Attachment C: Hazard Framework Project Workplan

The Hazard Framework project emphasizes hazards that fall within the scope of municipal land use planning and policy 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. It acknowledges that hazards can interact and compound over time, and that land use decisions have the potential to either mitigate future risks and vulnerability or contribute to their persistence. As hazard-related information becomes more publicly accessible, effective information management, including clear, accurate, and accessible communication, will be essential at all levels to avoid inconsistent interpretation and support informed decision-making.

The Framework will be organized into three tiers based on intensity of: (1) life-safety risk and municipal responsibility; (2) availability of current technical mapping and regulatory readiness; and (3) growth pressures in hazard-prone areas. This summary identifies the priority areas where staff will return to Council with proposed policies and bylaws, Development Permit Area updates, and supporting implementation tools for consideration. Prioritization and tool selection draw on established priorities and insights from a review of practices in comparable municipalities.

Tier 1: Immediate Priorities (2026) – Life Safety and Foundational Data

Estimated timeline: Q1–Q4 2026

Tier 1 will address the highest priority life-safety risks and establish the technical foundation for long-term resilience planning. Work in this tier is driven by:

- Documented risk to human health and safety
- Availability of updated technical studies and hazard mapping
- Growth and development pressures in hazard-prone areas
- Provincial legislative direction and municipal regulatory responsibility

Floodplain Regulations

Objective: Establish a Floodplain Bylaw based on updated flood hazard mapping that includes climate projections, to protect life safety, property, and infrastructure from riverine, coastal, and pluvial (clear water) flooding.

Key Actions:

- Complete a city-wide flood mapping, including flood construction levels, freeboard, setbacks, and hydraulic impact standards
- Introduce climate-adjusted flood construction levels, floodplain setbacks, and hydraulic impact standards
- Adopt best practice consistent with the Provincial Flood Hazard Area Guidelines in site planning and design, landscape plans, and building design for flood sensitive areas
- Align policies, bylaws, and process

Rationale:

Flooding is the most frequent and costly hazard affecting Maple Ridge. Updated mapping reflects climate-adjusted projections and identifies areas at risk from overland flow and riverine flooding. Provincial guidance and recent climate events emphasize the need to regulate development in flood hazard areas.

Compound Geohazard and Fraser River Escarpment Development Permit Area

Objective: Conduct a city-wide geohazard and compound hazard overview assessment to inform updated development regulations for slope areas.

Key Actions:

- Conduct city-wide geohazard and compound hazard overview assessment (interactions between slope instability, flooding, wildfire, and seismic events)
- Update relevant policies with risk-based setbacks and design standards

Rationale:

Current escarpment policies are based on outdated mapping and do not account for compound risks or climate-driven changes in precipitation and groundwater. Growth pressures in proximity to steep slopes require updated, defensible standards to protect life safety and reduce municipal liability.

Environmental Health and Safety Regulations

Environmental Health and Safety Regulations are land–use–based tools that address health and safety risks arising from the interaction of development patterns, ecosystem condition, and climate-related stressors, rather than from a single mapped hazard area. While natural hazard regulations focus on managing exposure to defined hazards such as flooding, slope instability, or wildfire, Environmental Health and Safety Regulations address the underlying land use and environmental conditions that can intensify, compound, or prolong hazard impacts over time.

These regulations consolidate zoning provisions, Development Permit Areas, bylaws, servicing standards, and maintenance requirements that reduce chronic and acute health risks, prevent development from creating new or cumulative hazards, and protect ecosystem services that mitigate heat, flooding, water quality degradation, and wildfire risk. Together, they support prevention and mitigation through land use regulation, complementing hazard-specific controls by strengthening community resilience and public safety across a wide range of conditions influenced by anthropogenic climate change and human activity.

Urban Heat Island Regulations

Objective: Reduce heat-related health risks associated with land regulation patterns while supporting safe, climate-resilient urban growth.

Key Actions:

- Introduce urban heat island mitigation requirements within development regulations, including the zoning bylaw and tree bylaw
- Establish performance-based standards for tree canopy, shade, and heat-resilient site design
- Update Tenant Standards of Maintenance Bylaw to incorporate heat-safety provisions
- Update servicing requirements and regulations to include heat island and transportation demand management supports

Rationale:

Heat waves pose serious health risks, particularly in dense urban areas with minimal tree canopy, including West Maple Ridge (Hammond, Lougheed Transit Corridor) and Town Centre. Mitigating heat through tree canopy, shading, and resilient design improves accessibility of the built environment, reduces energy use, and supports safe, liveable neighbourhoods, saving human lives, and is supported as a key action area of the Climate Action Plan and Urban Forest Management Plan.

Stormwater, Permeability, and Pluvial Flooding Regulations

Objective: Increase on-site stormwater management, reducing overland flows and downstream pressure on grey infrastructure such as storm mains during peak flow events.

Key Actions:

- Update zoning, site design, and permitting standards to strengthen permeability requirements and reduce impervious surface coverage

- Establish green infrastructure requirements for on-site stormwater management, including requiring plans that illustrate permeable surfaces and green infrastructure
- Review development processes to embed environmental health considerations early in site planning, supported through policy and guidance for staff and interest-holders
- Review funding mechanisms and establish incentives for stormwater improvements outside of development, such as retrofits on existing properties or public spaces

Rationale: Managing stormwater on-site slows, absorbs, and filters rainfall, reducing flooding risks for streets, neighbourhoods, and infrastructure. Enhanced permeability supports groundwater recharge, improves water quality, mitigates erosion, and reduces cumulative impacts on downstream ecosystems. Green infrastructure also provides co-benefits such as urban cooling, habitat enhancement, and improved liveability, creating safer and healthier communities.

Biodiversity Baseline and Natural Features Development Permit Area

Objective: Protect and enhance biodiversity and ecosystem functions that sustain life, while supporting social and cultural continuity across generations and long-term economic well-being.

Key Actions:

- Complete a city-wide biodiversity inventory baseline
- Identify climate refugia and ecosystem service functions
- Create and validate with the community an iterative framework for indicators and monitoring protocols on biodiversity health
- Inform updates to Natural Features Development Permit Area

Rationale: Clean water, soils, microbial activity, pollination, flood control, and local food production are all linked. Maintaining and growing biodiversity enhances community resilience to environmental change and supports long-term quality of life across multiple generations.

Watercourse Protection Bylaw and Watercourse Development Permit Area

Objective: Prevent construction-related runoff, pollution, sedimentation, and debris from negatively impacting waterways and downstream communities.

Key Actions:

- Conduct a review of the bylaw and process to streamline requirements and align with evidence-based best practices, improving transparency throughout the development process
- Review enforcement and monitoring protocols, including technical requirements and resourcing, to effectively address cumulative and acute hazards associated with non-compliance
- Evaluate gaps in current regulations to strengthen standards and protection for long-term environmental health and community safety

Rationale: Managing runoff at its source protects neighbours, streets, public infrastructure, water resources, and habitats. Clear, enforceable requirements support safer, healthier, and more resilient communities, while reducing cumulative impacts on waterways from multiple development projects.

Wildfire Development Permit Area

Objective: Manage and reduce wildfire risk by improving emergency access planning, guiding safe building siting and defensible space, promoting fire-resistant construction standards, and updating hazard mapping to reflect projected conditions.

Key Actions:

- Update wildfire risk mapping based on Metro Vancouver Multi-Hazard analysis and provincial FireSmart guidance
- Implement updated FireSmart-style measures, including defensible space, vegetation and fuel management, and safe evacuation access
- Coordinate with emergency management agencies to ensure alignment with evacuation planning and firefighting access

Rationale: Increasing drought, heat, and wildfire frequency heightens risk to homes, neighbourhoods, and emergency responders. Proactive planning and regulatory measures reduce property loss, improve safety, and prevent one site from increasing risk for the wider community.

Tier 2: Short-Term Priorities (2027)

- Invasive Species and Soils Regulations: Address soil erosion, contaminated fill, and invasive plant management to protect ecosystem health and slope stability

- Streamlined Watercourse and Groundwater Protection Development Permit Area: Incorporate drought and groundwater risk considerations, particularly in relation to urban growth and agricultural water demand

Tier 3: Medium-Term Priorities (2027–2028)

- Wind and Storm Resilience Standards: Explore design standards related to windthrow risk, site exposure, vegetation management, and protection of critical infrastructure during for severe wind and storm events
- Integrated Multi-hazard Assessment Protocols: Develop policy, process, and capacity for assessing interactions between hazards and their risks to human health and safety, including documentation of events and impacts
- Alignment with infrastructure asset management and capital planning: Ensure hazard considerations are embedded in long-term infrastructure investment and lifecycle planning