

# Anmore South | Fire Fighting Enhancement + Mitigation

May 23<sup>rd</sup> 2025

In response to the South Anmore 2025 Risk Assessment prepared by SenseNet Inc., this letter provides clarification on the wildfire mitigations and firefighting preparedness measures incorporated in the Anmore South Neighbourhood Plan.

The SenseNet report emphasizes generalized regional climate trends and landscape-level fire behavior, without taking into consideration the **extensive planning, infrastructure, and mitigation strategies that will be implemented as a result of the Neighbourhood Plan**. Contrary to the report's implication that the project increases community risk, the Neighbourhood Plan will provide fire resilience and community safety not only for Anmore South, but across the entire Village of Anmore.

## Anmore South-Specific | Fire Mitigation + Enhancement Measures:

- **MATERIALS** | All buildings in Anmore South will be constructed to current BC Building Code standards, including the latest wildfire-resistant materials such as non-combustible roofing, siding, and triple-pane windows.
- **SPRINKLERS** | All multi-family buildings and townhomes will be sprinklered, significantly reducing structural ignition risk.
- **WATER SOURCE** | A direct Metro Vancouver water connection will be constructed, dramatically increasing available water flow rates for fire suppression.
- **FIRE FLOWS** | Water modeling confirms that pressure zones and hydrant flows across Anmore South meet or exceed firefighting standards.
- **FIRE HALL** | The existing Sasamat Fire Hall is within a 5 km travel radius of the entire site, meeting the Fire Underwriters' standards for response time.

## Village-Wide | Fire Mitigation + Enhancement Measures:

- **VILLAGE-LINKED** | This new system provides an opportunity for a looped water network connected to Anmore's existing supply—boosting system redundancy, reliability, and fire-fighting water pressure across the Village. A memo outlining recommended actions for connecting the water system and improving Village fire flows is provided as an attachment to this letter.

- **EQUIPMENT + TRAINING** | Funding from the project will support acquisition of a new Type 1 aerial fire engine and enhanced fire department training to transition from “Exterior Operations” to “Interior Operations” over time.
- **SVFD HOUSING** | The Neighbourhood Plan includes policy requiring dedicated housing for volunteer firefighters to improve recruitment and retention for the Sasamat Volunteer Fire Department - strengthening service levels for all of Anmore.
- **ACCESS** | Emergency access will be enhanced through new street connections to Crystal Creek, Fern Drive, and First Avenue, expanding evacuation routes, reducing chokepoints and reducing the number of dead-end roads.
- **FIRE FIGHTING** | The Neighbourhood Plan includes policy to support wildland fire prevention and firefighting through detailed design of water servicing infrastructure.
- **FIREHALL EXPANSION** | The Neighbourhood Plan provides 1.2 acres of designated Civic Reserve land, which is available for future civic institutional uses such as a new firehall.
- **EMERGENCY PLANNING** | The Village maintains an Evacuation Plan, prepared by emergency management and disaster response professionals, that is updated on an as needed basis. This plan will be regularly updated to reflect ongoing build-out of Anmore South along with other residential growth in the Village.

Rather than increasing risk, the Anmore South Neighbourhood Plan introduces the very infrastructure and design interventions needed to help protect the Village against escalating wildfire threats. SenseNet’s landscape-level model fails to reflect the specific fire mitigation strategies, infrastructure upgrades, and operational enhancements incorporated in this development. The result is a safer Anmore - not only for those who will live in Anmore South, but for all current residents as well.

**Attachment:**

- Letter Memorandum: Anmore South Secondary Water Supply to the Village of Anmore, Aplin Martin, May 20<sup>th</sup> 2025

## LETTER MEMORANDUM

**To:** Icona Holdings Ltd. **File No:** 23-291

**From:** Ben Loewen, P. Eng, GDBA, PMP **Date:** 2025-05-20

**Re:** Anmore South Secondary Water Supply to the Village of Anmore

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Icona Holdings Ltd. (Icona) has engaged Aplin & Martin Consultants Ltd. (Aplin Martin) to conduct a high-level review of the potential impacts of connecting the proposed Anmore South development to the Village of Anmore's existing water distribution system.

The development presents the potential to improve available fire flow within the Village by introducing new water main connections. In particular, a second connection to the Metro Vancouver supply main, proposed to connect to the west side of the Village through the Anmore South development, would add redundancy to the current system, which relies on a single supply point from the southeast. To fully realize the potential benefits of these new connections, additional upgrades may be required, including new pump stations and storage infrastructure to address existing deficiencies, support future demand growth, and improve system reliability.

It is recommended that the following actions be completed in order to better understand the Village's water distribution system and any potential upgrade options:

1. Hydraulic Modeling Analysis of the existing and future scenarios
  - a. No current OCP scenario in the Village model. Aplin Martin could build a future scenario based on growth assumptions to ensure upgrades are sized, accounting for future growth (i.e. Bill 44 and Bill 47 implications)
  - b. Water Age Analysis – to evaluate future considerations of water quality concerns
2. Fire Flow Testing
  - a. Aplin could provide the village with a hydrant testing plan in order to calibrate the hydraulic model in order to ensure that the model reflects real-world results, in order to advise on the best upgrade strategies and solutions
3. Infrastructure Assessment
  - a. Review the existing infrastructure and size the potential proposed upgrades (i.e., storage tanks and pump stations)

These actions will help provide the Village with a clearer understanding of the current system's capacity, identify any existing or future deficiencies, and support informed decision-making regarding infrastructure investments. Ongoing coordination between the Village, Icona, Aplin Martin, and Metro Vancouver will be key to ensuring reliable service and making sure any upgrades are planned and implemented effectively.

**APLIN & MARTIN CONSULTANTS LTD.**



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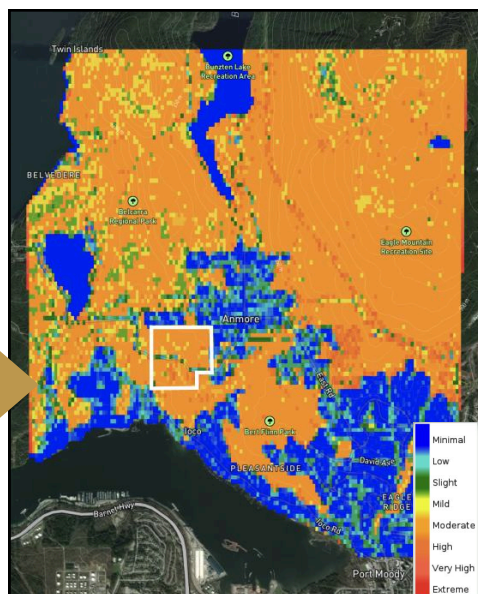
Ben Loewen, P.Eng, GDBA, PMP  
Project Manager



# South Anmore 2025 Risk Assessment - SenseNet

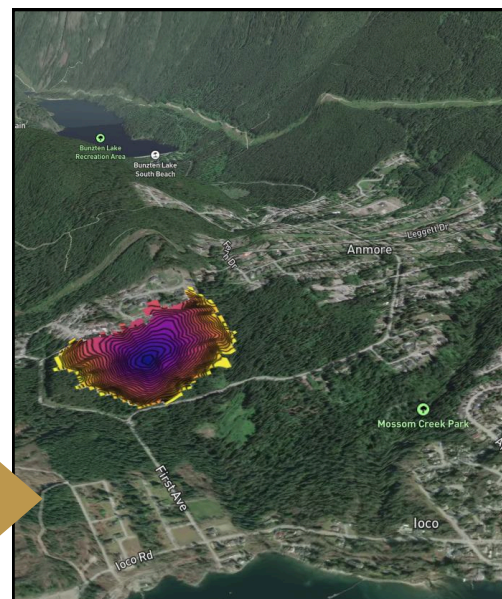
## 01 Wildfire Risk Maps

The wildfire risk mapping tool in our platform assesses ignition potential based on vegetation density, fuel moisture, and topography. Results indicate a consistent pattern of moderate wildfire risk across the landscape, underscoring the importance of addressing this threat in planning and risk management.



## 02 Fire Spread Predictions

We conducted fire spread simulations using hypothetical ignitions in identified high-risk areas to assess how wildfires could potentially move through and around the community. Twelve ignition points were selected to model various spread scenarios and evaluate their potential impacts on Anmore.



## 03 Development Pressures & Evacuation Risk

Residential growth and increased recreational use raise the risk of human-caused wildfires in South Anmore. All development options would further strain the area's two main evacuation routes, which are already projected to exceed capacity. This would delay evacuation and emergency response, increasing risk to both current and future residents.



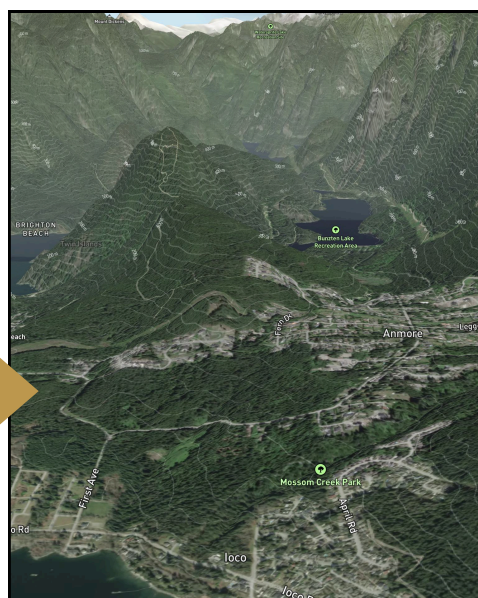
## 04 Wildland Urban Interface (WUI)

The Village of Anmore already has a significant wildland-urban interface (WUI), with forested areas surrounding the entire community. Expanding development further extends the WUI, increasing both ignition potential and exposure to wildfire from adjacent natural areas.



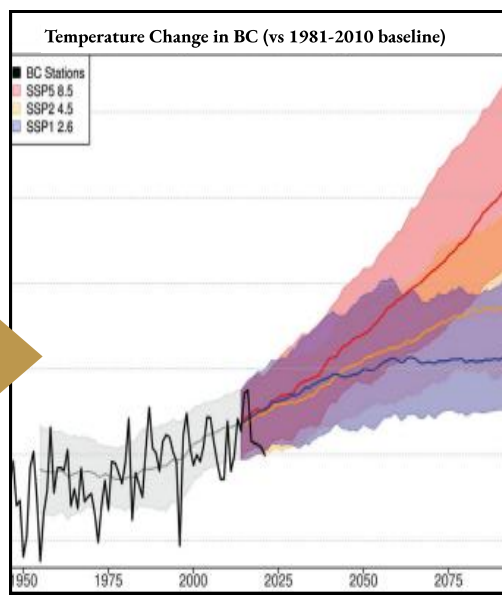
## 05 Influences of Local Terrain & Conditions

The Village of Anmore, situated within the Coastal Western Hemlock zone, faces increasing wildfire risk driven by climate change. Warmer temperatures, prolonged droughts, flammable vegetation, and complex topography all contribute to the potential for more frequent and severe wildfires in the area.



## 06 Climate Projections

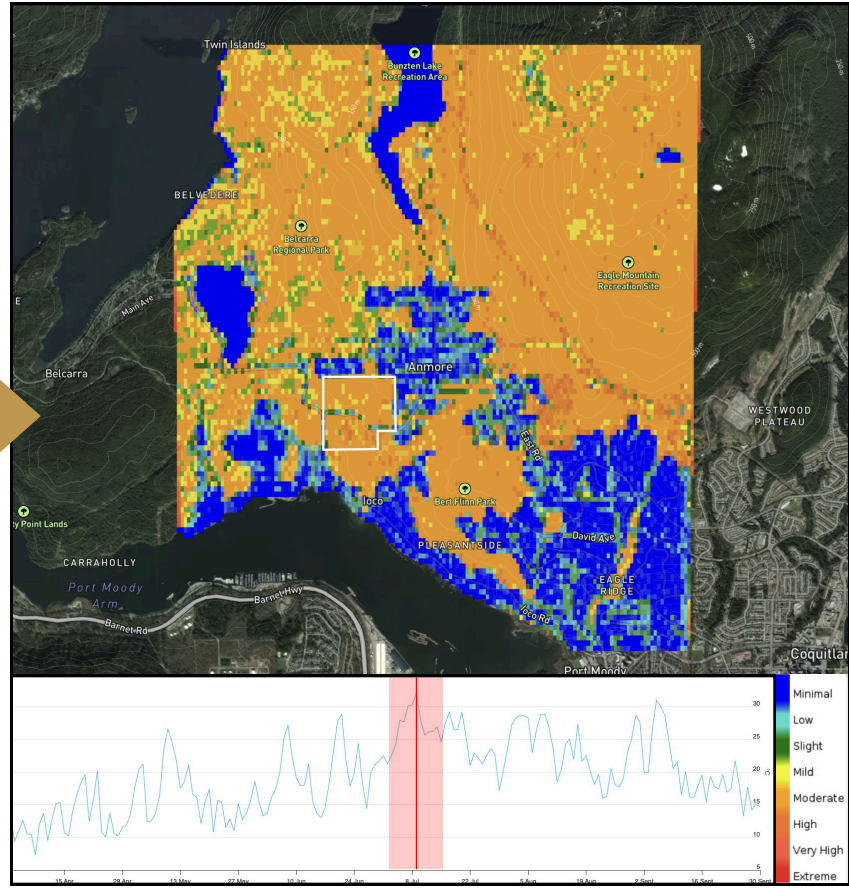
Metro Vancouver is projected to experience an average temperature increase of 3°C by 2050, along with extended drought periods and reduced rainfall. These changes are expected to elevate wildfire risk over time, with areas previously unaffected by wildfires increasingly prone to fire activity. Longer periods of extreme fire weather will likely lead to more frequent and severe fire incidents.



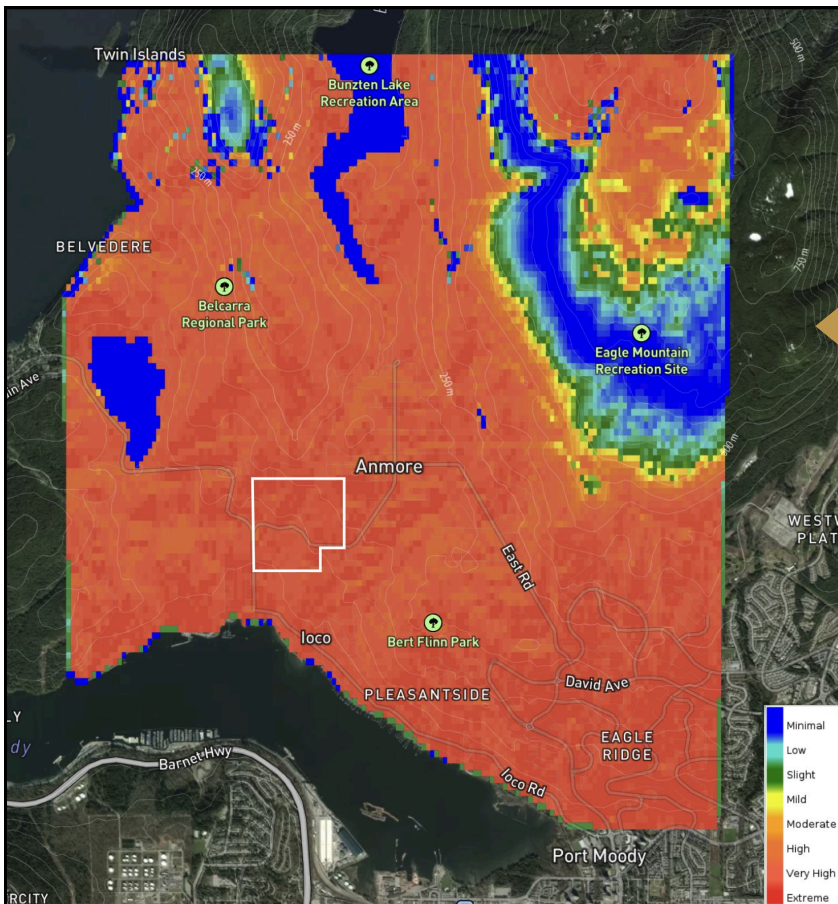


## Wildfire Risk

- Using historical data from the hottest day in 2024, we ran a wildfire risk model that incorporates vegetation type, density, fuel moisture, and other landscape factors.
- The results show that 47.16% of the assessed area (1,713.29 ha) falls under moderate wildfire risk. An additional 26.39% (958.73 ha), mostly infrastructure and water, is classified as minimal, while high to extreme risk zones make up 16.13% (586 ha).
- The area surrounding the Village of Anmore and the proposed South Anmore development is primarily moderate risk, with scattered zones ranging from mild to very high, highlighting the need for careful planning and mitigation.



## Landscape Risk

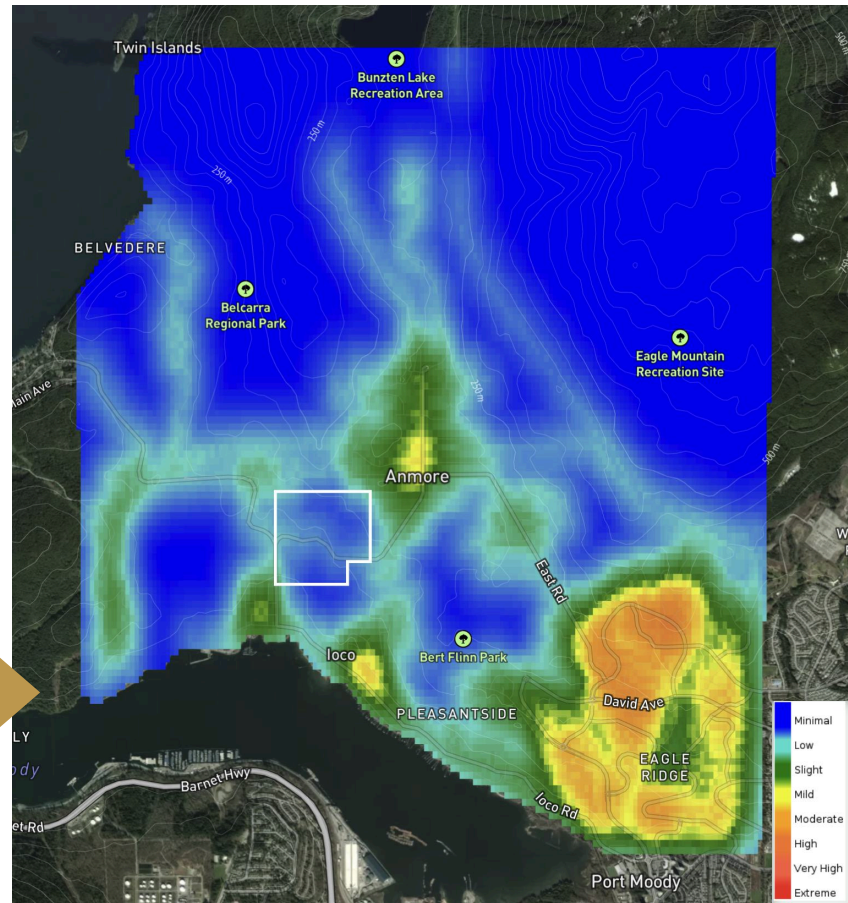


- We also produced a risk map using static physical features of the environment, including topography such as slope, aspect, and terrain complexity.
- This analysis reveals that the entire area in and around Anmore (including the proposed South Anmore development) is classified as high to extreme risk based on topographic influence alone.
- These topographic factors significantly shape wildfire behaviour and spread potential, especially in areas with steep slopes and south or west-facing aspects, which dry out faster and promote faster-moving fires.
- This map serves as a predictive indicator of how wildfire may behave if ignition occurs, making it a critical tool for understanding spread risk and suppression challenges.
- The findings highlight the need to incorporate topographic risk into development planning, emergency access design, and fuel mitigation strategies.

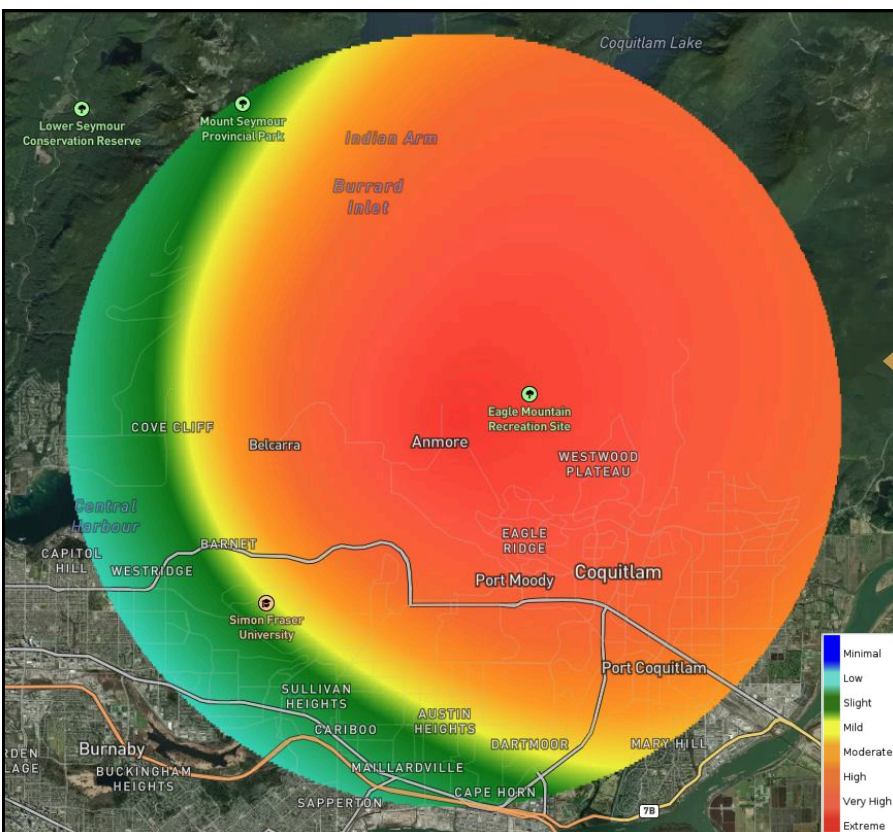


## Infrastructure at Risk

- This risk map highlights infrastructure in and around Anmore that is exposed to wildfire due to its location within a heavily forested landscape.
- It shows the extent of the Wildland-Urban Interface (WUI) and highlights the community's vulnerability.
- Limited road access and evacuation routes pose challenges for emergency response.
- With development concentrated in one area, a single wildfire could impact multiple assets, leading to significant disruption and financial consequences.
- The South Anmore proposal would increase exposure by adding more assets in high-risk areas.
- Even areas that appear as lower-risk zones remain vulnerable due to their surrounding forest conditions.



## Ember Flight Risk

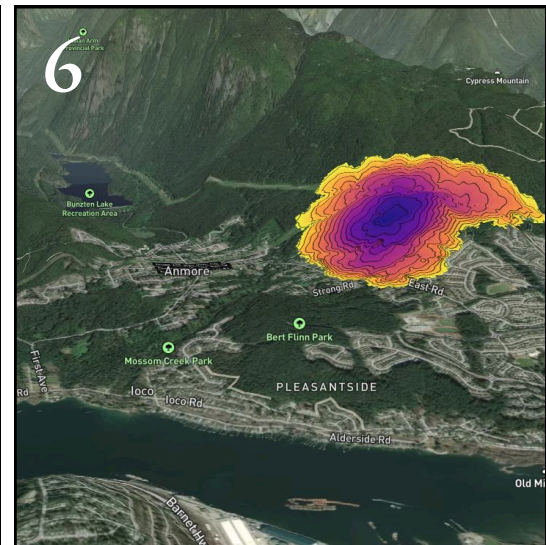
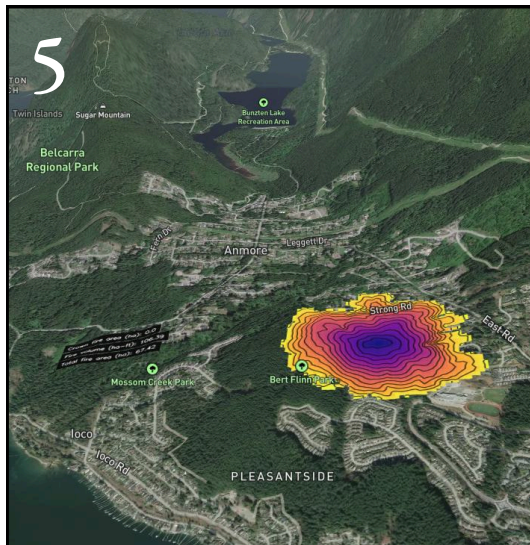
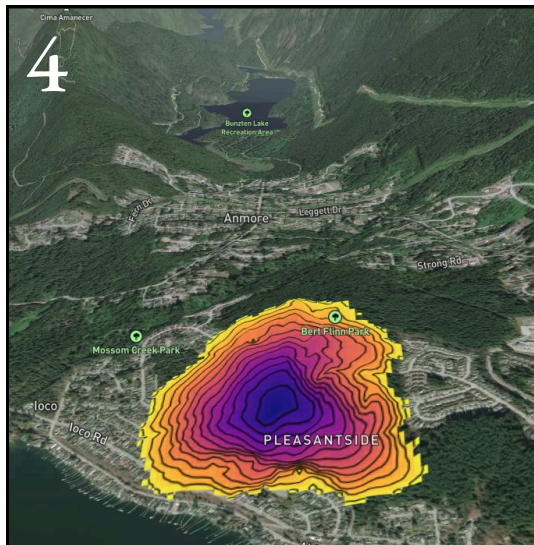
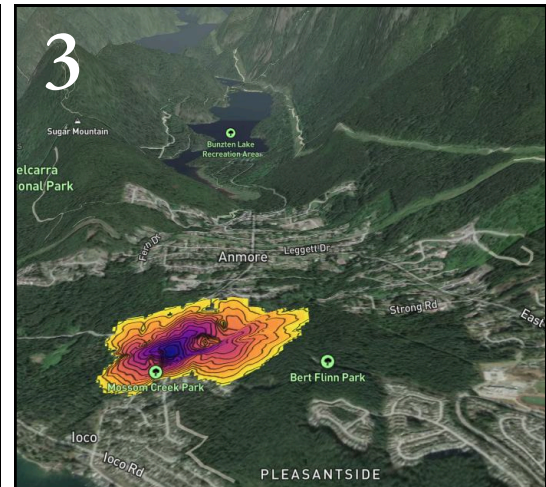
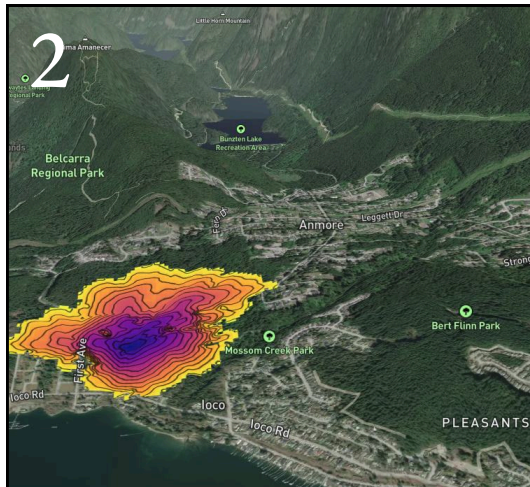
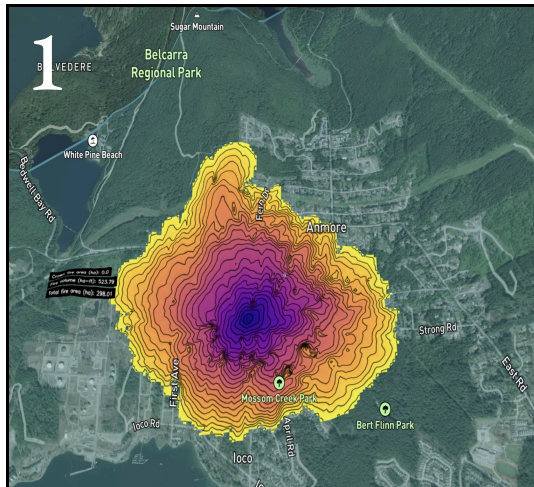
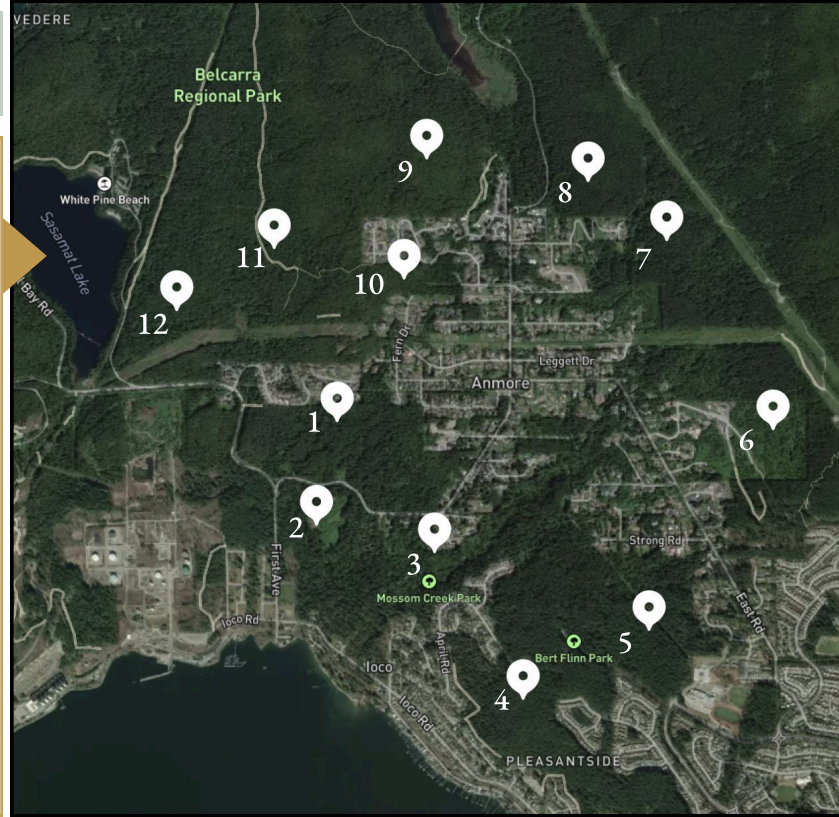


- This risk assessment models conditions on a high-fire-risk day to evaluate potential ember flight.
- High to extreme ember risk was observed up to 11 kms from Anmore, in the direction of the wind.
- Wildfire threats extend well beyond the visible flame front, driven by windborne embers.
- Embers cause up to 90% of home losses, often igniting dry vegetation, wood roofs, decks, and firewood piles.
- These small ignitions quickly grow into spot fires, which multiply and merge with surface fires.
- The result is fast-moving, intense fire behaviour that directly threatens homes and infrastructure.

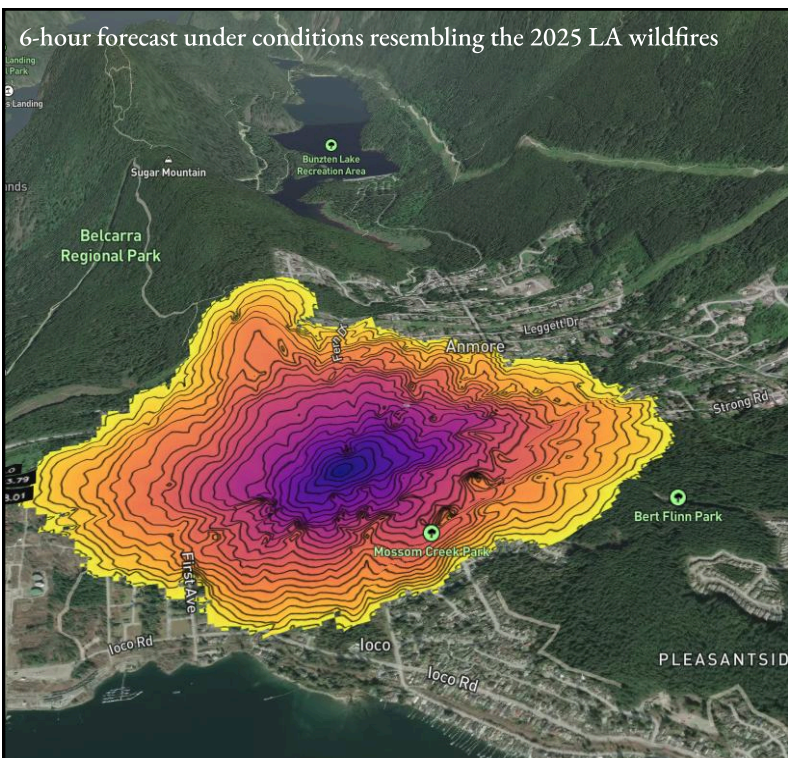
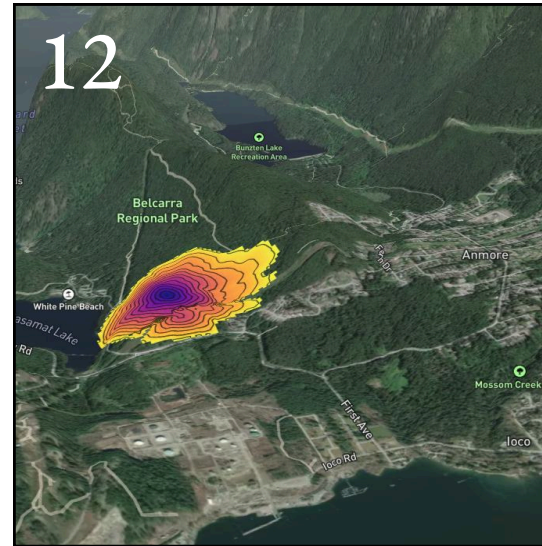
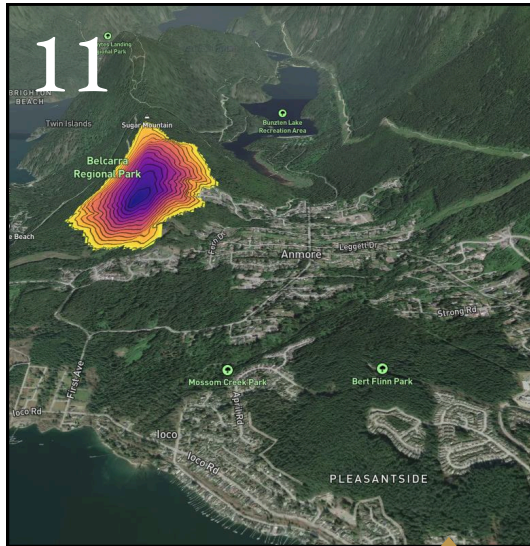
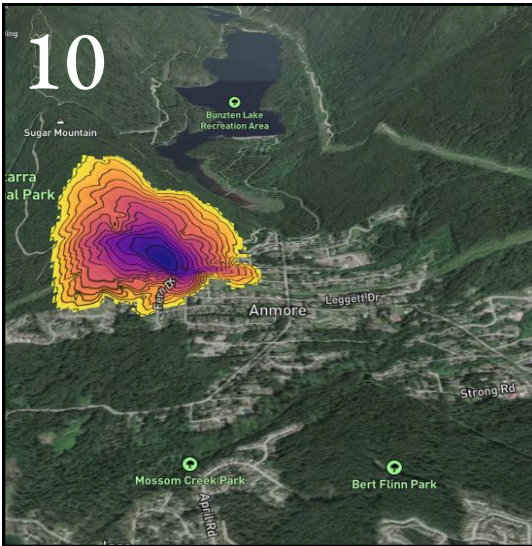
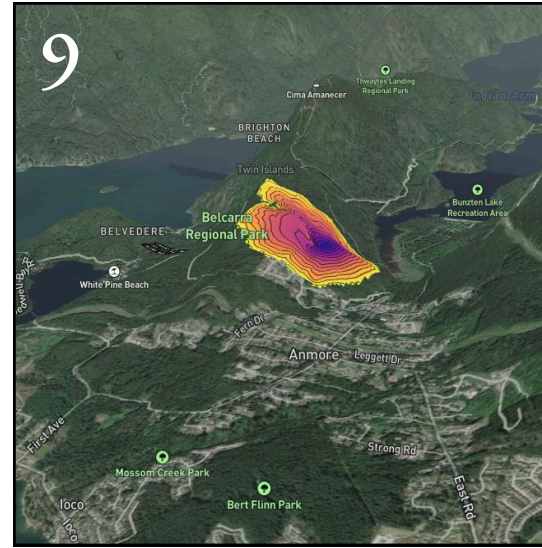
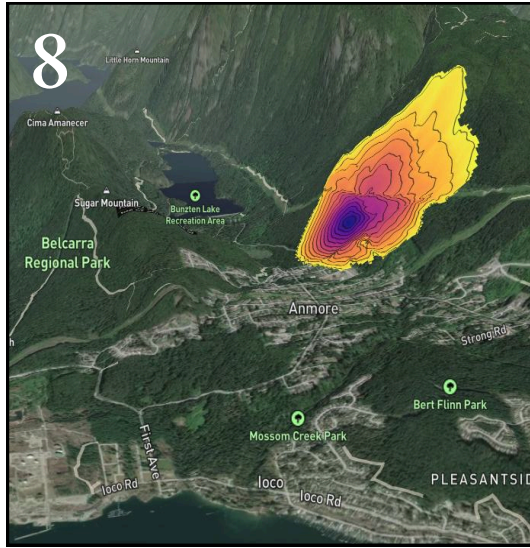
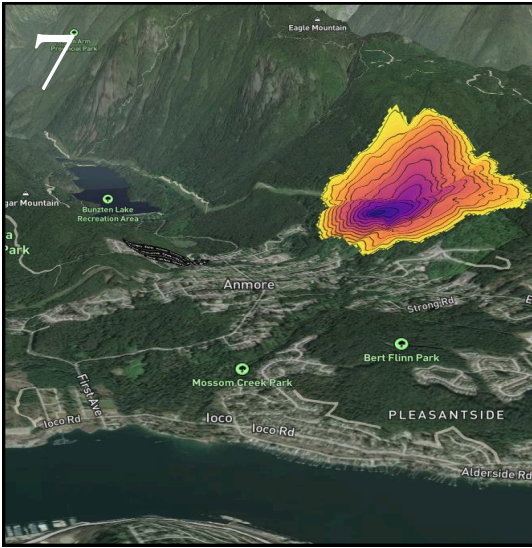


## Fire Spread Predictions

- We ran fire spread simulations using twelve hypothetical ignitions in high-risk areas to assess how wildfires could move through and around Anmore. These scenarios were designed to reflect a range of potential fire behaviours and their impact on the community.
- The model accounted for key wildfire drivers, including fuel type and density, topography (slope, aspect, elevation), fuel moisture weather conditions (wind, temperature, humidity), etc.
- By combining these factors, the simulations provide a realistic view of potential fire spread and highlight high-exposure zones and evacuation challenges.





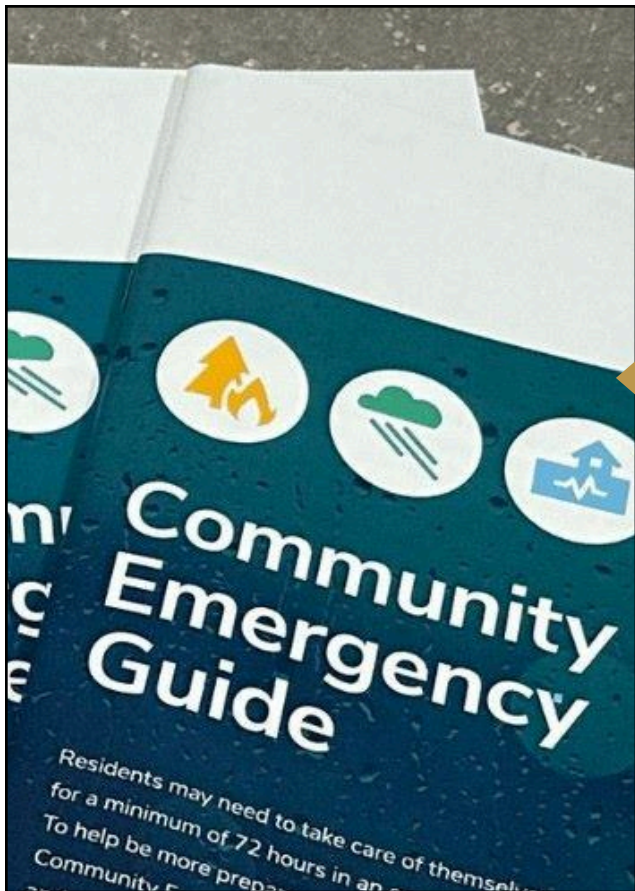


- Each simulation modeled wildfire spread over a 6-hour period, focusing on the early stage when fires grow rapidly.
- Fire behaviour varied by ignition point due to vegetation, fuel moisture, and topography, with slope accelerating fire spread upwards.
- Critically, the model shows that if even one of the two evacuation routes is compromised, evacuation becomes significantly more dangerous. Congestion, overcapacity, and panic could slow traffic to a standstill. With the population increase projected in the South Anmore plan, some residents may be unable to evacuate in time in certain scenarios putting lives at risk.
- This underscores the urgent need to evaluate fire risk and evacuation capacity before approving any large-scale population growth in this area.



## 03 Development Pressures & Evacuation Risk

- South Anmore could add 4,000–6,390 new residents, increasing density and wildfire exposure over a 25-year buildout.
- Expands the Wildland-Urban Interface (WUI) and raises the risk of human-caused ignitions, especially with increased trail use and recreation.
- The area relies on just two evacuation routes (Ioco Rd & East Rd), both projected to be overcapacity with added development traffic.
- Internal roads can support growth with upgrades, but regional access requires major improvements involving external agencies
- Without these upgrades, only 40% of the full buildout can be supported.
- Evacuation delays remain a serious risk, with transportation critical to safety as development expands.

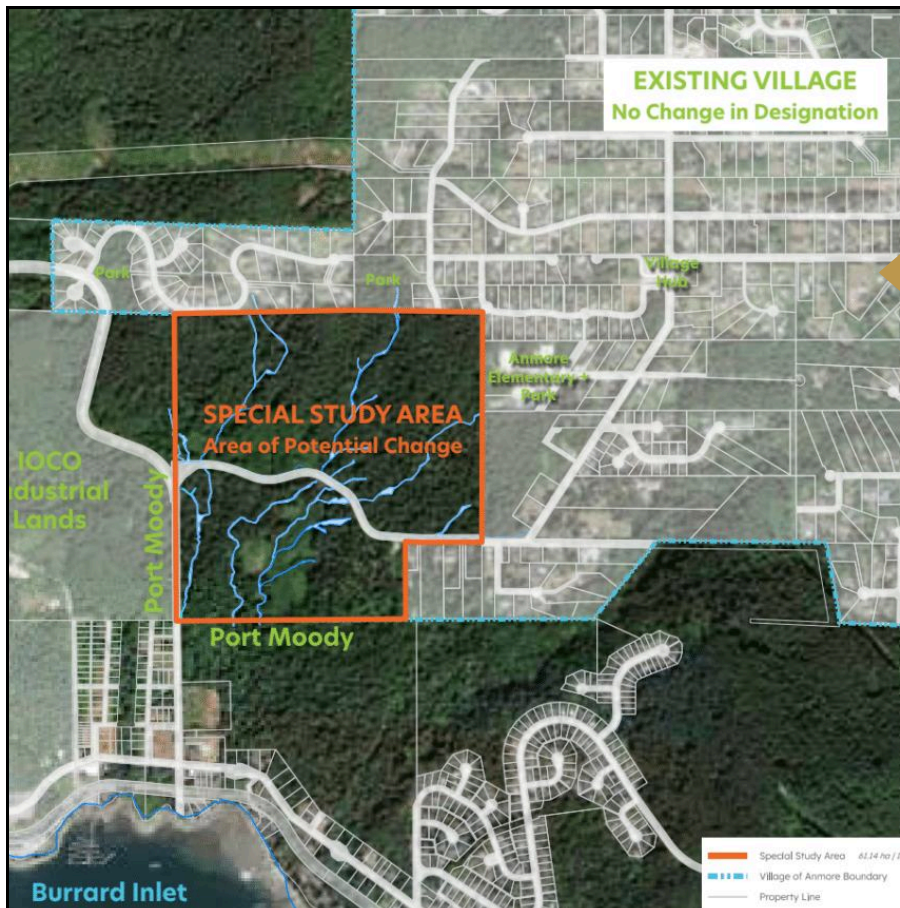


- Evacuation could take 7 to over 11 hours with proposed development, a 200–360% increase from the current estimate of ~2.4 hours.
  - Option 1: ~11.1 hrs (362% ↑)
  - Option 2: ~8.5 hrs (254% ↑)
  - Option 3: ~7.4 hrs (208% ↑)
- The two existing roads are already projected to exceed capacity under normal conditions with the South Anmore development.
- In an emergency, this would likely result in gridlock, delayed evacuation, and blocked emergency access, especially during fast-moving wildfires.
- In worst-case scenarios, residents may not be able to evacuate in time, posing serious risk to life.
- These estimates exclude Buntzen Lake visitors, which number in the hundreds of thousands annually and would further strain evacuation routes during peak season.



# 04 Wildland Urban Interface (WUI) Risk

- Anmore is fully bordered by the Wildland-Urban Interface (WUI), where homes and infrastructure sit directly beside flammable forests and vegetation.
- The Village's rural setting is surrounded by continuous forest, with few natural breaks and limited defensible space.
- The WUI is a high-risk zone where proximity to wildland fuels greatly increases ignition potential.
- Fires starting in the WUI can spread rapidly into residential areas, especially under dry, windy, or steep conditions.



- Climate change is worsening wildfire risk in WUI communities like Anmore, driving longer fire seasons, drier fuels, and more extreme fire behaviour.
- The proposed South Anmore development would extend the WUI boundary, introducing hundreds of new homes into wildfire-exposed areas and increasing the overall landscape-level risk.
- More residents and increased recreational use in forested areas also raise the likelihood of human-caused ignitions, such as from campfires, vehicles, or trail use.
- Incomplete or fragmented fire mitigation efforts, like isolated fuel treatments or inconsistent defensible space, can allow fire to intensify and spread through WUI areas, making suppression more difficult and increasing damage potential.



# 05 Vegetation and Topographic Influence on Wildfire Behaviour in the Village of Anmore

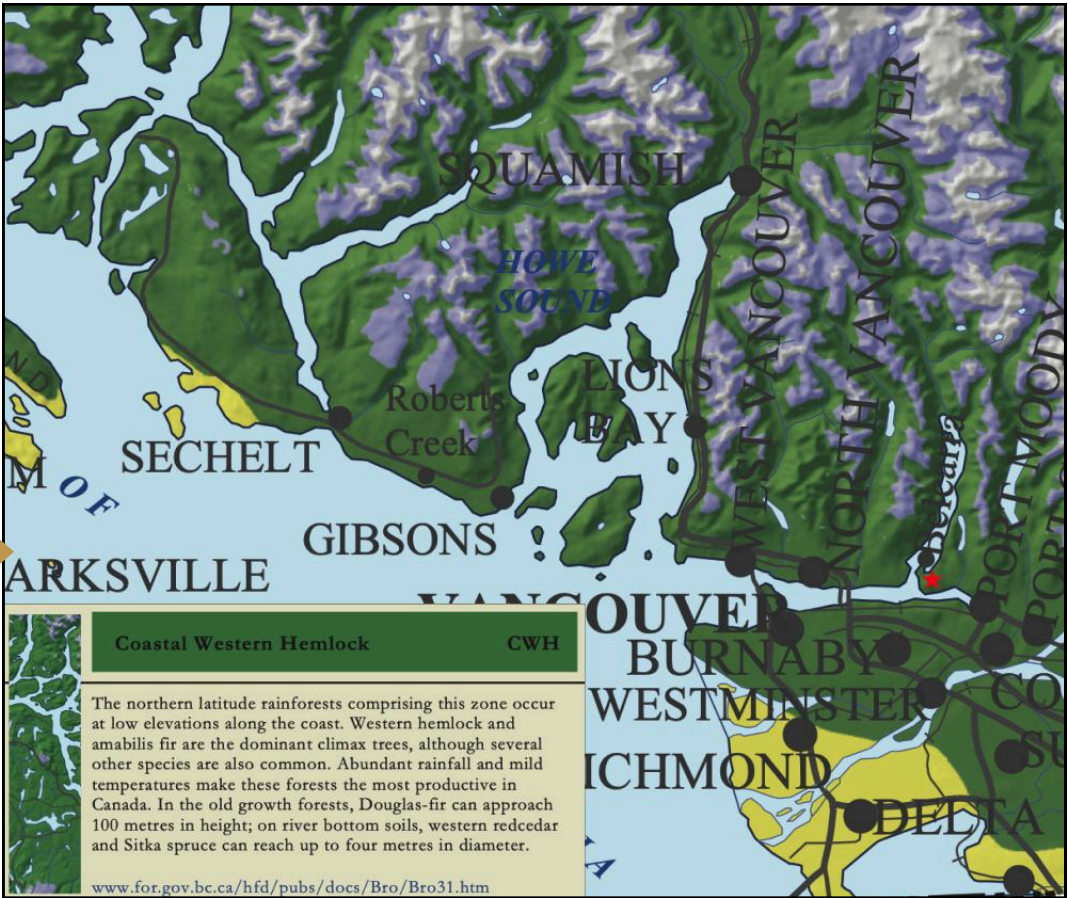
## BEC Zone/Vegetation

- The Village of Anmore is situated in the Coastal Western Hemlock (CWH) Biogeoclimatic (BEC) zone, which is increasingly vulnerable to wildfires due to climate change.

While this zone is naturally fire-resistant, topography, coastal influence, and climate change heighten the risk of severe fires.

## Topography

- The Village of Anmore is located in an area with steep, rugged slopes which accelerate fire spread. Lower elevations are more fire-prone, but fires can reach higher altitudes during extreme conditions.
- Narrow valleys and canyons funnel wind, increasing fire intensity, while ridges may either slow or intensify fire spread depending on wind direction.





## Coastal and Climate Change Influence on Wildfire Behaviour in the Village of Anmore

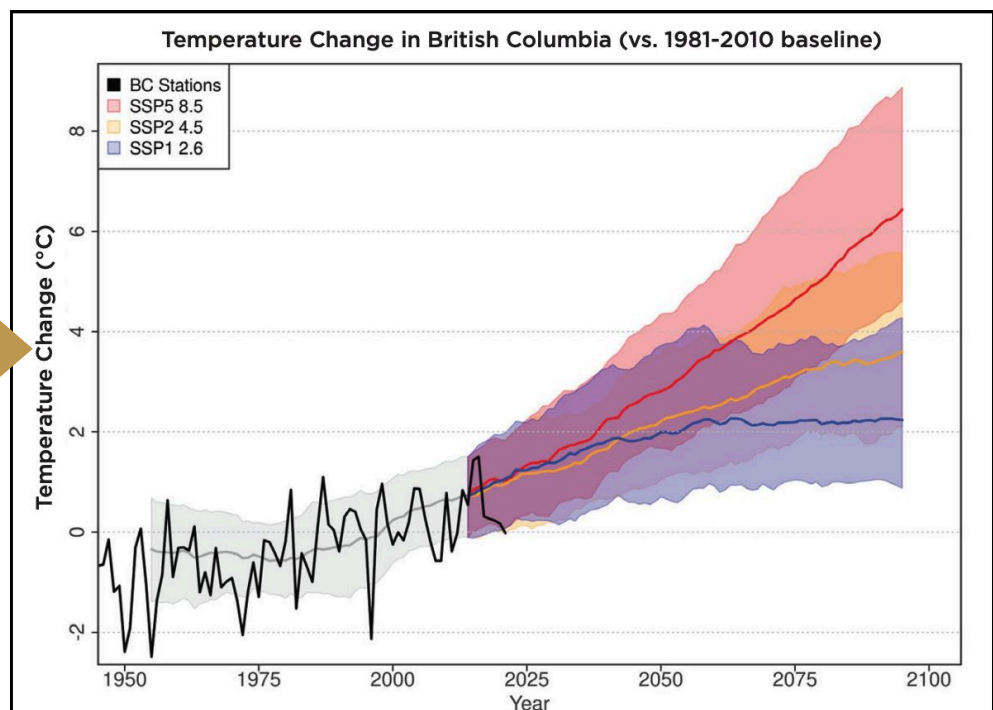
### Coastal Influence

- The Village of Anmore lies within the Coastal Fire Weather Zone, an area historically shaped by temperate rainforest conditions, long growing seasons, and high rainfall.
- These factors, along with low-flammability vegetation, moisture-rich fuels, and a closed canopy, have historically limited wildfire spread.
- However, shifting conditions, including dry summers, dense underbrush, and onshore winds, are drying vegetation and increasing fire risk, even in these typically fire-resistant ecosystems.



### Climate Change Impacts

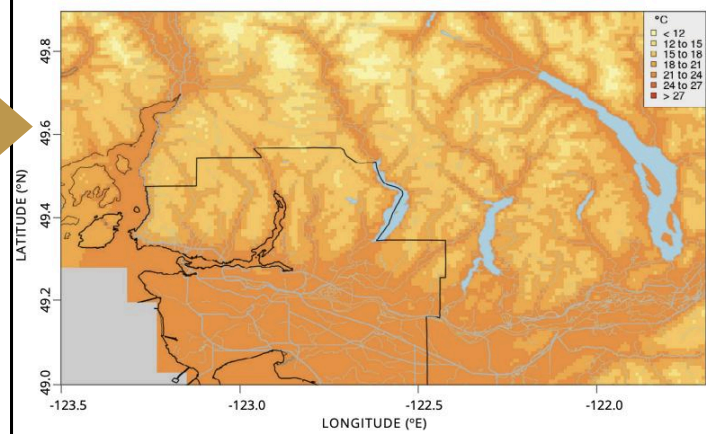
- Warmer temperatures and drought are weakening forests, making them more prone to wildfire.
- Increased vegetation growth under warm conditions raises fuel loads and fire risk.
- Shifting species composition may reduce fire-resistant vegetation and increase flammable fuels.



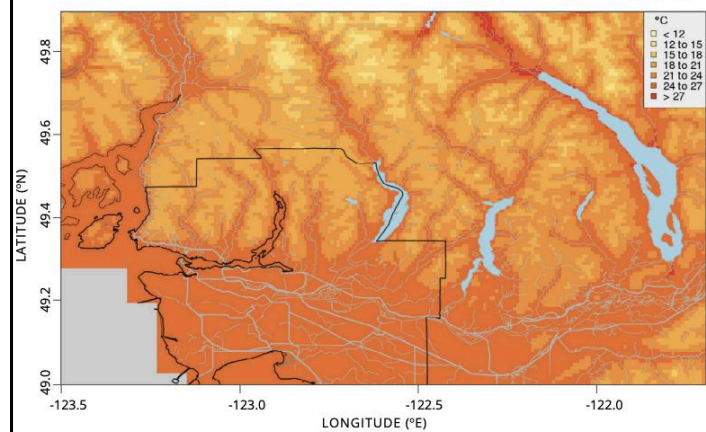


- Climate change is already affecting Metro Vancouver, and impacts are projected to intensify significantly by 2050, with average daily temperatures rising by 3°C.
- The number of extremely hot days is expected to triple, while frost and ice days will decline by 75%, leading to drier landscapes year-round.
- Summer rainfall is projected to decline by nearly 20%, increasing the likelihood of longer droughts, drier fuels, and more severe wildfires.
- Fire seasons will be longer and more intense, especially in forested, rural communities like Anmore, which are surrounded by dense vegetation and have limited natural firebreaks.
- Ember spread, erratic fire behaviour, and rapid fire growth will become more likely due to drier conditions, wind patterns, and topography.
- These changes directly threaten homes, infrastructure, and community safety, particularly in areas expanding into the Wildland-Urban Interface (WUI).

SUMMER AVERAGE DAYTIME HIGH TEMPERATURE - PAST



SUMMER AVERAGE DAYTIME HIGH TEMPERATURE – FUTURE (2050s)



Climate Projections for Metro Vancouver Report, 2016

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## As wildfire season approaches, how at risk is Metro Vancouver?

By CTVNewsVancouver.ca Staff

Published: April 04, 2025 at 1:06PM EDT



- Experts warn that climate change, poor forest management, and increased development in fire-prone zones are making urban-interface fires more likely in Metro Vancouver.
- A national report projects that 92% of new wildfire-related housing losses could occur in just 20 municipalities, mostly in B.C., with annual losses surpassing \$2 billion if high-risk development continues.
- While Anmore is not currently classified among the highest-risk areas, its location, topography, and development plans mean it must prepare for rising fire risk over the next 25 years.