

Hazards Framework Project Overview

Recommendation:

THAT Council receive the report dated March 3, 2026, titled “Hazards Framework Project Overview”.

Report Purpose and Summary Statement:

To inform Council of the City’s existing hazard-related land use regulations and outline a phased Hazards Framework project that will undertake technical studies to translate land use and climate related hazards into clear and consistent development regulations.

Strategic Alignment:

Liveable Community; Climate Leadership & Environmental Stewardship; Engaged, Healthy Community; Governance & Corporate Excellence

Hazards Framework Project Overview

BACKGROUND:

Maple Ridge is experiencing increasing exposures to natural hazards and climate-related stressors, resulting in elevated risks to people, buildings, public infrastructure, and ecosystems, as well as increasing impacts to municipal finances. The Hazards Framework project focuses on exploring land use regulations related to natural hazards, including prevention and mitigation efforts, with a focus on natural and climate-related threats. Long-term ecosystem degradation is a leading driver of future hazard conditions, including flooding, slope instability, extreme heat, wildfire, drought, and declining air quality. These risks are occurring alongside accelerated growth mandated by provincial housing legislation and transit-oriented development, which add further pressure to already-stressed lands.

Hazards relevant to land use planning arise from the interaction of natural processes, human activity, and a changing climate. Climate change is increasing the frequency, severity, and spatial distribution of many natural hazards. The community's land use patterns and public infrastructure can further influence exposure and consequences during hazard events. The Hazards Framework project will consider this interconnected context while remaining focused on land use related policies and regulations that are within the City's control.

The risks and vulnerability associated with the impacts of natural hazards are shaped not only by natural systems, but also by human-driven factors such as climate change, land use patterns, buildings, and infrastructure systems, all of which influence how hazards manifest and interact over time.

The Official Community Plan (OCP) is the overarching guide for sustainable, long-term community development. It outlines a vision, policy framework, and land use directives necessary to manage growth, mitigate risks, and ensure coordinated decision-making. Implementation is carried out through more detailed plans, technical studies, and strategies that consider local conditions.

Climate Action Plan:

In June 2025, Council endorsed its first Climate Action Plan: *Resilient Futures 2050: Moving Boldly Toward Low-Carbon Resilience*, which identified flooding, geohazards, extreme heat, wildfire, drought, air quality, and severe storms as priority risks to community health and safety. The Action Plan establishes a clear direction for hazard risk reduction by calling for the creation of flood and geohazard regulations based on updated technical studies (Bold Move 1, Action 1.1), directly linking land use to climate resilience outcomes.

Urban Forest Management Plan:

The Urban Forest Management Plan, adopted in June 2024, positions the urban forest as critical infrastructure for mitigating climate-related hazards and protecting public health. Through Strategy 8, the Management Plan explicitly connects forest health and management to community safety. Strategy 3 further advances climate resilience and equity by emphasizing the expansion and protection of forest assets to reduce heat-related illness, improve air quality, and support a more liveable community. Together, these plans demonstrate how targeted strategies advance the broader policy framework.

DISCUSSION:

While Maple Ridge has several hazard-related policies, bylaws, and Development Permit Areas (DPAs) in place, these tools were developed independently over time and do not consistently reflect updated hazard mapping or the compounding nature of climate-related risks, and gaps in data and mapping exist. The Hazards Framework project responds to this by proposing a coordinated approach, with a priority on natural and climate-related hazards, across multiple departments at the City. The Framework will also guide future updates in advance of the planned OCP update.

Natural Hazards in Maple Ridge:

Maple Ridge is located along the north shore of the Fraser River and encompasses a range of physical conditions extending from low-lying floodplain areas to upland and foothill terrain at the southern edge of the Coast Mountains. The community includes several major watercourses, including the Alouette River, and many associated tributaries such as Kanaka Creek. These features create a landscape characterized by river corridors, riparian areas, and areas of steep slopes.

These physical conditions result in a range of natural hazard considerations, including seasonal flooding, flooding during high rainfall events, wildfire risk, and slope instability and erosion; these are important considerations when considering new development patterns and public infrastructure. Some of the common natural hazards that exist in Maple Ridge are listed in Table 1.

Table 1. Common Natural Hazards in Maple Ridge

Hazard Category	Type of Natural Hazard
Creek and Mountain-Stream	Debris flood, debris flow, alluvial fans
Overland Flooding (Pluvial)	Clear water flooding from high-rainfall events
Riverine Flooding	Fraser River, major tributaries (e.g., Alouette River), floodplain inundation associated with freshet (spring snowmelt) and rainfall events
Slope Stability and Landslide	Geotechnical instability on steep slopes and escarpments (e.g., historic failures such as the Haney Slide and Port Hammond Slide along the Fraser River Escarpment)
Other Stressors	heat dome, drought, wildfire

Attachment A provides a glossary of terms to ensure consistent interpretation across departments, external agencies, Council and the public.

Current Regulatory Context:

The presence or risk of natural hazards are key consideration in the City’s land use decision-making process. Given the exposure to multiple hazards, the submission of geohazard/geotechnical reports is required for development proposals located in hazard-prone areas such as floodplains, steep slopes, and wildfire interface zones. The requirement for these assessments is primarily triggered through the City’s regulatory framework for environmental protection and hazard mitigation, which includes DPAs, bylaws, and policies.

While the existing regulations and review processes offer some protection against flooding, wildfire, slope instability, and environmental degradation, many were originally designed to support broader community objectives rather than explicitly addressing emerging climate-related hazards. Instruments such as the Watercourse Protection and Natural Features DPAs, Tree and Soil Deposit bylaws, and application checklists are useful to hazard mitigation; updating and standardizing these tools would improve clarity, consistency, and long-term resilience.

As growth pressures and climate-related hazards increase, there are opportunities to build on these tools to improve consistency, clarity, and long-term resilience outcomes.

Attachment B summarizes the alignment and application of existing bylaws and policies, their functions, areas of effectiveness, and opportunities for improvement.

Need for a Land Use Centred Hazards Framework:

Hazards are best understood as the result of interactions between natural processes and the built environment (Figure 1). The City's current tools offer some protections and address various environmental and hazard-related risks. However, new growth pressures and increasingly complex climate challenges present opportunities to better align data, address gaps, and adopt a more integrated, consistent, and evidence-based approach to managing hazards and risks. It will also be important to integrate the work that is underway and data that has been generated by neighbouring municipalities, and at the Metro Vancouver and Fraser Valley Regional District levels as well.

While natural hazards represent the primary focus of the Framework project, land use decisions can also influence exposure to other hazards, such as infrastructure failures, particularly when these occur concurrently with natural hazard events. The Framework does not seek to consider all hazard types at this time; that may be the subject of future work. References to non-natural hazards are included only where land use decisions can reduce exposure, prevent compounding impacts, or avoid creating new risks over time.

Figure 1. Rationale for a Hazards Framework



Increasing Hazard Frequency and Severity:

Recent events, such as the heat dome and atmospheric river events and subsequent flooding in 2021 and consecutive wildfire seasons, illustrate that climate hazards are increasing in frequency and severity and often occur in compounding sequences that amplify impacts to human health and property.

Growth and Development Pressures:

Maple Ridge is experiencing and expecting significant growth and change. Without updated hazard regulations, development decisions made today may not adequately consider the changing climate and limit adaptation options.

Provincial Requirements:

The Province will be requiring local governments to integrate climate and hazard risk assessments into future land use planning, development regulation, and infrastructure investment through the 2027 updates to the *Emergency and Disaster Management Act* and associated regulations. Municipalities will be responsible for taking proactive measures to reduce foreseeable risks and mitigate potential hazards, including cumulative impacts, with particular attention to equitable intervention for groups most affected, and ensuring that these groups have an active role in shaping policy, regulations, and actions that impact them.

All-Hazards Lens for Land Use Decision-Making:

Using an all-hazards lens, the Framework recognizes that land use decisions can both influence and be influenced by a range of natural processes and human activities. The Hazards Framework project will focus on land use–related hazards arising from natural processes, recognizing that hazards and the systems they affect are interconnected, and that humans are an integral part of the environment. While this report does not cover all hazard types or management functions in detail, it acknowledges that hazard-related responsibilities are distributed across multiple City departments with distinct roles and mandates. The role of the Framework will be to focus on the prevention and mitigation of natural hazards through regulatory tools and long-term decision-making. Emergency preparedness, response, and incident management will continue to be addressed through separate municipal functions, including emergency management and climate action initiatives.

HAZARDS FRAMEWORK PROJECT AND WORK PROGRAM:

The Hazards Framework project will provide a phased approach to updating land use policies and regulations based on risk, technical readiness, and projected growth pressures. The Framework will be designed to:

- Enhance public health and safety;
- Provide clarity and certainty for growth management;
- Improve alignment and coordination across natural hazard-related land use policies, bylaws, and development tools;
- Reduce long-term financial impact and legal risk;
- Support eligibility for provincial and federal resilience funding; and
- Establish a strong technical foundation for the planned OCP update.

Attachment C outlines the staff work plan for implementing the Hazard Framework project. The Framework will explore the hazards that are within the scope of land use planning and development regulation, such as floodplain standards, geohazard and slope stability requirements, wildfire interface measures, stormwater and permeability standards, and environmental health protections, including heat risk mitigation and ecosystem resilience.

Planned Official Community Plan Update:

The Hazards Framework project is intended to precede and inform the planned OCP update. The Framework will ensure that engagement with Council and the public on the OCP is grounded in a shared understanding of current hazard mapping, climate projections, and ecological data. This will avoid the need for reactive policy amendments during the OCP update process and allow the discussions to focus on establishing a long-term vision for the community, growth management, and community outcomes that are safe, resilient, and well-informed.

Financial Considerations:

Proactive hazard regulation and baseline studies represent a modest investment compared to the substantial costs of disaster response and recovery, as demonstrated by recent regional flood events, such as the 2021 atmospheric river flood event, which resulted in damages in the hundreds of millions of dollars. These events underscore both the financial risk of inaction and the strong return on investment associated with proactive planning.

Implementation of the Hazards Framework will be phased and scaled to align with existing staff capacity, approved work plans, and available capital and operating budgets. The 2026 components of the Framework, including policy development, regulatory updates such as DPA Guidelines, Floodplain Management Bylaw, and City-wide Geohazard Overview Assessment, are already budgeted as part of ongoing work programs.

Engagement:

Engagement for the Hazards Framework will be phased and aligned with the objectives of each stage of work. The initial phase will focus on the adoption of life-safety objectives and the establishment of foundational natural hazard data, with engagement primarily aimed at informing the residents, local interest groups (e.g., ARMS, KEEPS), and the development community. This phase is intended to support awareness and will include information sharing in a timely manner. As the project advances later in the year to address compound geohazards, more comprehensive floodplain studies, and updates to DPAs through OCP amendment, engagement will broaden to involve provincial and federal agencies, Indigenous Nations, neighbouring jurisdictions, and relevant local interest groups in Maple Ridge. Additional details on engagement for these later phases will be brought forward for Council endorsement through future updates to the Hazards Framework. The phased timeline is outlined in Attachment C – Hazard Framework Project Workplan.

NEXT STEPS:

The first phase of the Hazards Framework project aims to build the foundation for the City. In Q1 and Q2 of 2026, the focus will be on exploring a Floodplain Bylaw, followed by a City-wide Overview Hazard Assessment. Staff will report back to Council on proposed regulation updates, incorporating lessons from earlier phases, in Q2/Q3.

In early 2027, staff's work will expand to include topics such as invasive species management, soil regulation updates, and wind and storm resilience standards. In 2028–2029, an Integrated Multi-Hazard Assessment Protocol will be developed alongside enhanced asset management and capital planning practices. These efforts will culminate in 2029–2030 with the planned

Official Community Plan update, ensuring that the long-term planning objectives of the community align with hazard and risk reduction, resilience, public safety, and environmental health.

Figure 2: Timeline



CONCLUSION:

Maple Ridge is facing a convergence of increasing and more severe climate hazards with rapid growth, similar to many local governments in the Lower Mainland of BC. The Hazards Framework project will provide a coordinated, evidence-based approach to modernizing hazard-related land use policies and regulations, to better protect public health and safety, public infrastructure and the environment as the City grows. By recognizing the interaction between natural processes, climate change, and land use patterns, the Hazards Framework will support more resilient and informed development decisions.

Staff are recommending that Council endorse the Hazards Framework work program. Advancing this work now will reduce long-term financial and legal risk, improve regulatory certainty, and improve access to senior government funding for future infrastructure improvements. It will also establish a strong foundation for the planned update to the Official Community Plan.

“Kendra Cheeseman”

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Attachments:

- (A) Glossary of Key Terms
- (B) Current Policy and Processes Overview
- (C) Hazard Framework Project Workplan

Report Approval Details

Document Title:	Natural Hazards Framework Overview.docx
Attachments:	- Attachment A - Glossary of Key Terms.docx - Attachment B - Current Policy and Processes Overview.docx - Attachment C - Hazard Framework Project Workplan.docx
Final Approval Date:	Feb 23, 2026

This report and all of its attachments were approved and signed as outlined below:

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