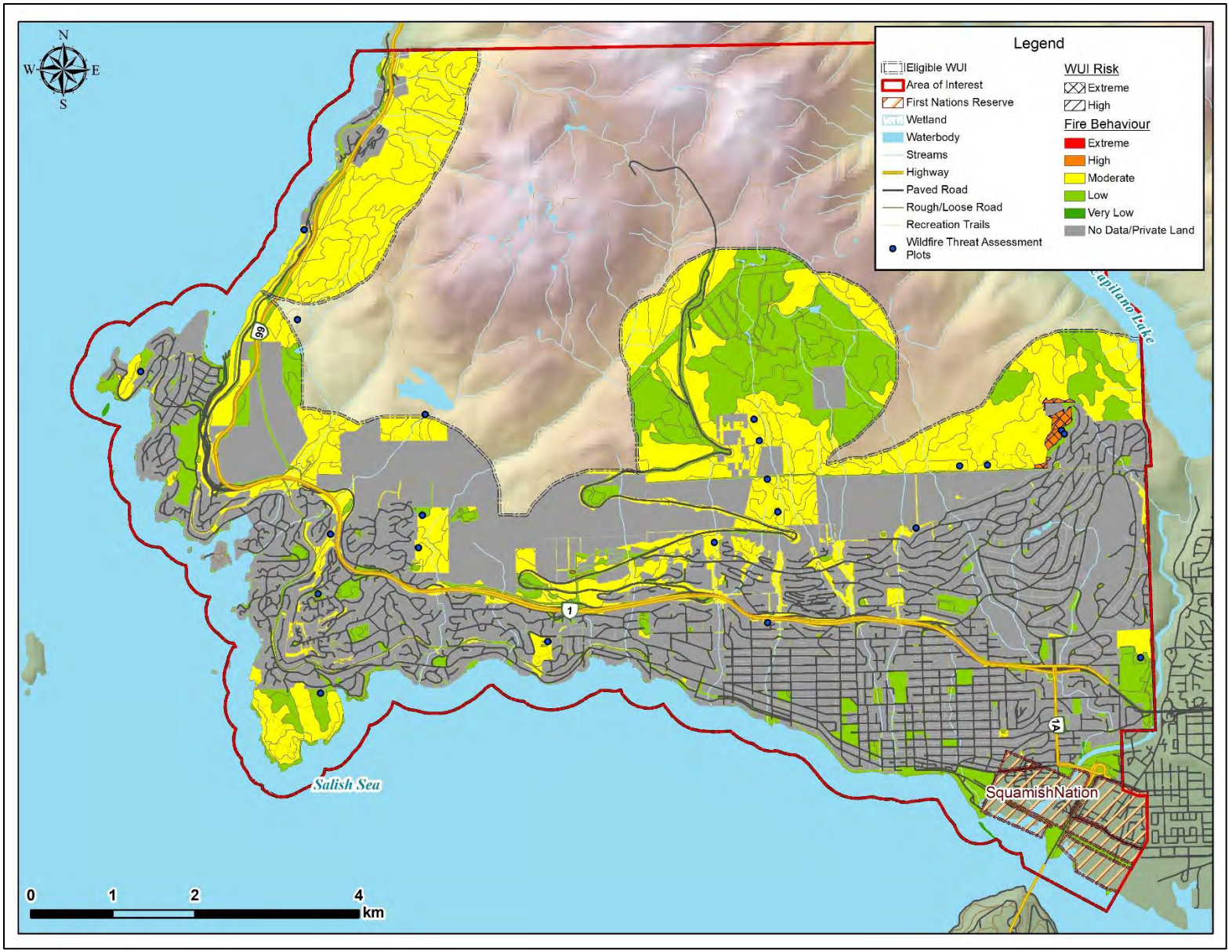
In this analysis, WUI Risk is quantified when the Wildfire Threat (the above) is assessed as high or extreme, causing a higher potential of unacceptable wildfire risk when near communities and developments. WUI Risk Classes are described below:

- Extreme: The high or extreme threat has potential to directly impact a community or development and is located within 200m from structures.
- High: The high or extreme threat has potential to directly impact a community or development and is located 200m to 500m from structures.
- Moderate: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located 500m to 2 km distance from structures, and
- Low: The high or extreme threat is sufficiently distant from developments, having no direct impact of the community and is located over 2 km from structures.

Table 19 below (and also displayed on Map 8) summarizes the WUI Risk Classes within West Vancouver. As there were very few high wildfire threat polygons identified, WUI Risk was not an applicable classification process for the majority of assessable public land in the Eligible WUI. It is also important to note that these analyses exclude private land, which is a significant limitation. These numbers should not be used to rationalize a lack of WUI risk within West Vancouver – as there are large areas in the interface for which information is not available, topographic factors to fire spread remain considerable, and climate change projections outline increasing climate-driven fire hazard in West Vancouver.

Table 19: WUI Risk Analysis ratings

WUI Risk			
Threat Class	**Hectares**	**Percentage of Eligible WUI**	**Percentage of Assessable Public Land**
Extreme	10	<1%	<1%
High	1	<1%	<1%
N/A (Moderate, Low, Very Low Threat Class)	3,731	59%	99%
No Data (Private Land)	*2,564*	41%	-



Map 8. District of West Vancouver's Local Fire Threat and WUI Risk Rating

SECTION 5: FIRESMART DISCIPLINES

FireSmart™ is the leading program in the country aimed at empowering the public and increasing neighbourhood resilience through wildfire mitigation measures. FireSmart has been implemented at the provincial / territorial level across Canada, including British Columbia since 2000. Basic FireSmart training for individuals is freely available through FireSmart Canada (FireSmart 101) and/or FireSmart BC (Local FireSmart Representative), along with a plethora of resources for homeowners, educators, and land managers at https://firesmartbc.ca/. The available training and resources provide the tools for individuals to be ambassadors for wildfire preparedness in their communities. The FireSmart program covers a wide breadth of preventative measures that are founded in the seven FireSmart disciplines:[63]

- Education
- Legislation and Planning
- Development Considerations
- Interagency Cooperation
- Cross-Training
- Emergency Planning
- Vegetation Management

These seven disciplines and the guiding principles behind FireSmart can be applied at several spatial scales and are not restricted to any type of land ownership, forest type, or property type. Sections 5.1 through 5.6 provide more in-depth information on each of the FireSmart disciplines. Recommended actions are introduced in each section and further detailed in the Executive Summary (Table 1. Community Wildfire Resiliency Plan Recommendations). Most actions identified are fundable through the UBCM CRI FireSmart Community Funding and Supports (FCFS) program.

It has been found that during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers (firebrands). Firebrands can be transported long distances ahead of a wildfire, across fire guards and fuel breaks, and can accumulate within the home ignition zone (HIZ, see Figure 8 on the following page) in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ can combine to provide fire pathways which can allow spot surface fires ignited by embers to spread and carry flames into contact with structures. Because ignitability within the HIZ is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.[64] Simple and achievable actions by property owners within their own HIZs can drastically reduce the ignitability of structures, vegetation, and materials.

[63] FireSmart BC, The FireSmart Disciplines: https://firesmartbc.ca/disciplines/
[64] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.

Figure 8: FireSmart Home Ignition Zone

Neighbourhood Overview

West Vancouver has a varying amount of forest interface area due to historic development practices and local topographic conditions. Therefore, implementing FireSmart strategies is more important for some neighbourhoods compared with others. The focus on FireSmart promotion should be on areas at higher risk from wildfire. In areas where development is more dense and forest fuel continuity is low – such as along the waterfront and in the developed commercial and residential centre of West Vancouver – adopting FireSmart principles is less important but can still have a considerable impact on the fire risk of individual properties. There are a wide range of factors that contribute both to FireSmart vulnerabilities and resiliency on private property throughout West Vancouver. These factors are summarized geographically in Table 20.

Table 20: Overview of varying vulnerabilities and resilience factors by geographic area.

Geographic Area / Neighbourhood	FireSmart Vulnerabilities	FireSmart Resilience Factors
Horseshoe Bay, Whytecliff, Gleneagles	• Complex topography and difficult access throughout. • High continuity of vegetation throughout residential areas, majority highly flammable. Vegetated rights-of-way with limited fuel management. • Cedar shake roofing and wood siding common. • Continuous private land throughout neighbourhoods, large private forested area at the north end.	• Lower slope (landscape scale). • WVFR Hall #2 is located within. • Newer, modern builds are structurally FireSmart.
Eagle Harbour, Caulfeild	• Complex topography, multiple single access/egress neighbourhoods. • High continuity of vegetation throughout residential areas, majority highly flammable. • Municipal drainages (e.g., Sahalee Trail), park areas (e.g., Plateau) and rights-of-way (railroad, transmission line, Highway 1) have limited management – often with high fuel loading and invasive species. • Continuous private land throughout neighbourhoods, extending on forested and unmanaged slopes.	• Lower slope (landscape scale). • Limited forest interface, though area is heavily intermixed. • WVFR Hall #3 is located within.
Bayridge, Westmount, Altamont	• Complex topography and access throughout. • High continuity of vegetation throughout residential areas for new and old builds, majority highly flammable. Cedar shake roofing and wood siding common on older structures. • Rights-of-way (e.g., railroad, Highway 1) have limited management. Continuous private land throughout neighbourhoods, other than municipal parks.	• Lower slope (landscape scale). • Limited forest interface, though area is heavily intermixed. • WVFR Hall #3 is located adjacent.
Dundarave, Hollyburn, Ambleside	• Higher density residential properties, high continuity of fuel due to landscaping decisions. • Older structures vulnerable (e.g., cedar shake), newer structures FireSmart. • Rights-of-way (e.g., railroad, Highway 1) have limited management. • Continuous private land throughout neighbourhoods, including forested drainages.	• Lower slope (landscape scale). • Gentle topography. • Limited forest interface – heavily developed.

Geographic Area / Neighbourhood	FireSmart Vulnerabilities	FireSmart Resilience Factors
Sentinel Hill, Cedardale	• Complex topography surrounding Sentinel Hill. • Higher density residential properties, high continuity of fuel due to landscaping decisions. • Continuous private land throughout neighbourhoods, including forested drainages.	• Lower slope (landscape scale). • Gentle topography (other than Sentinel). • Limited forest interface – heavily developed.
Cypress Park	• Large parcels on average, high continuity of fuel throughout. • Large forested and undeveloped private properties to the north with high recreational usage. • Cypress Falls Park (largely unmanaged) to the east. • Cypress Village neighbourhood is planned for the area west of Cypress Bowl Road, which will encroach into the naturally forested area.	• Underground utilities. • Fuel treatment completed in Woodburn Park (2024).
British Properties West (Chippendale, Whitby, Panorama, Canterbury, Chartwell)	• Consistently sloped terrain, long and often narrow access for WVFR. • Highly flammable vegetation planted and continuous between majority of properties. • BPP West: Private land throughout neighbourhoods though separated by municipal drainages which are forested and largely unmanaged. Furthest west developments have had the fuel reduced in municipal park areas prior to dedication.	• Structural conditions often FireSmart. • Underground utilities. • Densely developed – majority of natural vegetation removed.
British Properties East, Glenmore	• BPP East: Private land throughout neighbourhoods, including riparian corridors. Large forested and unmanaged private land parcels upslope, high recreational usage. • BPP East: Capilano River Regional Park downslope to the east (mostly unmanaged, high recreational use) and Capilano Water Supply Area to the north / east (mostly unmanaged).	• Structural conditions often FireSmart. • Densely developed – majority of natural vegetation removed. • Minor fuel management initiatives in the Cap. Water Supply Area (around infrastructure) and Cap. River Regional Park (interface and trailside). • West Vancouver fuel management in Cypress (2022) and Ballantree (2023) areas.

Geographic Area / Neighbourhood	FireSmart Vulnerabilities	FireSmart Resilience Factors
Isolated Locations: *Pasco Road, Seascape, Ansell/Citrus Wynd, Hollyburn Cabins*	• Isolated locations – difficult and/or prohibitive access by WVFR. • No fire hydrant coverage and limited available water supply for suppression for Hollyburn Cabins. • Pasco Road and Hollyburn Cabins are heavily intermixed with forested areas on steep slopes, much of which is on private land. • Cypress Provincial Park (unmanaged) located on steep slopes above Highway 99. • Vegetation and/or slash accumulations are common along rights-of-way (e.g., railroad, transmission lines, Highway 99). • Highly flammable landscaping and unmanaged vegetation provide considerable fuel continuity throughout neighbourhoods.	• Lower slope (landscape level) – Pasco, Seascape, Ansell, Citrus • FireSmart structures in Seascape • FireSmart Assessments performed for Hollyburn Cabins

5.1 EDUCATION

Description

Public education and outreach play a critical role in helping a community prepare for and prevent a wildfire. Participating in wildfire risk reduction and resiliency activities also promotes a sense of empowerment and shared responsibility. A successful public education campaign that builds awareness and understanding among residents and visitors can support the implementation of projects related to other FireSmart disciplines. In addition to public education, West Vancouver can advance FireSmart progress by leading through example – using positive reinforcement by demonstrating best practices in FireSmart landscaping, vegetation management, and building design. FireSmart education activities constitute the 'engagement' phase of the FireSmart Roadmap and are the foundation for progress towards resiliency.

Analysis

Expanding fire risk awareness and FireSmart communication and education initiatives throughout West Vancouver was stressed in the communities previous CWPP. The 2019 CWPP highlighted the need to further educate the community at large on what private landowners can do to build a FireSmart community and take personal responsibility for the ignition potential of their homes, businesses, lands, and neighbourhoods. This need remains relevant in 2025 and looking ahead, as the greatest interface fire risks in West Vancouver are found on private land, where there has been very limited action to date to mitigate these risks.

While there is notable room for improvement in FireSmart awareness across West Vancouver, there is a strong understanding of the wildfire risk and the FireSmart program among many District and WVFR staff. There have also been notable improvements to the District's FireSmart program since 2019, highlighted by the following initiatives:

- Completed 140 Home Ignition Zone (HIZ) assessments (at the time of writing this CWRP);
- Completed 31 Critical Infrastructure assessments, with upgrades completed to the four WVFR fire halls in response;
- Completed four FireSmart Neighbourhood assessments;
- Held numerous public education workshops, engaged the community at public events, and disseminated information to property developers for the Wildfire Hazard Development Permit Area (DPA – see Section 5.3);
- Began a social media campaign to communicate fire danger ratings and property preparedness;
- Established the FireSmart Plant Program at the Maple Leaf Nursery;
- Offered a chipping service to property owners who completed HIZ assessments;
- Established the FireSmart Library Program in 2024;
- Updated the District FireSmart webpage regularly, which provides information on available assessments, recorded workshops, the Wildfire Hazard DPA, and volunteer opportunities;[65] and

[65] West Vancouver, FireSmart Community: https://westvancouver.ca/services/emergency-services/fire-rescue/firesmart-community

- Updated the District Community Wildfire webpage regularly, which provides access to the previous CWPP and associated maps, fuel management initiatives, and more.[66]

While the District of West Vancouver has had numerous early successes, there are still plenty of opportunities to expand on this FireSmart discipline. Because of the coastal environment and the urban setting in many parts of the District, the main challenge for West Vancouver is to develop relevant messaging that effectively engages the most at-risk residents. Public interest tends to peak after extreme or nearby wildfire events and wane when fire danger is low or moderate. West Vancouver does not have the same risk profile as other communities in the province – but interface fire can adversely impact values within the municipality. Additionally, fire events that are within or visible from the District often receive considerable media attention, though there has been a lack of attention paid to FireSmart or preparedness initiatives in local newspapers or media outlets.

Action Planning

Previous activities have established a well-rounded FireSmart educational strategy in the District, and staff involved are motivated to grow these programs. It is recommended that the District expand their FireSmart outreach efforts through a variety of programs – staying flexible and adaptive in response to successes and/or challenges that they experience. Education initiatives in West Vancouver will not be able to take a one-size-fits-all approach due to the variety of risk factors in different neighbourhoods. However, many vulnerabilities are common within individual neighbourhoods, and addressing these shared risks at the neighbourhood level can be the most effective strategy for mitigation. Neighbourhood clean-up efforts can systematically address vegetation of concern, and include often overlooked areas like boulevards, rights-of-way, and fence lines to reduce fire pathways between homes. To date there has been a recognized challenge with implementing the FireSmart Neighbourhood Recognition Program in West Vancouver, largely due to a lack of involvement from community leaders.

As mentioned in Section 3.3, West Vancouver has had FireSmart assessments completed on multiple pieces of critical infrastructure and community assets – focusing on fire halls, schools, and community buildings. While assessments are a positive step, follow-up mitigation is the only way to effectively reduce risk. Follow up mitigation has been limited to date. Additionally, other than the facilities at Eagle Lake, critical infrastructure that is part of the municipal water supply system has not had assessments (or mitigation) performed, and much of this infrastructure is found in the forest interface or surrounded by hazardous vegetation. Professionally assessing these hazards and performing proactive mitigation work (either structural upgrades or vegetation management) is key in achieving long-term resilience.

To date, FireSmart educational initiatives have largely been managed by WVFR staff and District environmental staff, though many services have been provided through third-party consultants. WVFR staff have expressed the desire to dedicate more in-house staffing to FireSmart initiatives, grant applications, and assessments (which is further discussed in Section 5.5). Having this expertise in-house will benefit WVFR staff in terms of interface fire risk knowledge, while providing communication from a local, trusted, and recognizable group. West Vancouver staff should continue to discuss with and learn

[66] West Vancouver, CWPP: https://westvancouver.ca/services/emergency-services/fire-rescue/community-wildfire-protection-plan

from other communities (e.g., the North Shore FireSmart Committee / Working Group) about how to build up a FireSmart program that addresses the concerns and risks unique to its population.

Detailed recommendations related to FireSmart Education can be found in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include the following (high priority recommendations are in bold):

#1 Maintain and Expand Current FireSmart Outreach	**#2 Distribute FireSmart Materials**	#3 Continue to Conduct HIZ / WMP Assessments
#4 Continue to Conduct CI Assessments	**#5 Mitigate Infrastructure Hazards**	#6 Expand FireSmart Neighbourhood Recognition
#7 Establish FireSmart Rebates	#8 Incorporate FireSmart in Schools	#9 Communicate FireSmart & Fire Hazard Internally
#10 Communicate FireSmart & Fire Hazard Externally	#11 Share the CWRP Publicly	

5.2 LEGISLATION AND PLANNING

Description

Reviewing bylaws through a wildfire lens to assess where they inadvertently promote conditions that may contribute to fire spread (e.g., restrictions on vegetation management, unrestricted landscaping, lack of ignition controls), and determining where bylaws can be updated or strengthened to reduce wildfire risk to development, can help a community become more resilient to wildfire.

Analysis

West Vancouver's 2019 CWPP outlined various bylaws in detail that relate to wildfire risk and different aspects of community wildfire resiliency planning. Many of the recommendations made in the previous CWPP addressed gaps or specific language in pre-existing bylaws that allowed for higher exposure to wildfire risk throughout the District. Table 21 below displays these recommendations and highlights any proactive changes that have been made since 2019.

Table 21. Summary of local bylaws relevant to community wildfire planning.

Bylaw	Policy Description & Relationship To CWRP
Development Procedures Bylaw No. 4940	This bylaw establishes procedures related to an application for an amendment to the OCP, the Zoning Bylaw, Development Permits, and other permits, contracts, or designations. The following paraphrased recommendation was made in the 2019 CWPP related to Bylaw No. 4940: • *Review Bylaw No. 4940 and update the OCP to incorporate a Wildfire Development Permit Area where wildfire interface guidelines based on FireSmart principles apply*. The District of West Vancouver enacted a Wildfire Hazard DPA in December 2020. The DPA and related recommendations are discussed in detail in Section 5.3.
Fire Protection and Emergency Response Bylaw No. 4366 Fire Rescue Bylaw No. 5163	Bylaw 4366 was in effect when the 2019 CWPP was written – outlining various responsibilities of the Fire Chief and regulations related to public wildfire risk reduction. The following paraphrased recommendations were made in the 2019 CWPP related to Bylaw No. 4366 – though this bylaw has now been repealed and modernized into the Fire Rescue Bylaw No. 5163. • *Review Bylaw No. 4366 and update to include wording that expands the types of combustible materials that are prohibited to accumulate on private property. This should include accumulations on and under exterior projections, such as decks and patios, near the home, and in gutters and roofs. The revised bylaw should provide the District the authority to require removal/clean-up of combustible materials or to complete removal and recoup costs from the owner. Consider including language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect, or remain on the property unless securely contained.* • *Update the Fire Protection and Emergency Response Bylaw and remove reference to the Community Forester. Consider transferring the authority to action and dictate activities that may contribute to the risk of fires to the Fire Chief or other District staff.*

Bylaw	Policy Description & Relationship To CWRP
	• *Work with the Fire and Building Department (i.e., building inspectors) to ensure house numbering is posted prior to occupancy of new development and to provide instructions on how and where best to affix numbering to facilitate emergency response and evacuation efforts.* Through Bylaw 5163, West Vancouver has addressed the first two recommendations listed above and is addressing the final recommendation through a communications outreach campaign. Bylaw 5163 also requires that the Fire Chief review plans for water systems in new development, to ensure that emergency water supply will be adequate.
Tree Bylaw No. 4892	This bylaw summarizes how to regulate, prohibit and impose requirements in relation to trees. This includes the application and interpretation of the tree bylaw, protection of trees from damage, tree cutting permits and procedures, the replacement of trees and potential offences and penalties pertaining to tree cutting. The following recommendation was made in the 2019 CWPP: • *Revise Bylaw No. 4892 to include language which allows the issuance of a permit for the cutting of trees if it is required to reduce wildfire hazard within the wildland urban interface, as determined by a qualified professional (QP).* As of 2020, tree removal and/or alteration is considered under the guidance of a QP through the Wildfire Hazard DPA, discussed further in Section 5.3. Future amendments to this Bylaw are expected to ensure that protected trees are being altered (e.g., pruned) as opposed to removed.
Boulevard Bylaw No. 4886, 2016	This bylaw regulates the use and occupation of highway boulevards, especially with regards to tree cutting and vegetation maintenance along highways. Tree cutting within any boulevard is highly restricted through this bylaw – meaning the portion of any dedicated public road or trail that is not improved for vehicle or pedestrian traffic. The bylaw also requires a screen of landscaping between any fence on private property and the roadway. Although this bylaw requires maintenance of a boulevard by an adjacent property owner, increased hazards due to a lack of vegetation or debris management on boulevards was frequently observed throughout West Vancouver.
North Shore Interface Construction and Maintenance Protocol for High-Risk Work During Periods of Extreme Fire Danger Ratings	This protocol is shared between WVFR, the District of North Vancouver, and the City of North Vancouver. Based on Fire Danger Ratings from the Lower Capilano weather station, it restricts construction activity for areas within 10 metres of the forest interface during periods of Extreme fire hazard. The requirements of this protocol are much less restrictive than those that apply through the Wildfire Act or Wildfire Regulation and are inconsistently communicated across these three jurisdictions.
Parks Regulation Bylaw No. 4867	This bylaw describes how to regulate the use of parks and describes specific regulations and prohibitions as well as specific offences and penalties that may be incurred with regards to park usage – specifically managing the use of fires, fireworks, barbecues, and smoking within parks. This Bylaw is in the process of being updated to reflect new barbecue regulations – namely banning charcoal briquettes and permitting propane devices.
Smoking Regulation Bylaw No. 4607	This bylaw defines how to regulate smoking in the District of West Vancouver under the Community Charter, providing enforceable means to reduce fire ignition potential from smoking in various community areas.

Bylaw	Policy Description & Relationship To CWRP
Revised Drinking Water Conservation Plan Bylaw No. 4975, 2018 Amendment Bylaw No. 5183, 2022	Amended in 2022, this bylaw describes how to regulate the sustainable use of drinking water and fire suppression resources in accordance with the Metro Vancouver Drinking Water Conservation Plan. This bylaw covers water management plans, restriction stages, permits, exemptions and offences and penalties pertaining to the drinking water conservation plan. Certain water restriction stages may come into effect automatically such as Stage 1 restrictions which occur automatically on May 1 of every year, or they may be activated or deactivated by the Greater Vancouver Water District commissioner.

Action Planning

The legislative steps taken by West Vancouver in response to the 2019 CWPP have better prepared the District to proactively address wildfire risk. Municipal staff across multiple departments have been involved with these legislative changes, which has resulted in a more holistic understanding of wildfire risk and better incorporation and enforcement of FireSmart bylaws. Alongside these positive changes, this CWRP also includes further recommendations to enhance West Vancouver's wildfire risk management through a legislative lens.

Through the establishment of the Fire Rescue Bylaw (No. 5163) in 2021, positive changes have been made to regulate fire risk at the District level and provide enhanced responsibilities to the Fire Chief. Notably, portions of this bylaw prohibit the dumping and/or accumulation of combustible materials on a property. This bylaw has been enforced to-date, but not with reference to woody debris or vegetation. The Good Neighbour Bylaw (4380, 2004) is another tool that could be used to prohibit the accumulation of debris or materials. High hazard vegetation and structural conditions were observed throughout many West Vancouver neighbourhoods, especially for properties which contain large, forested areas. Most large private forested lands in West Vancouver are not actively managed. Increasing communication around the requirements of this bylaw and making language clearer on the hazards that this bylaw targets can make things clearer for property owners and potentially improve voluntary compliance.

The *North Shore Interface Construction and Maintenance Protocol for High-Risk Work During Periods of Extreme Fire Danger Ratings* is an important protocol for reducing accidental fire ignitions from construction sites, which is a concern of WVFR. The provincial *Wildfire Act* and *Wildfire Regulation* do apply within municipalities and are the foundation for restrictions on high-risk activities in response to fire danger ratings. This provincial legislation applies to activities within 300 metres of forestland, and sets shut-down restrictions and fire watch requirements for periods of both *High* and *Extreme* fire danger. The North Shore protocol does not implement restrictions or requirements under *High* fire danger and requires a shut-down time that is later (15:00) than the provincial legislation. These shut down times are also inconsistently communicated across the North Shore municipalities (e.g., 17:00 within the DNV). It is recommended that WVFR review the requirements of their protocol to comprehensively reduce the threat of accidental ignitions from industrial activities.

The 2019 CWPP also recommended various updates to West Vancouver's OCP (see Section 2.3) which are still relevant today, though no holistic updates to the OCP have been completed since 2019 nor are

planned for the near future. As future OCP update meetings are held, incorporating wildfire risk into growth management policies and natural hazard policies is important to build long-term resilience. The proactive changes made by the incorporation of a Wildfire Hazard DPA effectively regulate wildfire risk where new developments will occur, but the spatial extent of these DPA requirements is limited and it does not result in any requirements on pre-existing properties. Despite the common presence of highly flammable landscaping (e.g., cedar shrubs and hedgerows) in West Vancouver neighbourhoods and its contribution to fire risk and fuel continuity at the neighbourhood level, there is currently no legislation to prevent additional planting of this vegetation. There is also a lack of legislation to require the removal of dead or decadent vegetation from a property, which was frequently observed throughout the community. Enforcing FireSmart landscaping (e.g., through a bylaw) is a high priority recommendation in this CWRP.

Finally, continuing to enforce existing bylaws is also important. WVFR and municipal staff have identified challenges related to hazardous behaviour and bylaw infractions that occur throughout peak fire season in municipal parks. For example, abandoned campfires and discarded cigarettes have led to frequent brush fires.

Detailed recommendations related to Legislation and Planning can be found in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include the following (high priority recommendations are in bold):

#12 OCP Updates	**#13 Enforce FireSmart Landscaping**	#14 Communicate Bylaw Controls of Fire Risk
#15 Stiffen Controls of Fire Ignitions from Industrial Activity	#16 Update the CWRP	

5.3 DEVELOPMENT CONSIDERATIONS

Description

Introduced in Section 5.2, there are important structure and neighbourhood design features that can be regulated through land use planning and development processes to mitigate the risk of impacts to a community by wildfire. In this context, development refers to any aspect of the built environment, including structures (homes, businesses, accessory structures), attachments to structures (fences, decks), critical facilities (hospitals, schools), and critical infrastructure (roads, bridges). Related considerations include:

- Location of development in relation to high hazard forested vegetation, steep slopes, and other geographical features that contribute to extreme fire behavior (See Section 0 and 4.1.2);
- Vehicle access and egress;
- Availability and adequacy of water supply for firefighting;
- Type of construction materials on structures and attachments;
- Lot size and structure density;
- Design guidelines and architectural standards;
- Addressing and street signage; and
- Landscaping, screening, and buffering.

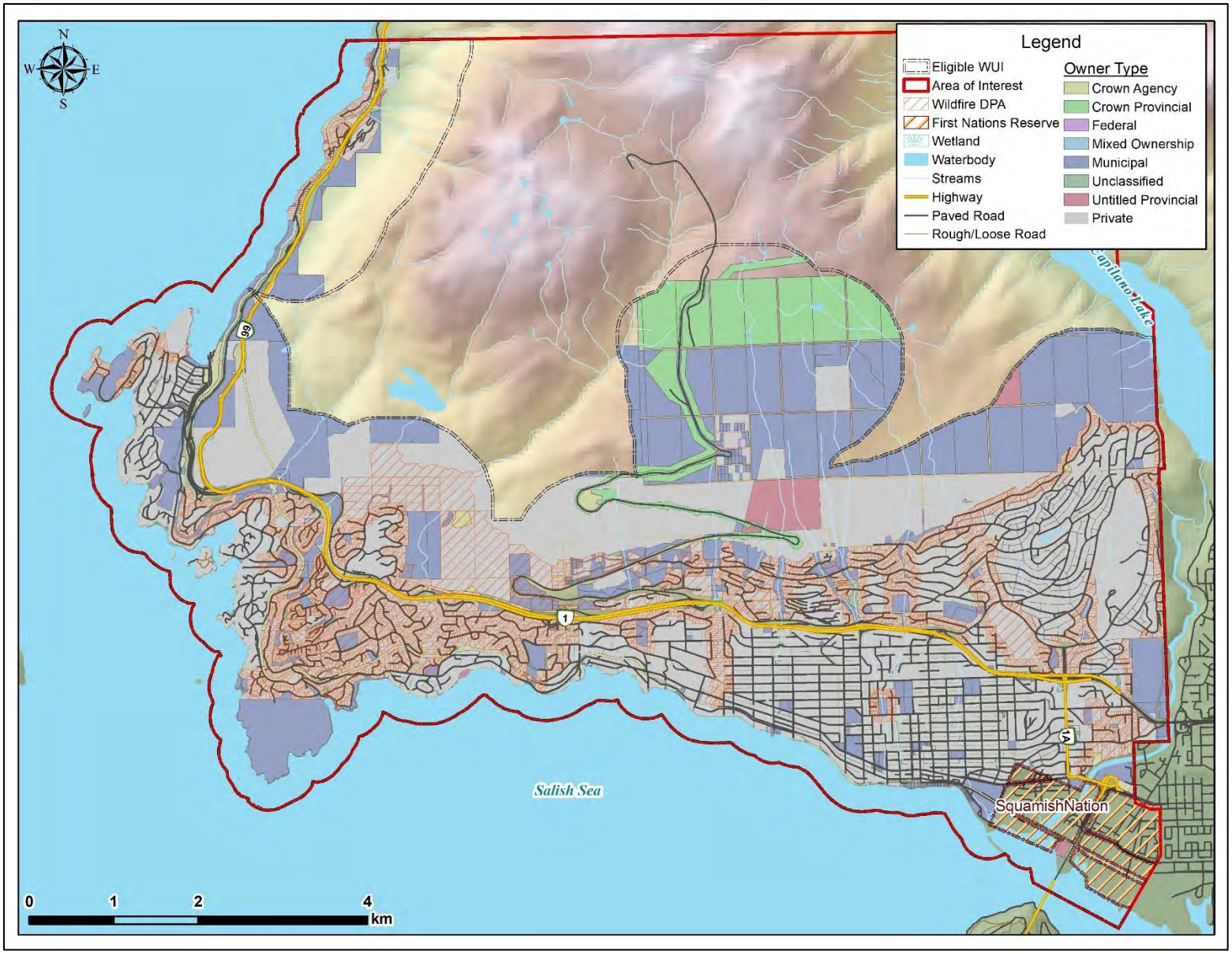
A key policy tool that can be used to regulate development and facilitate FireSmart best practices are *Development Permit Areas* (DPAs). These are geographic areas, as defined in the Official Community Plan, where special conditions must be met – or specific construction and design practices followed – in order to obtain a development permit for altering land in a known risk area. Pursuant to Section 5 of the 2015 BC *Building Act*, municipalities may not establish technical regulations related to buildings in their Building Bylaw. As a result, Development Permit Areas are commonly used to enact FireSmart requirements for new buildings (and specific renovations of existing buildings) and subdivision development.

Analysis

West Vancouver's 2019 CWPP recommended the establishment of a Wildfire Hazard DPA, which was developed and enacted in December 2020. This DPA is incorporated into West Vancouver's OCP as a Natural Environment and Hazard Policy and Guideline. The objectives of this DPA are as follows:

- Protect development from the risks of wildfire;
- Manage development to minimize the risk to people and property from wildfire;
- Minimize the risk of fire to the District's forests and parks;
- Promote management activities to reduce wildfire hazards and protect the environment;
- Proactively manage conditions affecting potential fire behaviour;
- Reduce the risk of post-fire hazards (e.g., landslides, debris flows, erosion); and
- Conserve the ecological, aesthetic, and recreational assets of the urban interface.

The Wildfire Hazard DPA applies to all properties that are within 100 metres of a forested area, which covers approximately 50% of the developed land within the District. The current spatial extent of the DPA area is shown on Map 9.



Map 9: Spatial extent of the Wildfire Hazard Development Permit Area in West Vancouver.

The current spatial extent of the Wildfire Hazard DPA inherently does not include many residential parcels that are adjacent to private forested properties or smaller forested municipal parcels. This provides a weakness in the system as there are multiple riparian drainages (e.g., McDonald Creek, Vinson Creek) that occur on private land yet are forested and unmanaged, smaller municipal parks which are forested (e.g., Brissenden Park), and vegetated rights-of-way which are not considered "forested". The hazards from vegetation in these areas are just as considerable, and often more hazardous, than in comparable forested areas. Additionally, some neighbourhoods have an extremely high continuity of fuel throughout because of historic landscaping choices (e.g., Horseshoe Bay, Westmount, Altamont), yet are not captured in the DPA due to a lack of natural or municipal forest.

The Wildfire Hazard DPA applies to the development of land with the installation of a new single or multi-family dwelling, duplex, or detached secondary suite, or the subdivision of land. This process requires that a Wildfire Hazard Assessment Report be developed by a Qualified Professional, accompanied by any other applicable municipal reports (e.g., Arborist Reports). In general, the requirements of the DPA are to create defensible space for the 10 metres surrounding buildings and structures by offsetting structures from surrounding forest, planting low-flammability landscaping, and removing or modifying pre-existing conifer trees. The DPA also requires fire retardant roofing, fire-resistive exterior walls, fire resistive building extensions (e.g., decks, balconies), screened openings and vents, and underground servicing.[67] There are annual maintenance requirements for properties within the DPA and the DPA itself is registered on title to the property, therefore compliance to these requirements must be maintained in perpetuity. For new subdivisions, the DPA also requires that firebreaks be designed and installed, and that building and road locations accommodate fire fighting vehicles and equipment.

Since 2021, 104 Wildfire Hazard Development Permits have been approved and issued within the District. Only eight of these Development Permits have been completed (i.e., constructed) at the time of writing this CWRP. Assessing long-term compliance with the DPA is essential to achieving its objectives.

Prior to the Wildfire Hazard DPA being enacted, multiple properties in West Vancouver had covenants registered to title that included Wildland Fire Management Requirements for the construction of new buildings (e.g., Areas 5 and 6 – Rodgers Creek – off Cypress Bowl Road). For Area 6 (Chippendale Road upslope of Cypress Bowl Road) a Wildland Fire Management Plan (WFMP) was created in 2016, which comprehensively discussed required structural conditions, wildfire threat, fire suppression and emergency access planning, and vegetation management within the development area.[68] As a result of this WFMP and the requirements within, the wildfire risk has been drastically reduced as this subdivision has been developed. In contrast, developments to the east of Area 6 did not have proactive risk-reduction measures in place, which has resulted in many undesirable conditions:

[67] Full requirements of the Wildfire Hazard DPA will not be displayed in this report. Requirements as per Schedule ii of the OCP, Guideline NE1, should be referenced. https://westvancouver.ca/sites/default/files/media/documents/Schedule%20ii%20Area-Specific%20Policies%20%26%20Guidelines_4.pdf

[68] Diamond Head Consulting Ltd. 2016. Wildland Fire Management Plan Rodgers Creek Area 6. Accessed from: https://westvancouver.ca/sites/default/files/dwv/assets/home-building-property/docs/Planning/Rodgers-Creek-Area-6/Schedule%20E%20-%20Wildland%20Fire%20Management%20Plan.pdf

- Riparian and/or forested areas immediately adjacent to structures, with high-hazard characteristics (e.g., deadfall accumulations, dead standing trees, low-drooping conifer trees – Marr Creek, Macdonald Creek, Shields Park);
- Forested areas adjacent that have limited / no access;
- Landscaping with highly-flammable vegetation (e.g., arborvitae / cedar hedges); and,
- Limited building setback from slope breaks.

Figure 9. Example of proactive vegetation management and emergency access in Area 6: 1) conifer trees removed or pruned on the high side and deciduous shrubs planted; 2) deadfall removed, trees spaced and pruned on the low side; 3) paved access to the interface area downslope of structures.

Action Planning

While the enactment of the Wildfire Hazard DPA is a major step forward for proactive community resilience, there are opportunities to update this DPA that will ensure that FireSmart best practices continue to be built into municipal development. Through the current wording of the DPA, there is the potential for landscaping to be planted or maintained within 1.5 metres of a structure – which is referred to as the FireSmart Immediate Zone (see Figure 8). Keeping this Immediate Zone free of combustible materials and all vegetation is a key component of structural resilience.[69] As amendments are made to the specifications of the DPA, these changes should be posted online and openly discussed with all local Qualified Professionals and developers.

As discussed above, the spatial extent of the Wildfire Hazard DPA should be critically reviewed and a potential expansion of this DPA area should be pursued. Outside of the "100 meter" DPA area that has currently been delineated, there remains a potential for structure ignitions from more long-range spotting into the community (i.e., transport of embers), which has been routinely observed and reported as the leading cause of structure ignition in recent urban conflagrations. This transport of embers is not exclusive to forest fires, as these can also occur from independent structure fires and structure fires that spread into adjacent landscaping. Given the current continuity of fuel across many West Vancouver neighbourhoods, having more resilient structures and properties throughout the community will help to break the WUI fire disaster sequence.[70] If preferred, the current requirements and spatial extent of the Wildfire Hazard DPA could be maintained as a *Primary DPA* area, and a *Secondary DPA* area could be created with less restrictive guidelines. A *Secondary DPA* area should at a minimum address the highest-priority retrofits / construction standards based on empirical evidence from recent urban interface wildfires (i.e., roofing materials), as well as the establishment of a FireSmart Immediate Zone and the use of FireSmart landscaping.

Detailed recommendations related to Development Considerations can be found in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include the following:

#17 Amend Requirements of the Wildfire DPA	#18 Expand the Wildfire DPA

[69] Institute for Catastrophic Loss Reduction, Protect your home from wildfire (Page 16 – Immediate Zone). Accessed from: https://www.iclr.org/wp-content/uploads/2024/02/FireSmart-Guide_2024.pdf

[70] National Research Council Canada. National Guide for WUI Fires. Appendix A – The WUI Fire Disaster Sequence. Retrieved from: https://nrc-publications.canada.ca/eng/view/ft/?id=3a0b337f-f980-418f-8ad8-6045d1abc3b3

5.4 INTERAGENCY COOPERATION

Description

The goal of interagency cooperation is to approach community wildfire resiliency planning from a landscape-level, multi-agency perspective. Coordination and cooperation are required to develop an effective CWRP and to be prepared in the event of a wildfire. When planning occurs only within single agencies or departments, the potential for efforts to be duplicated increases or there can be conflicting outcomes from various municipal programs. Interagency cooperation also increases the ability of local governments to plan for and respond to emergencies effectively. Working together with adjacent jurisdictions can help increase awareness of different agencies' priorities and concerns.

Commonly dubbed a Community FireSmart and Resiliency Committee (CFRC), these groups reflect the key planners and responders most involved in local FireSmart, wildfire resiliency planning, wildfire and emergency response, and land management specific to the WUI. Committees such as this foster collaborative problem solving and planning and are currently a requirement for accessing provincial funding through the FireSmart Community Funding and Supports Program.

Analysis

For a municipality like West Vancouver which is surrounded by large tracts of forest land that is either privately owned or managed by another jurisdiction (e.g., provincial park, regional watershed, regional park, or First Nations Reserve) and which has considerable municipal parkland embedded throughout, this FireSmart discipline is of particular importance. This has been recognized by the District, and several initiatives have already resulted in collaborative work between local stakeholders, government agencies, and First Nations.

As part of this CWRP, various municipal departments within West Vancouver were consulted. These various departments all have work portfolios which are relevant to FireSmart initiatives and FireSmart growth within the District. In addition to this internal communication, members from WVFR also meet with the North Shore Wildfire Working Group which includes other municipal fire departments, North Shore Emergency Management, Metro Vancouver, and the BC Wildfire Service. This group also holds a weekly wildfire meeting when fire danger ratings move to moderate and above to discuss and align public messaging. Members from this group performed a mock wildfire scenario in a remote location of the Indian Arm in April of 2024, and hope to make this an annual practice.[71]

Table 22 shows potential collaborative partners within and external to West Vancouver which can play important roles in wildfire preparedness and resilience.

[71] North Shore News: Multi-Agency Response Douses Mock Wildfire in North Vancouver: https://www.nsnews.com/local-news/multi-agency-response-douses-mock-wildfire-in-north-vancouver-video-8589544

Table 22. Interagency partners within and external to the District of West Vancouver.

Agency	Title / FireSmart Connection
West Vancouver Fire & Rescue	DWV FireSmart Coordinator – Program lead for FireSmart initiatives Fire Chief – Oversight into fire suppression and fire preparedness
DWV Planning, Development, & Environment Services	Senior Manager of Climate Action & Environment – Oversight on community wildfire plan, fuel management programs, and overall forest resilience initiatives. Environmental Protection – Focus on growth and application of the Wildfire Hazard DPA.
DWV Engineering & Facilities	Engineering & Transportation Senior Managers – Focus on management and upgrades of municipal infrastructure including critical infrastructure. Facilities staff are responsible for building infrastructure.
DWV Parks	Parks Environment & Ecosystems Manager – Incorporation of FireSmart and fire hazard reduction treatments within municipal park areas and park legislation.
Metro Vancouver – Regional Parks	Supervisor, Park Operations – Conduit for fuel management treatments and wildfire preparedness within Capilano River Regional Park.
West Vancouver School Board	Facilities Managers – Focus on management of school infrastructure.
Metro Vancouver – Watershed Protection	Superintendent & Vegetation Management Tech – Conduit for fuel management treatments and wildfire preparedness within the Capilano Water Supply Area.
North Shore Emergency Management	Continued emergency planning coordination and involvement in wildfire response training scenarios (see Section 5.5 and 5.6).
DNV Fire Rescue & CNV Fire Department	Fire Chiefs & FireSmart Coordinators – Continued discussion of wildfire hazard, preparedness, communications, and response capabilities.
Squamish Nation	Emergency Planning Manager & FireSmart Coordinator – Collaboration regarding FireSmart programs and messaging, and collaborative vegetation management programs in interface areas.
Tsleil-Waututh Nation	Emergency Program Coordinator & FireSmart Coordinator – equivalent connection as the above row.

Land management also plays a key role in potential vegetation management programs throughout West Vancouver, all of which can have marked impacts on fire hazard to private properties and critical infrastructure. The management of vegetation on various rights-of-way throughout West Vancouver is often complicated due to poorly understood property boundaries or municipal bylaws, but there are multiple rights-of-way to which external groups have management responsibilities. Electrical rights-of-way were discussed in Section 3.3.2. The active Canadian National (CN) railroad that traverses across West Vancouver has had vegetation management completed in recent years within approximately a 6-meter-wide portion of the right-of-way, though multiple instances were observed where there is highly

hazardous (and often invasive) vegetation at the edges of this right-of-way – conditions which often then continue onto private or municipal parcels (see Figure 10). Portions of the rights-of-way along Highway 1 and Highway 99 are also managed by the Ministry of Transportation and Transit. The vegetation along these corridors is variably managed and has become overgrown in many instances, often where these road allowances are adjacent to private property. Areas adjacent to the railroad and the highways both have heightened ignition risks.

Figure 10: Example of decadent and unmanaged Himalayan blackberry between train tracks and residential parcels.

Metro Vancouver Parks and Watershed Protection staff are responsible for the management of forested areas within and bordering West Vancouver – in Capilano River Regional Park and the Capilano Water Supply Area (WSA). While the Regional Park has an established network of recreational trails and is heavily trafficked, the WSA is fenced off and has very restricted access. Both entities have been proactively performing forestry work in the WUI, focused on hazard tree removal, fuel abatement, and ignition reduction. Work areas to-date have focused on critical infrastructure (e.g., electrical substations and water reservoirs) and forested areas immediately adjacent to homes in West Vancouver.

BC Parks also manages a considerable amount of land that is within West Vancouver's WUI, though the majority of Cypress Provincial Park extends outside the CWRP area. Fuel management areas have not been spatially delineated or recommended within Cypress Provincial Park largely due to the mature and higher-elevation forest types which are commonly not "high hazard" and the distance from infrastructure-based values at risk. However, ensuring that vegetation is regularly maintained surrounding rights-of-way and high traffic areas (e.g., along Cypress Bowl Road, adjacent to parking lots, Hydro right-of-way) will strategically reduce fire hazards. These accessible right-of-way areas are likely to be used as access and

anchor points for first responders in the event of an interface fire. BC Parks staff should also continue to work with WVFR and Cypress Mountain Resort to promote FireSmart messaging and publicly post fire hazard information, aiming to decrease the number of human-caused ignitions that occur from backcountry recreators. Cypress Mountain Resort owns and operates the majority of infrastructure within Cypress Provincial Park (e.g., Black Mountain & Hollyburn Lodges) – FireSmart assessments and mitigation work to proactively reduce the risk of fire to these structures is recommended.

Action Planning

While there have been many successful examples of interagency cooperation initiatives in the last five years, there are areas where increased engagement could benefit all parties.

West Vancouver staff should continue to participate in the North Shore FireSmart Committee and/or Wildfire Working group. It is important for various external agencies to discuss the successes and challenges they are experiencing – especially as many of the interface fire hazards that are present in West Vancouver are equally prevalent in adjacent communities. The discussions between this group will ensure that communications are more unified across the region during fire season, which is imperative for increasing FireSmart awareness and decreasing human-caused ignitions across the North Shore.

Internally, municipal staff across various departments need to share and understand the implications of their work on community wildfire resilience. For example, the development of the Wildfire Hazard DPA involved expertise and input from WVFR and multiple municipal departments (e.g., planning, engineering, etc.), and previous fuel management programs have involved staff from climate action, parks, facilities, and WVFR. Mitigating fire risk proactively spans the knowledge of numerous departments and requires decision-making to be collaborative.

Detailed recommendations related to Interagency Cooperation can be found in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include the following:

#19 Collaborate Externally	#20 Collaborate Internally (E.g., Inter-Departmental FireSmart Committee)
#21 Discuss Right-of-Way Management	#22 Collaborate with Metro Vancouver
#23 Attend the Wildfire Resiliency & Training Summit	

5.5 CROSS-TRAINING & FIRE DEPARTMENT RESOURCES

Description

All West Vancouver staff and agency partners who are expected to participate in the development and implementation of this plan or participate in wildfire response and recovery should be appropriately trained. Cross-training ensures that municipal staff are aware of wildfire specifics and wildfire response, that structural firefighters are experienced and trained with wildfire behaviour and suppression, and that wildfire fighters are experienced and trained with structure protection.

Analysis

The FireSmart program in West Vancouver is largely overseen by the FireSmart Coordinator – which has been a responsibility assigned to the Assistant Fire Chief in recent years as part of an extensive Fire Prevention portfolio. Four total individuals within WVFR are trained as Local FireSmart Representatives, though no one has been certified through the Wildfire Mitigation Program to-date. In terms of emergency response, staffing levels are deemed to be adequate and responsibilities have been pre-defined through the District's Emergency Plan (which is managed by North Shore Emergency Management – see Section 2.1).

Members of WVFR undergo significant training focused on structural firefighting and annual wildland firefighter training, including WFF-1 (Wildland Firefighter) and WSPP-115 (Structure Protection Program). Multiple staff have been able to exercise wildland skills on provincial wildfire deployments in recent years. In addition, WVFR members participated in a joint wildfire exercise in the spring of 2024 at Camp Jubilee, with other regional fire departments and emergency response agencies. Tabletop exercises and area familiarization tours have also been practiced between WVFR and Metro Vancouver staff. These proactive preparedness exercises and meetings have paid dividends in recent years, as there have been multiple successful mutual aid responses to interface fire events across the North Shore.

West Vancouver Fire Rescue's equipment allotment was introduced in Section 3.2.1. This allotment includes a considerable amount of wildland-specific gear which has been improved upon since 2019. The recent acquisition of two Structure Protection Units and two Type 5 wildland trucks greatly improves WVFR's response capabilities in the wildland-urban interface and to off-road areas within the District. Despite this, WVFR has expressed concerns with their ability to shuttle water to multiple areas within the District. These concerns apply in road-access areas with no hydrant coverage (e.g., Highway 1 / 99 corridor and the Cypress Bowl Road), and various off-highway areas (e.g., Hollyburn Lodge). This has made fire suppression more complex and challenging for recent fire events along Highway 99. There are also developed areas within the District that are not serviced by the municipal water system (e.g., Hollyburn Cabins), in which drafting or pumping from nearby natural water sources is unreliable. Additionally, WVFR has stated concerns with total water supply available in certain portions of the District where water demand has increased (e.g., Horseshoe Bay – Madrona Reservoir).

Action Planning

While West Vancouver has positively expanded their FireSmart program in recent years, the limited amount of staffing dedicated to this program has complicated in-house expansion. Additionally, it will likely be the responsibility of the FireSmart Coordinator to implement multiple recommendations from this CWRP. Dedicating additional funding to a FireSmart Coordinator position is crucial in effectively growing this program within the District. Having a stable position in place will allow one dedicated individual to organize and oversee this annually expanding program. Holding this position within WVFR will also ensure that it is staffed by a trusted and recognized local first responder. In addition to the FireSmart Coordinator position, there are roles that can be funded to support FireSmart initiatives. For example, FireSmart Crew Members or Wildfire Mitigation Specialists can help to host community events, perform local assessments, and perform mitigation work, while Wildfire Forest Professionals can plan and supervise vegetation management throughout the community.

As FireSmart and structure protection have become integral components of interface fire risk, increasing the amount of FireSmart training within WVFR will improve individual awareness and allow for more fluid communication of risk across the department. Various training courses are offered by FireSmart BC (e.g., Wildfire Mitigation Specialist, Local FireSmart Representative, FireSmart 101, and modules within the Wildfire Risk Reduction Course). Discussing these training initiatives with municipal Parks staff can also be beneficial, where it addresses vegetation management, landscaping, and structural attributes. Continuing to train WVFR staff in wildland fire is also critical, to support wildfire response within West Vancouver or on provincial deployment opportunities. There are also various roles related to wildfire response which could be identified within WVFR or municipal staff proactively, to have hired or on standby during periods of high fire danger. Examples include basic chainsaw operators, wildlife danger tree assessors (trained through the Wildland Fire Safety Module), and/or certified tree and/or danger tree fallers.

Continuing to host or attend tabletop exercises or live scenarios of interface fire suppression will also be a critical component of municipal preparedness, both for making interagency cooperation more fluid and for increasing skills within WVFR. As previous exercises have been discussed in the local media, these practice initiatives pose a great opportunity for community education and outreach – especially in notifying (/teaching) community members the role that they can play in reducing risk and improving first responder safety. Demonstrating structure protection within the community is a valuable way to practice real-life situations with WVFR staff, and to communicate to the public what conditions on a property permit or complicate structure protection setup.

Recommendations related to WVFR equipment upgrades, water system upgrades, and other cross-training topics are detailed in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include (high priority items are bolded):

#24 Staffing FireSmart Positions	#25 Expanding FireSmart Training	#26 Continue Wildfire Training
#27 Demonstrate Structure Protection	#28 Host Scenario-Based Training	#29 Increase Water Shuttling Capacity
#30 Water Tank Installation	#31 Reservoir Upgrades	#32 Expand Response Capacity

5.6 EMERGENCY PLANNING

Description

Deployment of provincial wildfire resources occurs based on the Provincial Coordination Plan for Wildland Urban Interface Fires,[72] which may result in BCWS resource availability becoming scarce when several wildfire emergencies take place throughout the province. Therefore, local government wildfire preparedness and resource availability are critical components of community wildfire resilience – individuals and agencies need to be ready to act. Wildfires that threaten human life, structures, and critical infrastructure are extremely complex and dynamic incidents to respond to, which can involve multiple concurrent emergency response events. All phases of an emergency response (mitigation, preparation, response, and recovery) should have significant pre-planning in place, or a WUI incident is likely to overwhelm resources and render them ineffective. Figure 11 below demonstrates important considerations for each of these four phases:

Mitigation

- A shared responsibility between various land managers and private property owners - mitigating wildfire risk prior to a fire event (includes FireSmarting homes and properties, performing vegetation management in public parks, etc.)

Preparation

- Includes pre-incident planning (see *Analysis & Action Planning* below) by Emergency Management personnel and fire response resources.
- Includes the preparedness of homeowners and business owners prior to an evacuation (e.g., use of the FireSmart Evacuation Checklist, and preparation of "ready-to-go" kits).

Response

- Includes the capable response by municipal and/or regional Emergency Operations Centre staff.
- Includes the capable response by West Vancouver Fire Rescue and/or mutual-aid partners, and available BCWS resources.
- Includes the disemmination of emergency information to the public.
- Includes the provisions made to protect Public Health in the event of a wildfire (i.e., mitigating smoke impacts especially to vulnerable populations).

Recovery

- Outlines the ability of the community to respond quickly to values that are affected by an interface wildfire.
- Required recovery efforts will likely decrease with pre-incident improvements in mitigation, preparation, and response.

Figure 11: Generalized description of the four phases of emergency response as they relate to a wildfire emergency in West Vancouver.

[72] Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Retrieved from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf

Analysis and Action Planning

Wildfire-specific pre-incident plans are a compilation of essential fire management information that can be used to save valuable time during fire suppression operations. During a busy wildfire season, provincial resources can be stretched thin and any information that local governments can provide to BCWS or assisting structural fire department crews is helpful. Pre-incident plans should be developed and tested using tabletop simulations, and if necessary, revised prior to every fire season. BCWS should be involved in this process to ensure that any mapping done as part of the regional Fire Management Planning process is not unnecessarily duplicated. These plans and maps (some of which are wholly or partially developed as part of this CWRP) should consider at a minimum:

- Command: Authority, structural protection needs, management constraints, etc.
- Operations: Helicopter base locations, water sources / intakes, fire control line locations and natural barriers, crew/personnel safety zones and staging locations, etc.
- Logistics: Base camp / EOC locations, roads and trails, utilities (CI), communications, etc.
- Planning: Maps (Structures, critical infrastructure, land status, vegetation and fuel, hazards, archaeology and environmentally sensitive areas, water sources, access/egress, evacuation route plans, etc.)

As part of pre-incident planning, the District should consider developing local daily action guidelines based on the fire danger rating. Table 23 provides a template that can be tailored to West Vancouver, outlining actions that staff can take as fire danger levels change throughout the fire season.[73]

Given the complex topography of West Vancouver and the "one way in, one way out" access to many neighbourhoods, evacuation planning and preparation should be a priority for any District emergency staff. Decreasing uncertainties during an interface wildfire and/or evacuation scenario can be achieved by implementing the following programs within West Vancouver:

- Finalizing a *Total Access Plan* for District lands, by mapping and inventorying the entire trail and road network. This should include details on the location, condition, width, and access constraints of all access features. All access features provide first responder access and offer potential fuel break locations in the event of a forest fire.
- Increasing first responder access throughout the District, by assessing the feasibility and costs of increased access along powerline corridors and/or by reopening old forest service roads. This will likely require collaboration with private landowners and/or developers in many situations.
- Communicating North Shore Emergency Management evacuation guides and/or wildfire preparedness checklists provided by PreparedBC and promoting pre-existing emergency communications software.

This bolsters the need for a comprehensive evacuation plan that considers fire risk at the landscape scale – which is outside the scope of this CWRP alone. Given the complexities with evacuation in West Vancouver, proactive / strategic evacuation may occur sooner than in other communities which makes it more important for community members to be prepared to evacuate and to reduce the risk on their property.

[73] Community Resiliency Investment. 2025 CWRP Supplemental Instruction Guide: https://www.ubcm.ca/sites/default/files/2024-06/LGPS_CRI_FCFS_2024_CWRP_Instruction_Guide_2024-06.pdf

Table 23: Example of a Wildfire Response Preparedness Condition Guide.

FIRE DANGER RATING	ACTION GUIDELINES
LOW	• West Vancouver staff on normal shifts. • Direct community members to BCWS (or the District's FireSmart page) for fire danger rating info.
MODERATE	• West Vancouver staff on normal shifts. • Regional fire situation evaluated. • Direct community members to BCWS (or the District's FireSmart page) for fire danger rating info, update fire danger signs in the community. • Information gathering and dissemination through West Vancouver's internal or external FireSmart committees.
HIGH	• West Vancouver staff on normal shifts. • Regional fire situation evaluated. • West Vancouver EOC staff notified of Fire Danger Rating. • Daily fire behaviour advisory issued. • Update fire danger rating signs in the community, post updates on social media and West Vancouver's FireSmart page, work with local radio outlets and MOTT to discuss and display fire danger rating. • Establish weekly communications with the internal or external FireSmart committees.
EXTREME	• Same conditions as 'High' Danger Rating. • West Vancouver EOC staff considered for level 1 activation standby. • Wildfire Incident Command Team members considered for stand-by / extended shifts.
FIRE(S) ONGOING	• All conditions apply as for Extreme (regardless of actual fire danger rating). • Mobilize EOC support if evacuation is possible, or if fire event requires additional support. • Implement Evacuation Alerts and Orders based on fire behaviour prediction and under the direction of the EOC or BCWS.

Early wildfire detection can also be an important piece of emergency preparedness – though given the visual exposure of West Vancouver and the high number of recreationalists in forested areas, there is considerably less concern of a fire ignition going undetected for a period of time. In addition, many forest types in West Vancouver's WUI are generally not conducive to rapidly spreading fires due to fuel alone – though fire spread can be heavily influenced by local topography and/or weather events. Early detection technology may be able to improve the ability of WVFR and/or bylaw staff in detecting and responding to illegal campfires or cooking fires in the forest interface. Additionally, detecting and responding to wildfires in "high-value" areas (e.g., forest interface, community watersheds, high-use recreational areas, areas with noted terrain stability issues) more quickly can reduce the overall size, severity, and impacts of the fire.

In addition to emergency and evacuation preparedness, West Vancouver has the potential to be exposed to smoke for prolonged periods of time either from fires burning in British Columbia or drifting up from the United States. The impact that wildfire smoke can have on public health is an emerging topic of

scholarly research, but it is generally well understood that fine particulate matter from wildfire smoke (i.e., $PM_{2.5}$) has a wide range of negative health effects. Wildfire smoke has the ability to affect anyone, and community health should always be at the forefront. There are multiple ways to reduce an individual's exposure to wildfire smoke, which can be achieved personally and/or facilitated through municipal programs.[74]

Finally, pre-planning for wildfire recovery and rehabilitation has been recommended and discussed in West Vancouver through previous CWPPs and remains a recommendation in this CWRP. After a damaging wildfire event in West Vancouver, the need for assessments and rehabilitation efforts can be extremely time-sensitive given the natural potential for debris flows and landslides due to the high probability of coastal storm events each year. The Burned Area Emergency Response (BAER) assessment protocol has been utilized in adjacent jurisdictions and provides a protocol to which West Vancouver could mirror a proactive rehabilitation plan. Pre-planning for terrain stability assessments, seeding and replanting of native vegetation, and control of invasive species in burned areas is key.

Recommendations and action items related to the four phases of emergency management are detailed in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations, and are summarized as follows:

#33 Develop a Fire Rehabilitation Framework	#34 Finalize a Total Access Plan	#35 Increase First Responder Access
#36 Assess Vulnerabilities of Critical Infrastructure	#37 Pre-Plan Incident Response	#38 Communicate Evacuation Materials
#39 Promote Emergency Communications Software	#40 Address Wildfire Smoke Exposure	

[74] The Government of Canada has published guidelines on wildfire smoke and its relationship with public health, including ways to prepare for smoke events and protect your physical and mental health: https://www.canada.ca/en/services/health/healthy-living/environment/air-quality/wildfire-smoke.html

5.7 VEGETATION AND FUELS MANAGEMENT

Introduced in Section 4, fuel is the only aspect of the fire behavior triangle that can be realistically modified to reduce wildfire threat proactively. Fuel management or vegetation management reduces potential wildfire intensity and ember exposure to people, structures, and other values through the manipulation of both natural and cultivated vegetation within or adjacent to a community. A well-planned vegetation management strategy can greatly increase fire suppression effectiveness and reduce damage to property and values. Reducing fire hazard through vegetation management can largely be accomplished through two different activities:

- Fuel Management Treatments: The manipulation or reduction of living or dead forest and shrub fuels to reduce the rate of spread and head fire intensity and enhance likelihood of successful suppression. These treatments are often located outside the Home Ignition Zone to strategically decrease fire behaviour at the forest stand or landscape scale. These are generally prescribed by a professional forester and implemented by qualified staff or contractors.
- Residential-Scale FireSmart: The removal, reduction, or conversion of flammable plants to create more fire-resistant areas in the FireSmart Immediate Zone, Intermediate Zone, and Extended Zone (see Figure 8). Efforts should start closest to the value (i.e., structure) and move outwards. This can generally be self-directed or prescribed by a Wildfire Mitigation Professional, arborist, or professional forester, and performed by a homeowner or contractor.

5.7.1 FUEL TREATMENTS

Description

Fuel treatment opportunities in West Vancouver may represent a linear fuel break or more discrete polygon treatment areas. The intent of establishing fuel treatments is to modify fire behaviour and should be designed to keep surface fires on the ground and avoid becoming more dangerous crown fires. Fuel treatments also provide safe and effective anchor points to fire-fighting crews for suppression activities.[75] The application of appropriate suppression tactics in a timely manner with sufficient resources is essential for fuel treatments to be effective. In addition, fuel treatment units require periodic maintenance to retain their effectiveness.

[75] BC Wildfire Service. Fuel Management Prescription Guidance 2025. https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/2025_fuel_management_prescription_guidance_march03.docx

Analysis

Fuel treatments within West Vancouver have been implemented on approximately 18.7 hectares of land and prescribed on an additional 12.7 hectares, as summarized in Table 24. Treatment areas to-date have been in the direct interface with private properties, surrounding critical infrastructure, and/or in contiguous areas of municipal forest. In general, the focus in these treatment areas has been to reduce the potential for crown fire through the management of ladder fuels, and to reduce the potential for high intensity or high severity surface fires through the management of surface fuels. Retaining a healthy and diverse overstory canopy has been a goal of all the fuel treatments to-date, which aligns with provincial best management practices for fuel treatments in coastal weather zones.[76]

[76] BC Wildfire Service. Best management practices for fuel treatment by fire weather zone. Coastal fire weather zone. https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/fire-fuel-management/fuels-management/coastal_fire_weather_zone__for_review.pdf

Table 24: Summary of previous fuel treatment areas within the District of West Vancouver

Name	Year	Area (Hectares)	Location and Description
Cypress	2022	6.0	• North of the transmission line above Millstream Road, east of Brothers Creek. • Reduced fuel threat from moderate to low for a ~125 metre width from the BC Hydro right-of-way.
Ballantree	2023	4.0	• North/west of homes on Ballantree and Kildonan Roads. • Direct forest interface, reduced the threat from moderate/high to low for a ~60 metre width from property lines.
Eagle Lake	2024	8.2	• South/west of the water treatment plant at Eagle Lake and along the access road. • Protection of critical infrastructure, reducing the fuel threat from moderate/high to low for a 50–100-metre width.
Westwood	2024	0.5	• Direct forest interface with homes on the south side of Westwood Drive Park.
Total Area Treated		**18.7**	---
Cypress	N/A	12.7	Additional untreated areas are located to the west and east of the fuel treatment completed in 2022. Implementation of areas to the west is not recommended at this time due to logistical challenges and the distance to structural values at risk. Implementation of areas to the east will be further discussed below.
Additional Area Under Prescription		**12.7**	---

Figure 12: Example of side-by-side areas that are untreated (left) and treated (right) in the Ballantree area.

Figure 13: Example of side-by-side areas that are untreated (left) and treated (right) in the Eagle Lake area.

Due to the forest types commonly found in West Vancouver's WUI, the potential threat reduction that can be accomplished through fuel management is often limited. Many of the conifer or mixedwood fuel types encountered do not have considerably dense ladder fuel components or accumulations of deadfall, or these conditions are discontinuous at the stand scale. Forests often have lush herbaceous and deciduous shrub understories, larger diameter and lower density overstories, and live crowns which are high and well separated from understory vegetation – all of which reduce the horizontal and vertical continuity of fuel. Where a higher continuity of fuel is found near critical infrastructure or other identified values at risk, fuel management can considerably reduce the hazard and exposure to these values. Proactively managing this vegetation will provide safe conditions for first responders if structure protection is to be employed, or it may create a hazard that is low-enough where adjacent structures will not be impacted by an adjacent fire that occurs.

Performing fuel management in West Vancouver's WUI is also extremely complex due to several factors, both site-specific and anthropogenic. As discussed in Section 4.1.2, the topography in West Vancouver is often very complex. This results in many interface areas that cannot be safely worked in by fuel management crews, or areas where it is not realistic for debris to be efficiently removed from the site. This is especially notable when machinery can not be safely used to remove debris, given the large volumes of debris that are created from fuel treatments in coastal areas. Across British Columbia fuel management material is often piled and burned on-site where it cannot be otherwise removed, but this practice is heavily regulated and restricted in Metro Vancouver due to the Open Burning Emission Regulation (No. 1355) & Air Quality Management Bylaws (No. 1082) – see Table 5 for additional information. Piling and burning of debris would likely be the most cost-effective and safe debris removal tactic in many locations in West Vancouver.

Additionally, where fuel management is used on public lands to protect structures that are on private lands, the effectiveness of it is highly dependent on the fuel or structural conditions on the adjacent private property. Conditions were frequently observed in West Vancouver where the fuel or structural conditions on private property are *considerably* more hazardous than in the surrounding forest. This limits the effectiveness of fuel management, limits the proactive identification of many fuel treatment areas in West Vancouver, but opens the door for future collaborative projects where hazards are strategically mitigated across parcel boundaries.

Action Planning

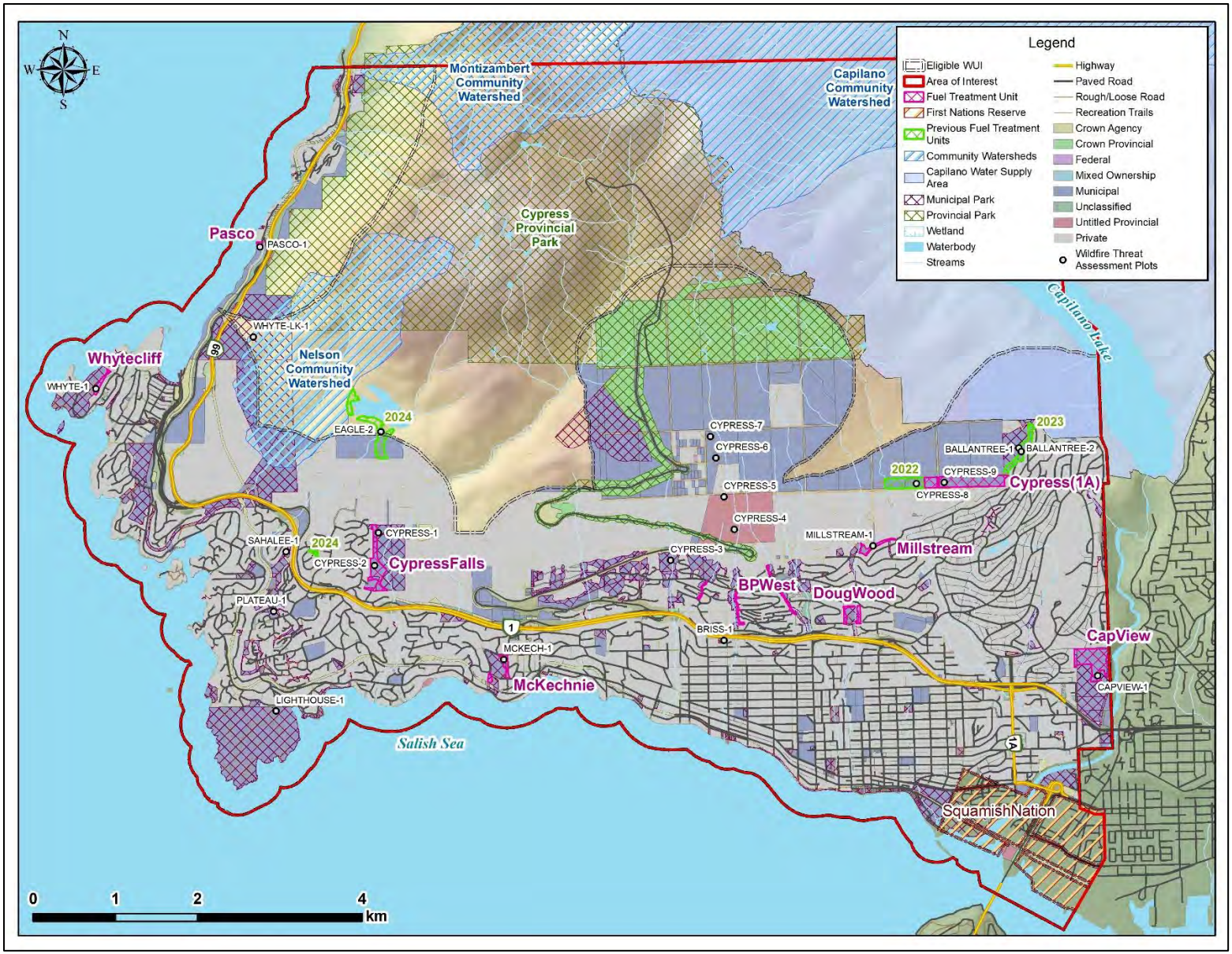
Multiple areas have been recommended for fuel treatment through this CWRP, referred to as Fuel Treatment Units (FTUs - Table 25, Map 10). The spatial extent, required fuel management, and objective of these treatment areas are variable, and have therefore been grouped into the following categories:

- Prescribed FTU: An area that is currently under prescription but has not been treated. Amendments to the prescription may be required to meet new best management practices and/or facilitate implementation.
- New FTU: A new area proposed for treatment, large and continuous enough that a fuel management prescription (FMP) would be recommended.
- FireSmart for Green Spaces (FSGS): Forested municipal areas in the direct interface with private property. Small, discontinuous, and may require collaboration with property owners.

Table 25: Summary of fuel treatment units identified in West Vancouver's WUI.

FTU Name	Total Area (Hectares)	Wildfire Behaviour Threat (ha)			Treatment Objective / Rationale	Overlapping Values / Treatment Constraints
		High	Moderate	Low		
Prescribed Fuel Treatment Unit						
Cypress (1A)	12.7	1.1	11.5	0.2	Moderate hazard conifer stands, can reduce potential fire severity and crowning through understory thinning and surface fuel abatement. Would connect the previous Cypress fuel treatment (2022) with the Ballantree fuel treatment (2023) and create a wide fuel break above the BC Hydro right of way.	• Multiple streams and no road access to the eastern extent may limit machine use or debris removal. • Multiple recreational trails throughout.
New Fuel Treatment Unit						
CapView	11.1	-	9.9	1.2	Forested area adjacent to private property and the cemetery with considerable conifer mortality in recent years due to western hemlock looper. Can reduce fire hazard and improve safety by removing dead standing trees and accumulations of deadfall.	• Adjacent to cemetery, operational windows may need to be controlled based on ceremonies. • High recreation use throughout – cemetery area, new wastewater right-of-way, and unofficial trails connecting to Cap. River Regional Park.
Cypress Falls	7.1	-	6.5	0.6	Forested area adjacent to private property with high recreational usage. Can reduce fire severity through spacing of high-density forest and abatement of deadfall.	• Minor overlap with critical habitat for Marbled Murrelet – a federally listed species at risk. • Adjacent to an occurrence of Northern red-legged frog – a provincially red-listed species at risk • High recreation uses throughout, parking lot near south end. • Steep topography with limited pre-existing access on knoll north of parking lot. • Limited access (foot-trail) to far north end.

FTU Name	Total Area (Hectares)	Wildfire Behaviour Threat (ha)			Treatment Objective / Rationale	Overlapping Values / Treatment Constraints
		High	Moderate	Low		
FireSmart for Green Spaces *The treatment objective and rationale for each of these units is to reduce fire risk to private property by demonstrating basic FireSmart vegetation management practices. This will generally require the removal of dead trees, understory spacing, pruning, deadfall abatement, and the pruning or removal of decadent shrubs. Invasive species may need to be concurrently managed.*						
BPWest	2.1	-	2.0	0.1	Contains five separate interface areas along Rodgers East, Marr, and Macdonald Creeks. All areas are trailside.	
DougWood	1.5	-	1.5	-	Contains perimeter areas adjacent to private properties in Douglas Woodward Park.	
McKechnie	1.8	-	1.8	-	Contains perimeter areas adjacent to private properties in McKechnie Park.	
Millstream	1.8	-	1.8	-	Contains interface areas along an access road in Millstream Trail Park. Accumulations of surface fuels exist from previous hazard tree removal programs.	
Pasco	0.4	-	0.4	-	Contains interface areas to the south of the isolated Pasco Road community.	
Whytecliff	1.2	-	-	1.2	Contains accessible interface areas along the eastern edge of Whytecliff Park.	



Map 10: Overview map of fuel treatment units identified in West Vancouver's WUI.

Besides conventional forest fuel management prescriptions or FireSmart-related vegetation management, there are several other actions that West Vancouver can take to manage hazardous vegetation within the municipality. The District should consider the fire hazard posed by invasive species when planning and prioritizing invasive species removals. Scotch broom and English holly (*Ilex aquifolium*) are known to be highly-flammable, but additional species can pose a fire hazard. For example, Himalayan blackberry can grow vigorously and at a scale that produces dense accumulations of brush. The dead stems and stalks beneath live leaves and branches can cure quickly, and the thorny structure of the shrub can be extremely challenging for firefighters to access for suppression purposes. Even if site-level eradication is not feasible, biomass reduction may be desirable in high traffic locations. Hazardous accumulations of blackberry were noted in countless boulevards and rights-of-way throughout West Vancouver, often continuous with landscaping or structures on private property. The District should continue supporting removal initiatives for benefits related both to ecological restoration as well as community wildfire risk reduction.

As discussed in Section 2.3, West Vancouver has multiple municipal plans and municipal staff dedicated to the management of park spaces. The Urban Forest Management Plan repeatedly discusses the need to actively manage park spaces to make them more resilient to climate change, to reduce safety hazards, and to proactively decrease wildfire risk.

Figure 14: FireSmart recommendations as presented in West Vancouver's Urban Forest Management Plan.[49]

Establishing a framework for having accessible park areas maintained in a low-hazard and healthy state is an important piece of long-term land management in West Vancouver. This is especially relevant as West Vancouver has recently acquired or dedicated considerable park space in the Upper Lands[77] and Eagleridge.[78] For new developments that fall within the Wildfire Hazard DPA, it is likely that park spaces to be dedicated to the District will have their fire hazard reduced prior to dedication – which will drastically reduce the short- and long-term management required by West Vancouver. Changes to this framework will likely need to be built into park policies (e.g., Parks Master Plan), and considerable staffing and budget will be required to implement these initiatives.

Recommendations related to fuel management treatments are detailed in the Executive Summary in Table 1. Community Wildfire Resiliency Plan Recommendations. In summary, these recommendations include the following (high priority items are bolded):

#41 Treat Previously Prescribed Areas	#42 Develop New Fuel Management Prescriptions
#43 FireSmart Municipal Green Spaces	**#44 Manage Parks Proactively**

[77] BC Parks Foundation, District of West Vancouver 2024 Announcement. https://bcparksfoundation.ca/press-room/west-vancouver-bc-parks-foundation-park-announcement/

[78] North Shore News, West Vancouver dedicates another 262 acres of forest as park. https://www.nsnews.com/local-news/west-vancouver-dedicates-another-262-acres-of-forest-as-park-10490761

5.7.2 RESIDENTIAL FIRESMART

Description

Residential FireSmart landscaping refers to the removal, reduction, or conversion of flammable plants to create more fire-resistant areas in the FireSmart Immediate, Intermediate, and Extended Zones – collectively referred to as the Home Ignition Zone (HIZ; see Figure 8). The names of these Zones changed in 2023 and had previously been referred to as the Non-Combustible Zone, Priority Zone 1, and Priority Zone 2 respectively. This section will focus largely on vegetation management but will re-introduce FireSmart structural conditions, which were introduced in Section 5.1.

Analysis

Throughout West Vancouver, generally low compliance was observed to FireSmart vegetation management within the HIZ. Though residential landscaping was often observed to be regularly maintained (often by landscaping contractors), much of the landscaping in the District is highly flammable and continuous between properties. FireSmart BC has published multiple resources to help identify some of the highest-risk vegetation (while sharing additional information on water usage and pollinator attraction) and display climatically suitable alternatives for trees, shrubs, hedges, privacy, and screening.[79,80,81] Regular maintenance on properties is also limited to more easily accessible locations, which results in a considerable amount of unmaintained area due to West Vancouver's complex topography and/or larger lot sizes. The most common FireSmart vulnerabilities that were noted for residential structures and community infrastructure were:

- Large, often decadent, and commonly dead arborvitae hedges – both between properties and along roadways;
- Conifer trees with branches that are overhanging homes or in contact with homes, or continuous down to the ground;
- Decadent and continuous thickets of Himalayan blackberry, often on embankments and boulevards outside of fence / hedge-lines;
- Unmaintained vegetation (or stored combustible materials) underneath exposed wooden decks;
- Vulnerable exterior structure conditions: cedar shake roofs and siding, wooden siding; and
- Wooden sheds / outbuildings within the Intermediate Zone of the primary house, which are often much less FireSmart than the house itself.

The District's FireSmart program has evolved since 2019, with achievements to-date largely focused on the identification and assessment of hazards, and education of the public (see Section 5.1). Once a vegetation hazard has been identified on a property, the work required to modify or remove the hazard and dispose of the debris can often be onerous, costly, and prohibitive for homeowners. In response, the District offers a complimentary chipping service to homeowners who have received HIZ Assessments, where debris will be chipped and taken off-site if it is brought to the roadside, though uptake of this

[79] FireSmart BC Landscaping Guide: https://firesmartbc.ca/wp-content/uploads/2021/04/FireSmartBC_LandscapingGuide_Web_v2.pdf
[80] FireSmart BC Landscaping Hub: https://firesmartbc.ca/landscaping-hub/
[81] FireSmart BC Guide to Lower Risk Plants for Hedges, Privacy, & Screening: https://firesmartbc.ca/wp-content/uploads/2024/01/FSBC_PlantChartBooklet_3A.pdf

service has been limited to-date. Where applicable, the Wildfire Hazard DPA proactively controls landscaping on a property or within a subdivision. The DPA restricts the planting of highly flammable vegetation and requires the removal or modification of pre-existing vegetation by FireSmart Zone. The District has also produced a list of recommended replacement trees for DPA locations and established the FireSmart Plant Program at the Maple Leaf Garden Centre.[82]

Tree removal is heavily regulated within West Vancouver and often requires reporting from a Qualified Professional, however, projects with such requirements do not represent the majority of FireSmart landscaping initiatives that can be pursued in the District. The majority of recommended actions would involve small-scale brushing, pruning, and deadfall / litter removal activities, which do not typically require a permit.

Action Planning

FireSmart education initiatives are the foundation of residential FireSmart activities – which were detailed in Section 5.1. The District should maintain and expand their programs which communicate FireSmart at the homeowner level, and which assess, recommend, and perform vegetation management at the residential and critical infrastructure scale. In addition, the District should consider the following initiatives to enhance its support for residential FireSmart landscaping:

- Increase opportunities for residents to dispose of yard waste conveniently, without having to travel to the transfer station – such as through an expanded chipper program or by providing temporary debris disposal bins in communal neighbourhood areas.
- Demonstrating vegetation management techniques through the mitigation of critical infrastructure hazards and communicating this with the community (see Recommendation #4 and #5).
- Promote and facilitate a neighbourhood FireSmart BBQ/clean-up day; this event can count towards FireSmart Canada Neighbourhood Recognition (see Recommendation #6).
- Offer a FireSmart rebate program to offset the costs of labour or equipment usage. Provincial funding programs allow for rebates of 50% of applicable work completed, up to $5,000 per property.[83]

[82] West Vancouver, Recommended replacement trees for locations within the Wildfire DPA. https://westvancouver.ca/sites/default/files/media/documents/Replacement%20Tree%20List%20-%20Wildfire%20Area.pdf
[83] UBCM, CRI Program. 2025. *2025 FireSmart Community Funding and Supports Program and Application Guide.* *https://www.ubcm.ca/sites/default/files/2025-03/LGPS_CRI-FCFS_Application_2025%20ProgramGuide%202025-03.pdf*

SECTION 6: FIRESMART ROADMAP AND CWRP ACTION PLAN

6.1 FIRESMART ROADMAP

The FireSmart Roadmap is a concept that visually demonstrates how no two communities will follow the same path towards increased community wildfire resiliency, but that actions progress along four sequential phases.[84] Some activities, including education, may appear in multiple phases but should reflect progression in terms of the community's understanding and adoption of FireSmart principles.[85]

Figure 15. Illustration of the FireSmart Roadmap concept.

Prior to the first phase, FireSmart BC recommends that three foundational elements are in place:

- A FireSmart Coordinator – a role which West Vancouver currently staffs but is recommended in this CWRP to pursue a more dedicated position (see Recommendation #24).
- A Community Wildfire Resiliency Plan (CWRP) – previously in place through West Vancouver's 2019 CWPP and updated through this CWRP.
- A Community FireSmart and Resiliency Committee (CFRC) – previously in place through West Vancouver's internal CWRP committee, and mutual aid / interagency groups across the North Shore.

Alongside these three elements, the District has progressed through all four phases of the FireSmart Roadmap. Examples of activities completed and ongoing under each phase are provided in Table 26.

[84] FireSmart BC, FireSmart Roadmap. Accessed from: https://firesmartbc.ca/resource/the-firesmart-roadmap/
[85] UBCM, CRI Program. *2025 Community Wildfire Resiliency Plan Supplemental Instruction Guide.* Retrieved from: https://www.ubcm.ca/funding-programs/local-government-program-services/community-resiliency-investment/firesmart-0

Table 26. Summary of West Vancouver's progress along the FireSmart Roadmap

Roadmap Stage	Current Status	Community Response & Recommended Next Steps
Engagement	-Local FireSmart Representatives trained in WVFR -FireSmart resources distributed online and at community events -FireSmart presentations (in person and in collaboration with NSEM Emergency Preparedness) -Staff attended the FireSmart BC Conference -HIZ Assessments performed -FireSmart Library Program and School Education Programs established	• Reception by community members has been good, but overall reach of communication has been limited to-date. • Continue to expand FireSmart programs, including diverse methods of communication and more presence on social media and in local news outlets.
Initiative	-Neighbourhood Assessments completed -Critical infrastructure assessments completed on fire halls and schools	• Difficulty in identifying and involving Community Champions in neighbourhood work • Continue to establish the Neighbourhood Recognition Program and host more neighbourhood-level FireSmart events • Expand Critical Infrastructure assessments • Establish the Wildfire Mitigation Program & local rebate programs
Expansion	-Fuel management prescriptions completed for CWPP areas -Fuel management treatments completed in high priority areas	• Mixed response from the community regarding fuel treatments – often due to a lack of understanding of tree removal specifications and treatment intent • Continue to develop fuel management prescriptions and treat the identified areas • Develop vegetation management programs for municipal park parcels that are in the WUI
Integration	-Wildfire DPA enacted -FireSmart BC Plant Program established at Maple Leaf Nursery	• Include a recognition of wildfire hazard and proactive mitigation measures in future OCP updates • Recommend expanding the DPA area or implementing FireSmart landscaping controls via bylaw

Table 1 in the Executive Summary details the Action Plan for West Vancouver. Each action item is a prioritized recommendation supported with a rationale, suggested lead agency, expected timeframe, resources required (funding, staff capacity), and metric for success.

6.2 TRACKING, REPORTING, AND UPDATES

Recommendations from the 2019 CWPP were thoroughly reviewed and used to inform the 2025 Action Plan. As the District works towards implementation of this CWRP, consider scheduling an annual review of progress made towards each action item/recommendation. Tracking and reporting will create accountability and also help with future funding applications.

The District should prepare for a five-year comprehensive review/update of the entire plan. A current CWRP (typically 5 years or less) is presently a requirement of the UBCM CRI FireSmart Community Funding & Supports program. The update should review the entire plan and consider how risk has changed based on any recent wildfires, vegetation management works completed, significant changes to the built environment due to growth and development, economic changes, or other factors that would influence the overall success of the plan. This would also include a detailed analysis of all completed fuel management treatments within the planning area with an updated status and/or a maintenance plan.

APPENDIX A: HOME IGNITION ZONE

Home and Critical Infrastructure Ignition Zones

Multiple studies have shown that the principal factors that contribute to structure loss by wildfire are the structure's characteristics and immediate surroundings. The area that determines the ignition potential of a structure is referred to (for residences) as the Home Ignition Zone or (for critical infrastructure) the Critical Infrastructure Ignition Zone.[86,87] Both the Home Ignition Zone and Critical Infrastructure Ignition Zone include the structure itself and four concentric, progressively wider zones out to 30 metres from the structure. More details on this can be found in the FireSmart Manual.[88]

During extreme wildfire events, most home destruction results from low-intensity surface fires, usually ignited by embers. Embers can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the Home Ignition Zone or Critical Infrastructure Ignition Zone in densities that can exceed 600 embers per square meter. Combustible materials found within the Home Ignition Zones or Critical Infrastructure Ignition Zones to create fire 'pathways', allowing surface fires ignited by embers to spread and carry flames into contact with structures.

Because ignitability of the Home Ignition Zone or Critical Infrastructure Ignition Zone is the main factor driving structure loss, the intensity and rate of spread of wildfires beyond the community does not always correspond to a high potential of loss or damage. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.[87] Extreme wildfire conditions do not necessarily result in WUI fire disasters.[89] It is for this reason that the key to reducing WUI fire structure loss is to reduce structure ignitability. Mitigation responsibility must be centred on structure owners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

Community Zone

The Community Zone encompasses all public land within the municipal boundary, that is beyond 30 metres from private structures.[90] Vegetation management planning and implementation on most Community Zone lands should be directed through a formal fuel management prescription developed by a forest professional with wildfire vegetation management within their scope of practice. Depending on the results of Wildfire Mitigation Program assessments (formerly known as Home Partners Program assessments) on individual structures, vegetation management may be required beyond 30 metres and

[86] Reinhardt, E., R. Keane, D. Calkin, J. Cohen. (2008). *Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States*. Forest Ecology and Management 256:1997 - 2006.
[87] Cohen, J. *Preventing Disaster Home Ignitability in the Wildland-urban Interface*. Journal of Forestry. p 15 - 21.
[88] https://firesmartcanada.ca/ and https://begins-at-home-guide.firesmartbc.ca/
[89] Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/.
[90] Community Resiliency Investment. (2024). *Community Wildfire Resiliency Plan Supplemental Instruction Guide.* Retrieved from: https://www.ubcm.ca/funding-programs/local-government-program-services/community-resiliency-investment/firesmart-0

up to 100 metres on larger private parcels. Municipal parks and trails are all often part of the Community Zone. Often Community Zone lands see high use by the public, which increases accidental ignition potential and risk to properties surrounding them.

Landscape Zone

The Landscape Zone encompasses lands that are located well away from any community infrastructure. Vegetation (fuel) management planning and implementation is primarily the responsibility of the appropriate land manager (e.g., BC Parks, Metro Vancouver, West Vancouver, etc.), working collaboratively to align landscape objectives with the CWRP objectives. Vegetation management planning and implementation in the Landscape Zone and on all forested provincial Crown lands must be directed through a formal fuel management prescription developed by a forest professional with wildfire vegetation management within their scope of practice.

Fire hazard in the WUI is partly dictated by the proximity of fuel to developed areas. Fuels closest to the community pose a higher risk, compared to fuels that are further from values at risk. It is recommended that fuels closest to structures or developed areas are prioritized for treatment first, in order to reduce the risk closest to the community. Continuity of fuel treatment is an important consideration, which can be ensured by reducing fuels from the edge of the community outward to a defined fuel-break feature (e.g., roadway, low-fuel area, water, etc.). Table 27 describes the classes associated with proximity of fuels to the interface.

Table 27. Proximity to the interface

Proximity to the Interface	Descriptor*	Explanation
WUI 100 *Home Ignition Zone, Critical Infrastructure Ignition Zone, and Community Zones*	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
WUI 500 *Community and Landscape Zones*	(100-500m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
WUI 1000 *Landscape Zone*	(500-1000 m)	Treatment would be effective in limiting long – range spotting but short-range spotting may fall short of the value and cause a new ignition that could affect a value.
Landscape Zone	>1000 m	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break / treatment.

**Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.*

APPENDIX B: WTA PLOTS AND PHOTOS

Twenty-one site-level Wildfire Theat Assessment (WTA) plots were completed during the field work for this CWRP, targeting representative forest types commonly found in the District. These plots are summarized in Table 28 below, and the finalized WTA forms have been provided separately as a PDF package. The following point ranges are assigned to the Coast and Mountains / Georgia Depression Ecoprovince:

- Wildfire Threat Score:
    - Low (0-41); Moderate (42 – 57); High (58 – 69); Extreme (>70)

Table 28: West Vancouver WTA Plot Summary

WTA Plot ID	Geographic Location	Wildfire Behaviour Score (Threat Class)
BALLANTREE-1	Fuel treated area NW of Ballantree Road.	32 (Low)
BALLANTREE-2	Untreated stand adjacent to treated areas on Ballantree road.	53 (Moderate)
BRISS-1	NE corner of Brissenden Park.	45 (Moderate)
CAPVIEW-1	Forested area in the Capilano View cemetery, adjacent to a newly built sewer access road.	51 (Moderate)
CYPRESS-1	Old growth conifer stand in Cypress Falls Park - within 80m of homes.	39 (Low)
CYPRESS-2	Southern / central portion of Cypress Falls Park, with homes adjacent to the west.	56 (Moderate)
CYPRESS-3	Mature second growth C5 stand between new developments in the Cypress area.	49 (Moderate)
CYPRESS-4	Upslope of Cypress Bowl Road from the lookout point.	49 (Moderate)
CYPRESS-5	Higher elevation than Cyprees-4 WTA plot but in the same Crown land parcel - located to the southeast of properties in the Hollyburn Cabins community.	53 (Moderate)
CYPRESS-6	East of Holly Burn Cabins, just west of where the Cypress Resort Road meets the Spar Tree Road.	56 (Moderate)
CYPRESS-7	East of Holly Burn Cabins, just north of Spar Tree Road.	50 (Moderate)
CYPRESS-8	Treated area in the Cypress PTU, implemented in winter 2022. North of the transmission line corridor but > 400 metres from structures.	35 (Low)
CYPRESS-9	Untreated area within the Cypress PTU adjacent to power lines and access road.	44 (Moderate)
LIGHTHOUSE-1	In Lighthouse Park. Just south of homes on Water Lane.	46 (Moderate)
MCKECH-1	NE corner of McKechnie park, away from any established trails and approximately 50m from homes.	41 (Low)
MILLSTREAM-1	Shields Park, within the Millstream FTU, just upslope of access road and new builds.	56 (Moderate)
PASCO-1	Municipal parcel south of homes on Pasco Road.	56 (Moderate)
PLATEAU-1	Plateau park. Foot trail bisects the area and park area is adjacent to private properties on three sides.	39 (Low)

SAHALEE-1	Municipal park area (Keith Park), upslope of the Sahalee trail, between Westhaven-Wynd and Highway 1.	45 (Moderate)
WHYTE-1	Located in Whytecliff Park, adjacent to homes on Marine Drive.	48 (Moderate)
WHYTE-LK-1	Plot was accidentally located outside of eWUI. North of Whyte Lake off hiking trail.	51 (Moderate)

APPENDIX C: REQUIRED MAPS FOR SUBMISSION

Provided separately as PDF package.

APPENDIX D: LOCAL WILDFIRE RISK ASSESSMENT PROCESS

The Wildfire Threat Assessment results that are described in Section 4.4 were obtained through a process consisting of the following steps:

- Updating fuel typing through in-situ verification (field work) and orthophotography.
- Updating structural data using in-situ verification, spatial data, and orthophotography.
- In-situ observations of wildland fuels and completion of Wildfire Threat Assessment worksheets.
- Wildfire threat spatial analysis to produce mapping and statistics described in Section 4.3, using updated fuel typing, updated structural data, and Wildfire Threat Assessment worksheet results.

This appendix provides methodological information for each of the above steps to produce the Wildfire Threat Assessment, as follows:

- Further details on fuel typing update methodology are provided in Appendix D-1: Fuel Typing Methodology and Limitations
- Wildfire Risk Assessment plot worksheets are provided in Appendix B.
- Wildfire threat spatial analysis methodology to produce results reported in Section 4.4 is detailed in the following sections:
- Appendix D-2: Wildfire Fire Threat Spatial Analysis Methodology, and
- Appendix D-3: WUI Risk Spatial Analysis Methodology.

APPENDIX D-1: FUEL TYPING METHODOLOGY AND LIMITATIONS

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups, and sixteen fuel types based on characteristic fire behaviour under defined conditions.[91] Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.[92]

There are significant limitations with the fuel typing system which should be recognized:

- The fuel typing system is designed to describe fuels which sometimes do not occur within the area of interest
- Fuel types cannot fully, and accurately capture the natural variability within a polygon
- The data used to create initial fuel types, also has limitations.

Given these limitations, the following should be considered when using fuel type maps and information, to plan community wildfire resiliency projects:

- Fuel typing further from the developed areas of the study generally has a lower confidence.
- Fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire risk, not as an operational, or site-level, assessment.
- Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur.
- Regular monitoring of fuel types and wildfire risk assessment should occur every 5-10 years to determine the need for updated assessments.

Fuel types found within the WUI were listed and discussed in in Section 4.1.1.

[91] Forestry Canada Fire Danger Group. (1992). *Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.*

[92] Perrakis, D.B., Eade G., and Hicks, D. (2018). Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.

APPENDIX D-2: WILDFIRE FIRE THREAT SPATIAL ANALYSIS METHODOLOGY

Source Data

As part of the CWRP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. Proponents completing a CWRP can obtain open-source BC Wildfire datasets, including Provincial Strategic Threat Analysis (PSTA) datasets from the British Columbia Data Catalogue. Wildfire spatial datasets obtained through the BC Open Data Catalogue used in the development of the CWRP include, but are not limited to:

- PSTA Spotting Impact
- PSTA Fire Density
- PSTA Fire Threat Rating
- PSTA Lighting Fire Density
- PSTA Human Fire Density
- Head Fire Intensity
- WUI Human Interface Buffer (2Km buffer from structure point data)
- Wildland Urban Interface Risk Class
- Current Fire Polygons
- Current Fire Locations
- Historical Fire Perimeters
- Historical Fire Incident Locations
- Historical Fire Burn Severity
- Fuel Type

As part of the program, proponents completing a CWRP are provided with a supplementary Structure point dataset from BC Wildfire Service. A structure dataset for this CWRP was provided by the District as building footprints and converted to a point feature class. The provided PSTA data does not transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the localized Fire Threat feature class that is included in the Local Fire Risk map required for project submission. The Fire Threat in the PSTA is based on provincial scale inputs - fire density, spotting impact; and head fire intensity; while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet.

Spatial Analysis

Not all attributes on the WUI Threat Assessment form or provincial guidance documents for *Determining Wildfire Threat and Risk at a Local Level* can be determined using a GIS analysis on a landscape/polygon level. To emulate as closely as possible the threat categorization that would be determined using the Threat Assessment form, the variables in Table 29 were used as the basis for building the analytical model. The features chosen are those that are spatially explicit, available from existing and reliable spatial data or field data, and able to be confidently extrapolated to large polygons.

Table 29. Description of variables used in spatial analysis for WUI wildfire risk assessment

WUI Threat Sheet Attribute	Used in Analysis?	Comment
Fuel Subcomponent		
Duff depth and Moisture Regime	No	Many of these attributes assumed by using 'fuel type' as a component of the Fire Threat analysis. Most of these components are not easily extrapolated to a landscape or polygon scale, or the data available to estimate over large areas (VRI) is unreliable.
Surface Fuel continuity	No	
Vegetation Fuel Composition	No	
Fine Woody Debris Continuity	No	
Live and Dead Coniferous Crown Closure	No	
Live and Dead Conifer Crown Base height	No	
Live and Dead suppressed and Understory Conifers	No	
Forest health	No	
Continuous forest/slash cover within 2 km	No	
Weather Subcomponent		
BEC zone	Yes	Although included, these are broad classifications, meaning most polygons in the Study Area will have the same value
Historical weather fire occurrence	Yes	
Topography Subcomponent		
Aspect	Yes	Contour model was used to determine aspect.
Slope	Yes	Elevation model was used to determine slope.
Terrain	No	Incorporated through aspect and slope.
Landscape/ topographic limitations to wildfire spread	No	Incorporated as non-fuel or water in the fuel typing attribute.
Structural Subcomponent		
Position of structure/ community on slope	No	Too difficult to quantify – this is a relative value.
Type of development	No	Too difficult to analyze spatially.
Position of assessment area relative to values	Yes	Only distance to structures is used in this analysis, being above, below or sidehill too difficult to analyze spatially.

The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme wildfire threat class. Table 30 below summarizes the components and scores to determine the Fire Threat.

Table 30. Fire Threat Class scoring components

Attribute	Indicator	Score
Fuel Type	C-1	35
	C-2	
	C-3	
	C-4	
	M-3/4,>50% dead fir	
	C-6	25
	M-1/2, >75% conifer	20
	C-7	
	M-3/4, <50% dead fir	
	M-1/2, 50-75% conifer	15
	M-1/2, 25-50% conifer	10
	C-5	
	O-1a/b	
	S-1	
	S-2	
	S-3	
	M-1/2, <25% conifer	5
	D-1/2	0
	W	0
	N	0
Weather - BEC Zone	AT, irrigated	1
	CWH (majority), CDF, MH	3
	CWH xm1/xm2	5
	ICH, SBS, ESSF	7
	IDF, MS, SBPS, CWHsds1 & ds2, BWBS, SWB	10
	PP, BG	15
Historical Fire Occurrence Zone	G5, R1, R2, G6, V5, R9, V9, V3, R5, R8, V7	1
	G3, G8, R3, R4, V6, G1, G9, V8	5
	G7, C5, G4, C4, V1, C1, N6	8
	K1, K5, K3, C2, C3, N5, K6, N4, K7, N2	10
	N7, K4	15
Slope	<16	1
	16-29 (max N slopes)	5
	30-44	10
	45-54	12
	>55	15
Aspect (>15% slope)	North	0
	East	5
	<16% slope, all aspect	10
	West	12
	South	15

Limitations

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The Wildfire Threat Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. Structures are considered, but there is no consideration for structure type (also not included on threat assessment worksheet). This method uses the best available information to produce accurate and useable threat assessment across the study area in a format which is required by the UBCM CRI program.

APPENDIX D-3: WUI RISK SPATIAL ANALYSIS METHODOLOGY

To determine the WUI Risk score, only the distance to structures is used. Buffer distance classes are determined (<200m, 200m-500m and >500m) but only for polygons that had a 'high' or 'extreme' Fire Threat score from the previous, assessment. To determine WUI Risk, polygons within 200 m of structures are rated as 'extreme', within 500 m are rated as 'high', and within 2 km are 'moderate'. Distances over that are rated 'low.' WUI Risk Classes and associated assumed scores are summarized in Table 31.

Table 31. WUI Risk Classes and their associated summed scores

WUI Risk Class	Score
Very Low	0
Low	0-35
Moderate	35-55
High[93]	55-65
Extreme	>65

[93] WUI risk is only assessed for polygons with wildfire threat ratings of high or extreme.

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