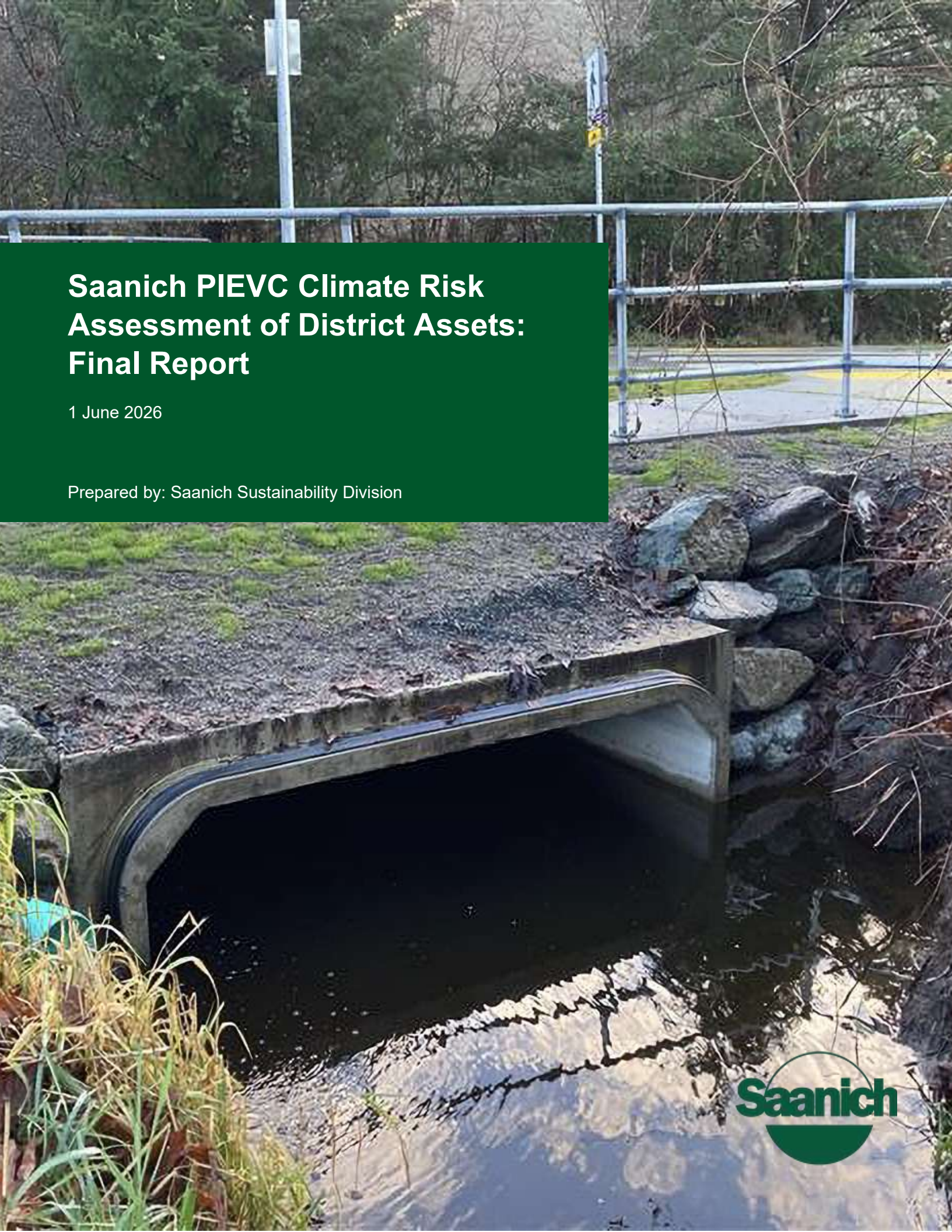

Saanich PIEVC Climate Risk Assessment of District Assets: Final Report

1 June 2026

Prepared by: Saanich Sustainability Division

Saanich

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Territorial acknowledgement

The District of Saanich operates within the territories of the lək̓ʷəŋən peoples represented by the Songhees and Esquimalt (xʷsepsəm/Kosapsum) Nations and the W̱SÁNEĆ peoples represented by the, W̱JOŁEŁP (Tsartlip), BOḴEĆEN (Pauquachin), STÁUTW̱ (Tsawout), W̱SIḴEM (Tseycum) and MÁLEXEŁ (Malahat) Nations. The District acknowledges that the lək̓ʷəŋən and W̱SÁNEĆ peoples have stewarded this land since time immemorial and that their historical relationships with the land and water continue to this day.

Acknowledgements

This assessment is the culmination of many hours dedicated by staff within the District of Saanich, including from the Asset Management and Risk Management sections, and staff from multiple departments across all our asset groups. Thanks as well to Joan and Joel Nodelman of Nodelcorp Consulting who provided an expert peer review of the process.

Executive summary

Incorporating climate change into asset management and risk management is key to sustainable, effective service delivery and fulfills a requirement in our Asset Management Strategy, which is based on current international best practices including the International Infrastructure Management Manual (IIMM) and the International Organization for Standardization (ISO) standard for AM (ISO 55000).

Using the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol, the District conducted a climate change risk assessment involving input from over 65 Saanich staff from across the organization.

The assessment covered:

- Nine asset types in Saanich: drainage, facilities, IT, park & trail structures, natural assets, transportation, vehicles & equipment, wastewater, and water
- Six climate hazards: extreme heat, extreme rain, extreme snow, drought, wildfire and smoke, and sea level rise, based on available climate projections
- Three time horizons: current, medium term (2050s) and longer term (2080s), following those used in the 2024 Climate Projections for the Capital Regional District (CRD) report
- Likelihood, impact, and risk scoring: including financial, people's safety, business operations, legal and regulatory, reputational, and environmental impact considerations, based on Saanich's Enterprise Risk Management (ERM) Framework.

The assessment found that all of Saanich's assets are impacted by climate change. As climate hazards increase in frequency and intensity over time, so do the risks to municipal assets. The hazards associated with the highest risk scores across all time horizons were extreme heat and wildfires. The assets with the highest risk scores at all time horizons were natural assets, followed by park and trails structures and then transportation assets.

A total of 87 risk treatment actions were developed across all asset types. Each of these actions were defined with assigned leads, timelines and cost estimates (where possible).

This assessment is complementary to and was developed in parallel with the Community Climate Hazard and Resilience Assessment, which looks at the impact of climate hazards on the community as a whole, rather than solely considering District assets. These two assessments together informed the development of the 2026 Saanich Climate Plan's resilience actions and are intended to be used to inform the development of forthcoming Asset Management Plans and Risk Registers.

1.0 Introduction

Climate change is increasingly impacting communities, intensifying existing challenges while introducing new risks. In the District of Saanich, understanding and addressing these impacts is crucial to supporting ongoing quality of life for our community and effectiveness of municipal service delivery.

This document provides a summary of Saanich's climate risk assessment of District assets and the assumptions used as part of the process. This assessment is complementary to and was developed in parallel with the Community Climate Hazard and Resilience Assessment, which looks at the impact of climate hazards on the community as a whole, rather than District assets specifically. These two assessments together provide an update to the 2019 Climate Risk Assessment conducted using the ICLEI BARC methodology. They have been used to inform the development of the 2026 Saanich Climate Plan's resilience actions and are intended to be used to inform the development of Asset Management Plans and Risk Registers. More information about the community assessment is available at Saanich.ca/climateplan.

1.1 Municipal responsibilities for climate change risk assessments

Local governments like the District of Saanich are on the front lines of managing the impacts of climate change. They are directly responsible for critical infrastructure and essential services that support community well-being. By proactively addressing climate risks, local governments can enhance community resilience, protect public safety, and ensure long-term sustainability.

Anticipatory adaptation planning not only mitigates risks but also provides opportunities for innovation and economic growth. Additionally, infrastructure funding from provincial and federal governments for municipalities is increasingly requiring sophisticated climate change adaptation analysis requirements.

Municipal staff who are registered professionals, including registered engineers, planners, and architects, have a professional duty to include climate change considerations in their work.

Under the B.C. Emergency and Disaster Management Act (EDMA) and forthcoming regulations, local authorities will be required to:

1. Conduct risk assessments to identify hazards, including those based on future climate projections,
2. Prepare emergency preparedness plans based on risk assessment findings, and
3. Develop business continuity plans.[1]

As outlined in the B.C. Disaster and Climate Risk and Resilience Assessment (2025), local governments and First Nations have an essential role to play in climate adaptation, drawing on local knowledge and community connections.

[1] Climate Action Best Practice Guidebook for B.C. Local Governments and Modern Treaty Nations. 2025.

1.2 Integration with asset and risk management processes

Incorporating climate change considerations into municipal asset management and risk assessment is key to sustainable, effective service delivery, and is embedded in Saanich's 2023 Asset Management Strategy in line with international best practices such as the International Infrastructure Management Manual (IIMM) and the International Organization for Standardization (ISO) standard for AM (ISO 55000).

Recent years have seen a significant increase in extreme weather events across British Columbia such as unprecedented heatwaves, wildfires, and floods. These have impacted local governments as well as the broader society, causing significant loss of life, widespread evacuations, and millions of dollars in damages. These events highlight the critical need to integrate climate adaptation into our District risk assessments to ensure the District of Saanich remains resilient in the face of future challenges.

Figure 1 shows pathways through which climate change becomes a risk to local governments. Complementary to traditional risk management approaches, climate change risk assessments require understanding projected climate changes over time, how those change community risk profiles over time, and what risk treatments are appropriate in different timeframes to address shorter- and longer-term risks (e.g. sea level rise and subsequent impacts on land use and infrastructure siting).

1.3 Objectives

The objectives of Saanich's climate risk assessment of District assets were to:

- Systematically assess potential risks to District assets from changing climate conditions to ensure resilient design, operation, maintenance, and management practices.
- Inform climate adaptation actions, support the 2026 Climate Plan Update, and incorporate findings into Asset Management Plans.
- Incorporate results into current and future planning efforts, enabling proactive decision-making and resource allocation for enhanced resilience.
- Enhance preparedness for future climate-related challenges by aligning with international risk management standards and ensuring compliance with federal grant and funding application requirements and future provincial climate risk legislation.

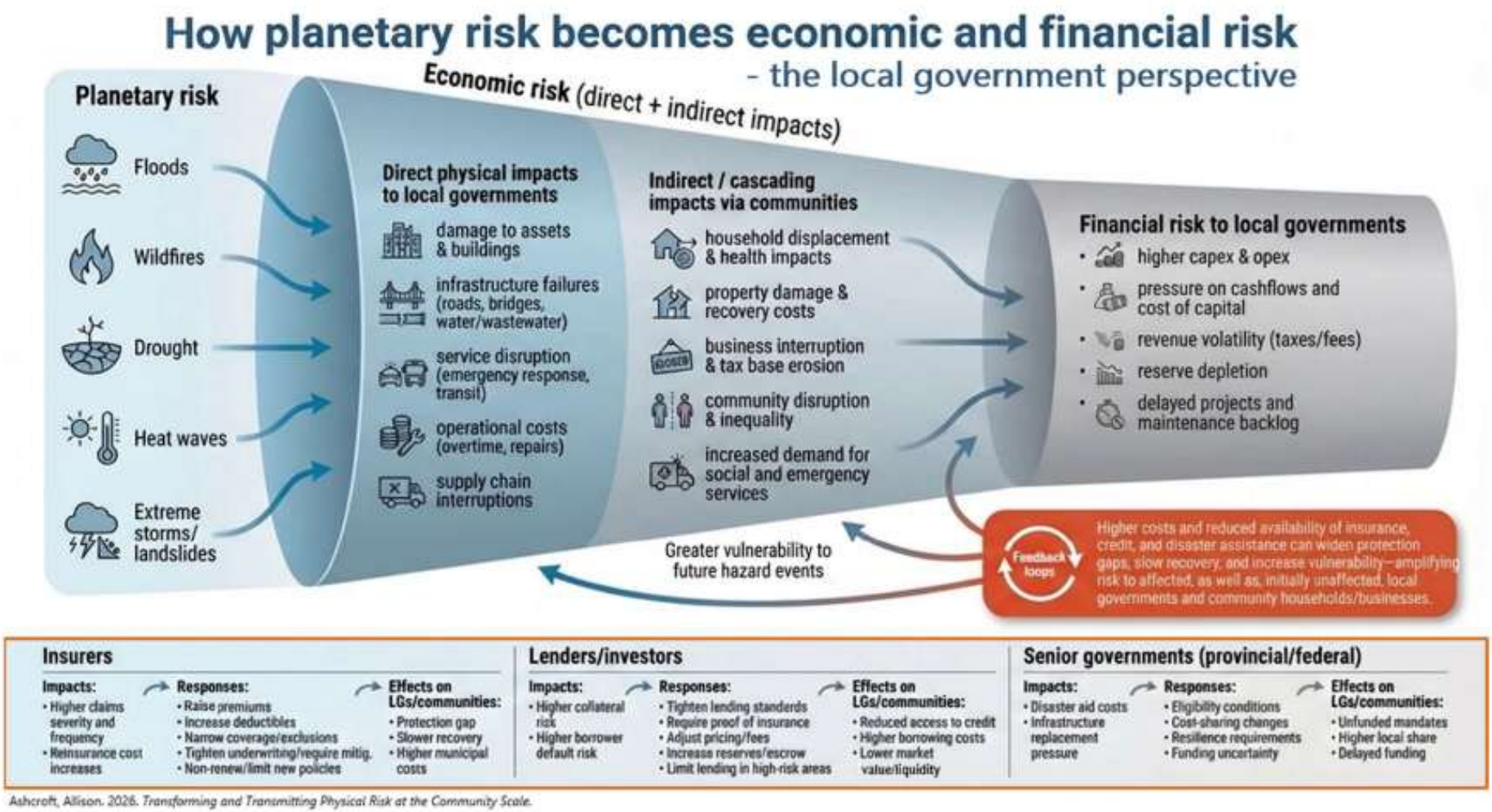

Figure 1: Climate change and risks to local governments

2.0 Methodology Selection

After reviewing regulatory requirements, international standards, infrastructure funding criteria from senior levels of governments, and experiences of similar local governments, Saanich selected the Public Infrastructure Engineering Vulnerability Committee (PIEVC) Protocol. PIEVC is a structured approach established by Engineers Canada for assessing the risks posed by climate change to publicly owned and operated physical infrastructure. The protocol provides a systematic, step-by-step methodology to identify, evaluate, and address vulnerabilities in infrastructure systems. This process is internationally recognized and aligns with international risk management standards ISO 31000 and ISO 14090.

By employing the PIEVC process, Saanich can systematically assess potential risks to its assets from changing climate conditions, thus ensuring that design, operation, maintenance, planning, and management practices are resilient.

This approach supports a wide range of applications, from emergency management to asset management and capital planning. The PIEVC assessment has been used to inform adaptation actions in the updated Climate Plan (the 2026 Climate Plan) and will be incorporated into the Asset Management Plans (currently in development) and District Risk Register. It will also support grant and funding applications from provincial and federal sources and is expected to deliver on forthcoming provincial legislation related to requirements for local governments to undertake climate risk assessments.

The High-Level Screening Guide (HLSG) variant of the PIEVC Protocol further facilitates Saanich's efforts by enabling rapid and less detailed assessments using existing data and expert judgment, thus making the process more efficient and focused. Table 1 shows the five main steps of the protocol.

Table 1: Summary of PIEVC Methodology High-Level Screening Steps

Assessment Step	Description
Preliminary	Assessment Scoping
Step 1	Identify Climate Hazards, Time Horizons, and Likelihood Scoring Framework
Step 2	Identify Assets, the Risk Impact Framework, and Risk Scoring Framework
Step 3	Identify Climate Hazard Thresholds and the Likelihood of Threshold Exceedance
Step 4a	Identify the Impacts of Climate Hazard Threshold Exceedances
Step 4b	Calculate Risk Scores
Step 5	Identify Existing and Future Resilience and Adaptation Actions
Post Assessment	Reporting

3.0 Protocol implementation

3.1 Step 1: Climate hazards, time horizons, and likelihood scoring

3.1.1 Climate hazards

Climate hazards were selected as outlined below in Table 2 based on downscaled projections of temperature and precipitation changes, sea level rise, and other related hazards as data was available. These hazards are not an exhaustive list of all climate related hazards facing our community. They were selected based on available projections and relevance for District assets. Additional hazards may be added in future assessments.

Table 2: Selected climate hazards in Saanich

Climate Hazard	Input Data References	Rationale
Extreme Heat	CRD 2024 Climate Projections CRD Heat Vulnerability Mapping	The CRD 2024 Climate Projections predict an increase in annual average temperatures for Saanich, with increased frequency and intensity of extreme heat events.
Extreme Rain	CRD 2024 Climate Projections	The CRD 2024 Climate Projections predict an increase in intensity and frequency of rain events.
Snowfall	CRD 2024 Climate Projections	The CRD 2024 Climate Projections predict a decrease in annual total snow and ice accumulation. However, larger, individual extreme snowfall events could occur.
Drought	CRD 2024 Climate Projections	The CRD 2024 Climate Projections predict an increase in the number of consecutive days without precipitation over the summer months and higher temperatures overall throughout the year.
Wildfire	BC WUI Risk Class Assessment and Maps CRD 2024 Climate Projections	Conditions conducive to wildfires are projected to become more frequent and intense within and around Saanich.
Sea Level Rise	2015 CRD Coastal SLR Assessment 2021 CRD Flood Inundation Mapping Project	According to the 2018 amendment to the Flood Hazard Area Land Use Management Guidelines from the BC Government, it is projected that there will be 0.5 m SLR increase by the year 2050, 1 m SLR increase by 2100, and 2 m by 2200.

3.1.2 Time horizons

Three time horizons - current period, the medium term (2050s), and the long term (2080s) – were selected to effectively address the varying impacts of climate change on District assets (see Table 3). The medium term and long-term time horizons are based on the CRD 2024 Climate Projections for the Capital Region which has projections for two time periods, the "2050s" (i.e., 2041 to 2070) and the "2080s" (i.e., 2071-2100). By evaluating risks across different time horizons, Saanich can take a comprehensive approach to risk management, ensuring that both short-term and long-term adaptation measures are integrated into municipal planning.

Table 3: Time Horizons for Climate Risk Assessment

Time Horizons	Rationale
Current Period	• Understanding current risks allows Saanich to address immediate vulnerabilities. • Establishing a baseline of current conditions helps in comparing future projections and understanding the progression of climate impacts over time.
Medium Term (2050s)	• Many infrastructure elements, like roads, drainage systems, and water facilities, have lifespans of 20-30 years. Assessing risks for the 2050s ensures that these assets are resilient to mid-term climate impacts. • The medium term (2041-2070) is a critical period for infrastructure expected to last several decades (CRD, 2024). Although climate projections do not differ significantly across scenarios in the near term, understanding medium-term risks helps in planning for gradual changes. • Identifying medium-term risks guides investment in adaptation measures that enhance resilience, ensuring that new and existing infrastructure can withstand future climate conditions.
Long Term (2080s)	• Infrastructure expected to last 50-75 years, such as storm sewers and large transportation projects, must be designed and located to cope with long-term climate projections. The 2080s (2071-2100) projections provide critical information for ensuring these assets remain functional and resilient. • Climate projections for the long term vary significantly depending on emissions scenarios. By considering long-term risks, Saanich can plan for worst-case scenarios and implement robust adaptation strategies that account for significant changes in climate patterns. • Long-term assessments support strategic planning and policy development, helping to integrate climate resilience into broader urban and land use planning.

3.1.3 Likelihood scoring framework

The likelihood of occurrence ranking framework is from Saanich's 2024 Enterprise Risk Management (ERM) Framework (see Table 4). The occurrences have been modified to align with climate hazard timeframes.

Table 4: Likelihood of Occurrence Ranking Framework

Likelihood Descriptor	Descriptor	% Range	Occurrence	Probability Score
Almost Certain	Likely to occur once or more annually	≥ 90%	>1/year	5
Likely	Likely to occur at least once per decade	≥ 70% - < 90%	1: 1-10 year	4
Possible	Likely to occur at least once every 10 to 30 years	≥ 25% - < 70%	1:10-30 year	3
Unlikely	Likely to occur at least once between 30-50 years	≥ 10% - < 25%	1:30-50 year	2
Rare	Not likely to occur in the assessment period	≤ 10%	>1:50 year	1

3.2 Step 2: Identify assets, risk impact, and scoring frameworks

3.2.1 Identify assets

This assessment covers all nine major asset types identified in the District's Asset Inventory including drainage, facilities, IT, park & trail structures, natural assets, transportation, vehicles & equipment, wastewater, and water. See Table 5 for details.

Table 5: Asset Types Included in Assessment

Asset Type	Asset Managers	Asset Group	
Drainage	Senior Manager of Water Resources	• Box Culverts • Culverts • Laterals	• Mains • Pump Stations
Facilities	Manage of Facility Operations	• Municipal Facilities	• Park Buildings
Information Technology	Manager of IT Solution Delivery & Client Services	• Hardware	• Software
Park & Trail Structures	Manager, Park Plan and Development Senior Manager Parks	• Foot Bridges • Irrigation • Parking Lots • Park Roads	• Playgrounds • Sports Fields • Courts • Trails
Natural Assets	Manager of Urban Forestry, Natural Areas, and Community Stewardship Senior Manager Parks	• Agriculture • Non-Forested Area • Marine Shoreline • Riparian Area	• Urban Forest • Waterbody & Watercourse • Wetland
Transportation	Senior Manager of Transportation & Development Services	• Bridges • Bus Stops • Controlled Crosswalks • Pedestrian Signals • Road Base	• Road Surface • Sidewalks • Signalized Intersections • Streetlights
Vehicles & Equipment	Senior Manager of Public Works	• Equipment • Vehicles – Fire	• Vehicles – Fleet • Vehicles – Police
Wastewater	Senior Manager of Water Resources	• Force Mains • Gravity Mains	• Pump Stations
Water	Senior Manager of Water Resources	• Water Mains • Water Meters • Reservoirs	• Pump Stations • Water Pressure Reducing Valve (PRV) Chambers

3.2.2 Identify risk impact framework

The risk impact ranking framework (Table 6) used in the assessment is from Saanich's 2024 Enterprise Risk Management (ERM) Framework. It consists of a risk impact category (financial, people, business operational effectiveness, legal and regulatory, reputation, and environmental) and a ranking of the significance of the impact from insignificant to catastrophic.

Table 6: Risk Impact Framework

Category	Insignificant	Minor	Moderate	Major	Catastrophic
	1	2	3	4	5
Financial	The NET financial impact to Saanich is likely to be less than 0.5% of the annual operating budget.	The NET financial impact to Saanich is likely to be between 0.5% - 2% of the annual operating budget.	The NET financial impact to Saanich is likely to be between 2% - 10% of the annual operating budget.	The NET financial impact to Saanich is likely to be between 10% - 50% of the annual operating budget.	The NET financial impact to Saanich is likely to be greater than 50% of the annual operating budget.
People	Single or multiple staff unable to perform work for one day. Injury (to staff or public) requiring no medical treatment.	Single or multiple staff unable to perform work for a period of one week. Minor injury (to staff or public) requiring first aid only.	One staff member with serious long-term injury / illness connected with Saanich endeavours. Injury (to staff or public) requiring hospitalisation to one or more persons.	Multiple staff with serious long-term injury / illness connected with Saanich endeavours. Serious injury to one or more persons (to staff or public) resulting in a permanent disability.	Substantial permanent loss of Saanich staff resources. Deaths (to staff or public)
Business Operational Effectiveness	Minor, but noticeable, change in service from the public's perspective.	Intermittent loss of services to the public of less than 3 hours. Intermittent interruption of IT systems / email less than once per month.	Frequent loss of services to the public of between 3 hours and a week. Routine interruption of IT systems / email each week. A noticeable change in normal service quality to the public.	Loss of basic services to the public for a period longer than a week. A very noticeable change in normal service quality.	Total inability to provide basic services to public for an extended period. Complete operational failure of a critical system for a sustained amount of time.

Category	Insignificant	Minor	Moderate	Major	Catastrophic
	1	2	3	4	5
Legal and regulatory	No regulatory impact. Minor complaint / incident resolved by management.	Activity does not follow relevant established industry / provincial / national guidelines. Isolated complaint / incident where there is a threat of legal action, resolved by management.	Activity does not meet the requirements of relevant industry / provincial / national standards exposing Saanich to possible litigation risks. Significant level of complaints / incidents where there is a high threat of legal action, resolved by management.	Non-compliance with legislation/regulations trigger material fines, penalties, and restrictions on operations. Contract dispute results in significant loss of productivity and legal action. Senior employees charged for breaches / fraud.	Total failure to meet relevant legislation and regulations leading to dismissal of Council or Board.
Reputation	No impact on reputation. No media coverage.	Minimal customer sensitivity and damage to reputation. Limited local community coverage.	Moderate customer sensitivity and damage to reputation impacting noticeably on business activities. Significant local community coverage.	Significant customer sensitivity and damage to reputation. Province wide Media coverage.	Very high customer sensitivity and irreparable damage to reputation. National / International media coverage.
Environmental	Minor leak, non-contaminating.	On site release contained immediately.	On site release contained with outside assistance. No damage to flora / fauna and short-term effects on soil, water, and air.	Off-site release with no long-term effects. Limited damage to flora/fauna, soil /water.	Toxic release off site with long term effects. Substantial / long term damage to flora / fauna, soil / water.

3.2.3 Identify risk scoring framework

The risk scoring framework (i.e., risk priority matrix or heat map) used is from Saanich's 2024 Enterprise Risk Management (ERM) Framework, as shown in Table 7. It provides a risk score by multiplying the impact score determined in Table 6 above with the likelihood score from Table 4.

Table 7: Risk scoring framework

		IMPACT				
		1 Negligible	**2 Minor**	**3 Moderate**	**4 Major**	**5 Catastrophic**
LIKELIHOOD	**5 Almost Certain**	5	10	15	20	25
	4 Likely	4	8	12	16	20
	3 Possible	3	6	9	12	15
	2 Unlikely	2	4	6	8	10
	1 Rare	1	2	3	4	5

3.3 Step 3: Identify climate hazard thresholds and likelihood of threshold exceedance

As shown in Table 8, thresholds for climate hazards were developed along with likelihoods for threshold exceedance at the three time horizons selected. These thresholds and likelihoods of exceedance were selected based on best available information. More detailed information on the sources used to determine these thresholds and likelihoods are available upon request to sustainability@saanich.ca.

Table 8: Climate Hazard Thresholds and Likelihood of Threshold Exceedance

Climate Hazards (from STEP 1)	Thresholds	Likelihood of Threshold Exceedance
Extreme Heat	The CRD Heat Vulnerability Mapping and Data Analysis Project underscores the necessity of incorporating extreme heat thresholds in Saanich's Climate Risk Assessment. Thresholds of >30°C, >40°C, and heatwaves reflect the severity of heat exposure and potential impacts on health, infrastructure, and socio-economic conditions. These thresholds also represent the upper extreme of what many native natural assets in Saanich can likely tolerate.	In the Past, a daily maximum temperature of 32°C or higher occurred once every 20 years or so in the capital region, or with a 5% annual exceedance probability (AEP) (CRD, 2024). By the 2080s, maximum temperatures will approach 40°C, heatwaves will last up to 8 days in length with average temperatures of 32°C, and more than 60 days of each year will exceed 25°C.
Extreme Precipitation	A 10-year return period event is commonly used in stormwater infrastructure design (typically for sizing minor systems; storm drains ≤ 900 mm in Saanich). 5-minute intensities are used to reflect the time of concentration of urban developments (especially catch basins and smaller pipes) making them representative of a flash flood event. 24-hour rainfall intensities are used to reflect total volume over longer durations, i.e., sustained rainfall events.	By the 2080s, a 27% increase in the 1-in-20-year maximum one-day rainfall and 20% increase in the 1-in-20-year maximum 5-day rainfall are expected.
Snowfall	Table 19 - Alerting Parameters Environment Canada Uses for Issuing a Snowfall Warning from Environment Canada's Criteria for Public Weather Alerts specifies a threshold of 10 cm or more of snowfall in 12 hours or less or 5 cm or more of snowfall within 6 hours or less for the southern and central coast of British Columbia.	The CRD 2024 Climate Projections predict a decrease in annual total snow and ice accumulation. However, larger, individual extreme snowfall events are likely to continue in frequency and potentially increase in intensity.

Climate Hazards (from STEP 1)	Thresholds	Likelihood of Threshold Exceedance
Drought	The Province uses a six-level classification to rate the severity of drought conditions. Provincial drought levels are set following the guidance in the British Columbia Drought and Water Scarcity Response Plan (PDF, 958KB).	The median future-projected dry spell length is expected to increase by 21% (29 days) by the 2080s.
Wildfire	BC WUI Risk Class Assessment and Maps provides information on wildland urban interface risk throughout the province. Another important wildfire threshold should encompass an increase in frequency and severity of wildfires that occur in regions surrounding Saanich. Wildfires occurring outside of Saanich may still impact the community, e.g., wildfire smoke, changes to goods and services to Vancouver Island, etc.	Currently, severe wildfire events outside the region impact Saanich at least once per year, with some years having worse impacts than others. In the future, wildfires are predicted to happen more frequently, with worsening severity. Therefore, it can be anticipated that the negative impacts to Saanich will become more severe and frequent (likely several times per year).
Sea Level Rise	According to the 2018 amendment to the Flood Hazard Area Land Use Management Guidelines from the BC Government, it is projected that there will be 0.5 m SLR increase by the year 2050, 1 m SLR increase by 2100, and 2 m by 2200.	

3.4 Step 4: Describe and score impacts and risks

3.4.1 Step 4A: Describe and score impacts

To determine the impacts and impacts scores of climate thresholds exceedances, a workshop for each of the nine asset types was held with multiple subject matter expert staff who design, operate, and maintain the asset types in question. Preliminary information was distributed in advance along with presentations to introduce the scope and objectives of the assessment, the PIEVC protocol, and the steps implemented to date. The workshop durations depended on the asset category but were usually three hours in duration. In some cases, the workshops considered combined assets when they were interrelated, such as storm and wastewater assets. Workshop attendance size depended on the asset category but ranged from three people for IT assets to 17 people in size for combined drainage, wastewater, and drinking water assets, in addition to Sustainability staff and risk and asset management staff representation.

The workshops were mainly conducted in person, or as hybrid meetings. Impacts of each threshold exceedance on the assets in question were discussed. Detailed notes were recorded of the conversation to capture nuances of how different assets (e.g., outfalls for the stormwater system or junction boxes for transportation assets) would be impacted by each threshold exceedance. Scoring of the impacts was recorded anonymously, and differences in scoring choices between participants were encouraged and discussed in order to benefit from the varied expertise in the room. The impact scores were assigned assuming that the threshold was exceeded in the current timeframe with our current risk treatments and no additional treatments. Impact scores from each subject matter expert were averaged to form a total impact score for each threshold for the asset category as a whole.

3.4.2 Step 4B: Score risks

Sustainability staff took the impact scores from step 4A and multiplied them by the likelihood scores at all the time horizons established in previous steps. The resulting heat map shows the risk scores identified for all asset types against climate hazards and thresholds at current, medium, and long-term timelines.

The assessment found that all of Saanich’s assets are impacted by climate change. As climate hazards increase in frequency and intensity over time, so do the risks to municipal assets. The only exception to this trend is the risk posed by snowfall which is shown to be constant. While precipitation events in the colder seasons are expected to become more frequent and intense, warming temperatures in the winter are projected to shift snow to rain more frequently, reducing the likelihood of large snow events while increasing their impact, resulting in a similar risk score.

The hazards associated with the highest risk scores across all time horizons were extreme heat and wildfires. The assets with the highest risk scores at all time horizons were natural assets, followed by park and trail structures assets and then transportation assets.

3.5 Step 5: Identify current and new risk treatments

A second round of workshops was conducted with staff representing each asset group to review current and new potential risk treatments (i.e. climate adaptation actions) to address the climate risks identified in the previous workshops.

The workshops followed our overall enterprise risk management process which are summarized in Table 9 below.

Table 9: Risk Treatment Sub-Steps

Sub-Step	Description
Assessing Current Risk Treatment Measures	
Confirm the risk/impact statement	Subject matter experts confirmed or refined the risk/impact statements defined in Step 4a to ensure that they clearly described the issue to be addressed
Identify the risk owner	
Describe any current risk treatments	Identify whether measures are currently in place to address the risk and document them
Evaluate effectiveness	Assess how effective these current measures are in addressing identified climate risks
Developing New Risk Treatment Measures	
Determine the risk treatment strategy for each risk/impact statement	Identify the appropriate risk treatment strategy: • Avoid • Accept • Transfer (e.g., insurance) • Mitigate
Develop and evaluate potential actions to address climate change risks/impacts to municipal assets	Record the following: • Treatment details • Lead and support departments • Initiation timelines • Financial implications (high level estimates of staffing, capital, operating costs)
Implement, monitor, and report	Incorporate actions into risk management reporting dashboard and departmental workplans

Sustainability staff prepared for the workshops by turning the discussion notes from the previous impact scoring workshops into draft risk statements, draft current risk treatments, and draft potential resilience actions. During the workshops, these were discussed, refined, or modified based on the subject matter expertise in the room.

A total of 87 resilience actions were developed through the workshops across all asset types with assigned leads, timelines and cost estimates where this information was available. Table 10 below summarizes the actions into 20 strategic action groupings based on the relevant Climate Plan focus area they appear in. Each of the 87 resilience actions are also integrated into the Service Level Risk Assessments for the Asset Management Program.

Table 10: Resilience Actions Summaries by Climate Plan Focus Area

Climate Plan Focus Are	Summary Resilience Action
Transportation	Integrate climate adaptation measures into transportation projects
Buildings & Infrastructure	Embed green infrastructure in public and private infrastructure and development projects
	Complete a District wide landslide risk assessment
	Update wildfire risk mapping and resiliency plans
	Develop a FireSmart program aligned with biodiversity goals
	Update sea-level rise related data and mapping
	Develop and implement Coastal Flood Adaptation Strategies
	Update land-use and development policies, guidelines, and bylaws to increase resiliency to overland flooding and sea level rise
Ecosystems	Measure and monitor permeable and impermeable areas across Saanich
	Support cultural fire management practices
	Implement the Biodiversity Conservation Strategy
	Conduct ecosystems data management and monitoring
Community Wellbeing	Integrate climate adaptation measures into parks and trails planning and management
	Implement the Urban Forest Strategy
Leadership in District Operations	Develop and update District procedures to increase climate resiliency
	Establish a reporting and monitoring process to collect information on the impacts of climate induced extreme weather events and the associated costs and resource impacts.
	Establish an annual climate adaptation contingency fund to support increased operational or services costs as a result of increased extreme weather events
	Increase maintenance programs to better manage extreme weather events
	Increase the resiliency of District buildings
	Increase the resiliency of the Saanich Fleet

4.0 Discussion

The PIEVC Protocol was well received by participating staff and resulted in tangible, targeted actions to address identified risks that can be operationalized through existing budgetary, workplan, asset and risk management processes.

Based on feedback received from staff, future climate risk assessments can explore:

- The development of additional studies and data sources to help inform updated climate thresholds and impact scoring e.g. updated Provincial wildfire maps.
- The use of future studies and data to develop or update specific climate thresholds with staff who manage each asset to improve the impact evaluation.
- The consideration of cumulative and compounding impacts from hazards. This could potentially use the PIEVC Green Protocol which includes impact chains as part of the assessment.
- Conducting a risk assessment for other areas of service delivery at the District, in addition to asset types.

5.0 Conclusion and next steps

The Saanich PIEVC Climate Risk Assessment of District Assets found that municipal assets are impacted by climate-change related hazards, and that risks to municipal assets related to climate change are projected to increase in frequency and intensity over time.

The hazards associated with the highest risk scores across all time horizons were extreme heat and wildfires. The assets with the highest risk scores at all time horizons were natural assets, followed by park & trail structures assets and then transportation assets.

All identified risks were reviewed for their current risk treatments and where deemed needed, additional risk treatment options were developed. These actions were integrated within the 2026 Climate Plan and the Service Level Risk Assessment for the Asset Management Program. The PIEVC Risk Assessment has been used to inform the 2026 Climate Plan and will be used to inform the development of forthcoming Asset Management Plans and Risk Registers. Actions included within the 2026 Climate Plan would be monitored and reported on through the annual Climate Plan Report Card.

Updated climate risk assessments should be conducted on a regular basis (expected every five years) to respond to updated climate projections, changing conditions, to inform updated Climate Plans and Asset Management Plan cycles, and as required by regulation.