









Climate Change Risk and Opportunity Assessment for the Tourism Industry

tiapei Tourism Industry Association of PEI

Prince Edward Island CANADA

ICF

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Key Terms

- **Climate hazard:** A potentially damaging event or phenomenon caused by climate factors (e.g., rising global temperatures), that could negatively affect the province's tourism sector, such as through environmental degradation, infrastructure damage, or social and economic disruption.
- **Climate hazard scenario:** For a given climate hazard, a plausible set of specific circumstances such as location affected, time frame, and severity of hazard, to facilitate evaluation of likelihood and consequences.
- **Consequence:** A measure of the severity of impacts from a climate hazard scenario.
- **Consequence category:** The dimensions on which consequence are evaluated (e.g., infrastructure, environment, health & safety, economy & livelihoods, operations).
- **Discrete climate hazard:** A climate hazard related to an individual extreme event (e.g., storm) or disaster that occurs over a relatively short period of time (e.g., days or weeks).
- **Likelihood:** The probability or expected frequency that a climate hazard scenario will occur.
- **Ongoing climate hazard:** A climate hazard related to a phenomena or gradual change in climate that occurs over many years (e.g., sea level rise).
- **Opportunity:** New possibilities for the tourism industry to adapt to a changing climate in terms of tourism products or experiences, operational changes, or contributions to the local economy. A potential opportunity does not neglect the risks of climate hazards.
- **Risk:** The chance that a hazard will cause harm. Risk is a function of the likelihood of a hazard occurring and the severity of its consequences.

Introduction

Climate change presents a unique set of challenges and some opportunities for Prince Edward Island's (PEI) tourism industry. Weather is becoming more volatile under a changing climate with more extremes and more variability in temperature, precipitation, winter weather, and storm events. The purpose of this report is to identify priority risks and opportunities for the tourism industry and develop a tailored adaptation plan to manage and address those priorities.

The Province has already taken steps to understand and prepare for climate change across multiple industries (see textbox for recent actions). Government commitments and reports commissioned in recent years have paved the way for this tourism-focused climate change risk and opportunity assessment. This assessment builds on the findings of the 2021 provincewide *Climate Change Risk Assessment (CCRA),* which included high-level discussion of how the tourism industry could be affected by climate change. This assessment also partially fulfills Action 13 in the 2022 *Building Resilience: Climate Adaptation Plan*, which committed the Province to working with industry partners to identify priority risks to the tourism industry.

Timeline of Key Climate Actions

- 2018: Taking Action: A Climate Change Action Plan for PEI, 2018-2023, includes a commitment to taking proactive measures to reduce PEI's vulnerability to climate change as well as taking advantage of new opportunities.
- 2021: Climate Change Risk Assessment, provides a province-wide and multi-sector assessment of climate risks.
- 2022: Building Resilience: Climate Adaptation Plan, includes an action to identify and respond to priority climate risks to the farming, fishing, and tourism sectors.
- 2023: Department of Fisheries, Tourism, Sport, and Culture Mandate Letter, outlined department priorities, including using evidence-based tools to consider the impacts of climate change in the decision-making process.
- 2024: Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry includes an initiative to help PEI's operators become more resilient to the impacts of climate change and pandemics.

Interconnectedness of Tourism and Climate Change

Tourism and climate change are deeply intertwined, with each influencing the other in significant ways. Tourism depends heavily on the natural and cultural assets of destinations, yet climate change is reshaping the very landscapes on which the sector relies by altering coastlines, shifting seasons, increasing stress on infrastructure, and changing visitor experiences. At the same time, tourism contributes to climate change, particularly from transportation-driven greenhouse gas emissions, creating a feedback loop that underscores both the sector's vulnerability and responsibility to take action.

Around the world, climate change is altering tourism operations and experiences. In some regions, a changing climate is expected to bring increased challenges for the tourism industry (e.g., extended hot and uncomfortable weather), while other regions like Atlantic Canada may

see a mixture of challenges and opportunities for the industry from a warmer climate (e.g., the ability to extend and expand operations in the shoulder seasons). This duality underscores the need for strategic, careful, and flexible planning, stronger collaboration with the sectors that tourism relies on to operate, and coordination across multiple tourism industries and stakeholders, including local communities. Sustainability and adaptation planning from the local to global scale will be essential for helping tourism destinations remain resilient, manage new climate-related challenges and opportunities, and adapt to future conditions.

Risk and Opportunity Assessment Overview

The *PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry* is intended **to directly inform future adaptation planning and decision-making to help increase the resilience of PEI's tourism sector against the impacts of climate change.** The Tourism Industry Association of Prince Edward Island (TIAPEI) and the Department of Fisheries, Rural Development and Tourism (DFRDT) are committed to working with industry partners to establish programs and initiatives that will help ensure resilient and sustainable growth of the PEI tourism industry in the face of climate change.

The assessment identifies and rates the potential risks and opportunities of climate change on **eight tourism focus areas**, defined in Table 1. Focus areas are divided into three categories:

- Outdoor tourism experiences
- Culinary and indoor tourism experiences
- Accommodations

TIAPEI and DFRDT selected the focus areas, emphasizing those that most significantly contribute to PEI's economy and may have unique climate risks or opportunities.

Table 1. Tourism focus areas

Category	Focus Areas	Description
Outdoor Tourism Experiences	**Focus Area 1: Sea-sun-sand**	• Beaches and water-based activities: Boating, kayaking, stand-up paddle boarding, sport fishing, swimming
	Focus Area 2: Other nature-based tourism	• Summer nature-based tourism: Cycling and mountain biking, hiking, swimming, outdoor Indigenous experiences, driving scenic tour, wildlife watching, freshwater fishing • Winter nature-based tourism: Cross-country skiing, snowshoeing, snowmobiling and all terrain vehicle (ATV) driving, ice fishing, outdoor Indigenous experiences, driving scenic tour
	Focus Area 3: Sports and amusement facilities	• Summer sports and amusement facilities: Golf courses, waterparks, theme parks • Winter sports and amusement facilities: Skating/hockey rinks, downhill skiing, tubing

Category	Focus Areas	Description
	Focus Area 4: Festivals and events	• Summer festivals and events: Cavendish Beach Music Festival, PEI International Shellfish Festival • Winter festivals and events: Winterval, Jack Frost Children's Winterfest, PEI Beer Festival, professional hockey games
Culinary and Indoor Tourism Experiences	**Focus Area 5: Culinary experiences**	• Restaurants, cafes, Indigenous culinary experiences, cooking classes
	Focus Area 6: Other indoor experiences	• Museums/galleries, Indigenous experiences, retail
Accommodations	**Focus Area 7: Fixed-roof accommodations**	• Hotels, short-term lodging
	Focus Area 8: Campground accommodations	• Camp sites • Recreational vehicle (RV) parks

This assessment focuses on **four climate hazards**: post-tropical storm, heat wave, heavy precipitation and flooding, and longer warm season and shorter cold season. Coastal erosion and flooding impacts are also discussed as part of post-tropical storms and a longer warm season and shorter cold season. The assessment **explores the likelihood of these hazards occurring** now and into mid-century, as well as their **consequences, or impacts, on infrastructure, environment, health & safety, economy & livelihoods, and operations** for each tourism focus area.

Coastal Erosion

To complement the industry-wide risk and opportunity assessment, the Department of Land and Environment (DLE) also completed site-specific **coastal hazard assessments for 24 major tourism assets.**

Although not included in the detailed risk and opportunity analysis, the potential impacts of wildfire and smoke, severe snowstorms, ice storms and freezing rain, and seasonal drought are also discussed within this report.

To ground truth the findings of the risk and opportunity assessment and build buy-in across the industry, **TIAPEI and DFRDT held an in-person workshop with tourism industry representatives** in November 2025. The purpose of this workshop was to vet and discuss high priority risks facing the industry and begin to identify potential adaptation options to address priority risks. Industry partners will be key to the design and successful implementation of any new programs and initiatives.

For more information on adaptation options to address the risks and opportunities discussed in this report, see the *PEI Climate Change Adaptation Strategy for the Tourism Industry*.

Methodology: Risk and Opportunity Assessment

ICF completed the risk and opportunity assessment in close collaboration with TIAPEI and DFRDT following the six-step process outlined in Figure 1. Risk is ultimately a function of the likelihood of a climate hazard occurring and the severity of its consequences:

Risk = Likelihood x Consequence

The assessment results were also vetted and refined with key industry representatives during a workshop in November 2025. The following sections detail the steps of the risk and opportunity assessment process.

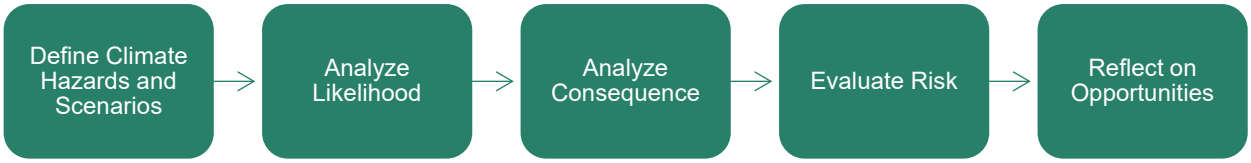


Figure 1. Climate risk and opportunity assessment process diagram.

Step 1. Define Climate Hazards and Scenarios

To define the scope of this climate risk and opportunity assessment, ICF began with the climate hazard scenarios identified in PEI's 2021 CCRA and the 2023 Climate Change Risk and Opportunity Assessment for the Seafood Industry. In close collaboration with TIAPEI and DFRDT, ICF refined the focus hazards and illustrative hazard scenarios (see Table 2) for further analysis. The purpose of the scenario is to detail the specifics of one possible permutation of the climate hazard and evaluate the likelihood and consequences of that scenario.

This assessment rates the risk of **four focus climate hazards**: post-tropical storm, heat wave, heavy precipitation and flooding, and longer warm season and shorter cold season. Due to the complex and site-specific nature of coastal erosion and coastal flooding, the project team decided to discuss the impacts of coastal erosion and flooding within the post tropical storm and longer warm season and shorter cold season hazards, as appropriate. This high-level discussion is complemented by site-specific coastal hazard assessments of major tourism assets (see Appendix E: Coastal Hazard Assessment for Major Tourism Assets for details).

Table 2. Climate hazard scenarios

Hazard	Scenario
Post-tropical storm	Multi-day post-tropical storm with heavy rain, storm surge, and wind.
Heat wave	Three consecutive days with temperatures above 29°C.
Heavy precipitation and flooding	100 mm of rain in 24 hours.
Longer warm season and shorter cold season	Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks.

Step 2. Analyze Likelihood

To analyze likelihood, ICF assigned a rating to each climate hazard scenario on a scale from 1 to 5, reflecting the degree of certainty that the scenario will occur within the specified timeframe. Climate hazards can be either discrete (e.g., heat wave) or ongoing (e.g., longer warm season and shorter cold season). Evaluating the likelihood of these hazards is fundamentally different:

- **Discrete climate hazards:** Likelihood is measured by the expected frequency of the hazard in a given time period.
- **Ongoing climate hazards:** Likelihood is measured by the probability that a critical threshold—a defined tipping point at which significant impacts occur—is exceeded by a given time period.

ICF used the likelihood rating scale in Table 3, which includes rubrics for both discrete and ongoing climate hazards, to determine the likelihood ratings. This scale and methodology are consistent with 2021 CCRA. ICF evaluated likelihood for both a baseline time period and future time period (2050) to capture how the likelihood of the climate hazard scenarios changes over time.

Likelihood ratings are documented in Appendix A: Climate Hazard Likelihood Ratings and based on the best available climate science and research.

Table 3. Likelihood rating scale

Likelihood	Rating	Criteria for Discrete Climate Hazards	Criteria for Ongoing Climate Hazards
Almost certain	5	Event is expected to happen about once every two years or more frequently (i.e., annual chance ≥ 50%*).	Event is almost certain to cross critical threshold.
Likely	4	Event is expected to happen about once every 3-10 years (i.e., 10% ≤ annual chance < 50%).	Event is expected to cross critical threshold. It would be surprising if this did not happen.
Possible	3	Event is expected to happen about once every 11-50 years (i.e., 2% ≤ annual chance < 10%).	Event is just as likely to cross critical threshold as not.
Unlikely	2	Event is expected to happen about once every 51-100 years (i.e., 1% ≤ annual chance < 2%).	Event is not anticipated to cross critical threshold.
Rare	1	Event is expected to happen less than about once every 100 years (i.e., annual chance <1%).	Event is almost certain not to cross critical threshold.

*Annual chance is the probability that an event will occur in a given year

Step 3. Analyze Consequence

ICF also analyzed the consequences of each climate hazard scenario on the tourism industry across five key dimensions:

- **Infrastructure:** This includes physical impacts to the assets, facilities, and systems that support the tourism industry.

- **Environment:** This includes physical impacts to beaches and other natural attractions as well as changes in local agricultural and seafood products.
- **Health & Safety:** This includes impacts to visitor and worker health, comfort, and safety.
- **Economy & Livelihoods:** This includes impacts to revenue, demand (e.g., number of travellers), operating and maintenance costs, and employment.
- **Operations:** This considers the ability of tourism activities or businesses to remain open and operational and shifts in seasonal patterns.

Using the consequence rating scale in Table 4, ICF rated the severity of impacts on infrastructure, environment, health & safety, economy & livelihoods, and operations from each climate hazard scenario. To calculate the overall consequence score, ICF took an average of the five individual ratings for infrastructure, environment, health & safety, economy & livelihoods, and operations.

Consequence ratings are documented in Appendices B-D and based on desktop research, workshop feedback, site visits, and professional judgment.

Table 4. Consequence rating scale

	Infrastructure	Environment	Health & Safety	Economy & Livelihoods	Operations
Catastrophic (5)	Months-long disruption in infrastructure services	Irreversible damage to a significant natural asset	1,000+ people exposed to potential harm or safety concerns Potential for loss of life	Severe disruption to multiple seasons or employment	Months-long disruption to operations
Major (4)	Weeks-long disruption in infrastructure services	Widespread damage to a natural asset Recovery would take years to decades	100-1,000 people exposed to potential harm or safety concerns Potential for loss of life	Severe disruption to one season or employment	Weeks-long disruption to operations
Moderate (3)	Days-long disruption in infrastructure services	Localized, significant damage to a natural asset Recovery would take years to decades	10-100 people exposed to potential harm or safety concerns Low potential for loss of life	Moderate disruption to multiple seasons or employment; or severe weeks-long disruption to one season	Days-long disruption to operations
Minor (2)	Hours-long disruption in infrastructure services	Localized, moderate damage to a natural asset Recovery would take months to years	<10 people exposed to potential harm or safety concerns Low potential for loss of life	Moderate disruption to one season or employment	Hours-long disruption to operations
Insignificant (1)	Temporary nuisance or no impact	Minimal or no damage Recovery would take days to months	Extremely low possibility of harm or safety concerns Extremely low potential for loss of life	Insignificant disruption to sector and employment	Temporary nuisance or no impact on operations

Step 4. Evaluate Risk

Risk is a function of likelihood and consequence. To evaluate risk, ICF combined the likelihood and consequence ratings for each climate hazard scenario and tourism focus area. ICF calculated risk scores for both present day and mid-century (2050).

The five consequence category ratings were averaged to calculate an overall consequence score, then multiplied by the likelihood score to compute a total risk score, as shown in the formula below.

Risk = Likelihood × Overall Consequences

where

Overall Consequences = Average (Infrastructure, Environment, Health & Safety, Economy & Livelihoods, Operations)

Table 5 and Table 6 provide the final risk rating matrix and corresponding score-to-rating rubric.

Table 5. Climate risk rating matrix

	Consequence				
Likelihood	**Insignificant (1)**	**Minor (2)**	**Moderate (3)**	**Major (4)**	**Catastrophic (5)**
Almost Certain (5)	Medium	Medium	High	Extreme	Extreme
Likely (4)	Low	Medium	High	High	Extreme
Possible (3)	Low	Medium	Medium	High	High
Unlikely (2)	Negligible	Low	Medium	Medium	Medium
Rare* (1)	Negligible	Negligible	Low	Low	Low

*Scenarios that received a “rare” likelihood rating for both the current and future time period were not evaluated further and received a Negligible overall risk rating.

Table 6. Risk rating rubric

Risk Score	Risk Rating
0-3	Negligible
3-5	Low
5-11	Medium
11-18	High
18+	Extreme

Step 5. Reflect on Opportunities

With appropriate risk management and adaptation planning, climate change also presents potential opportunities for PEI’s tourism industry, particularly from a longer warm season. ICF reviewed literature, applied professional judgment, and discussed the potential benefits and challenges of a longer warm season with industry stakeholders at the November 2025 workshop.

Overview: Risk and Opportunity Assessment Results

PEI's tourism industry is deeply rooted in its natural assets, including beaches, dunes, woodlands, and the ocean. Tourists from across Canada and abroad are drawn by the beautiful beaches and parks, fresh food, and family fun. PEI's tourism industry is critically important to the economy and supports more than 8,900 full-time equivalent jobs, and thousands more seasonal positions.[1] In 2024, visitor spending was $520.7 million, representing approximately 6% of the province's gross domestic product (GDP), contributing approximately three times the national average.[2,3]

PEI is a seasonal destination (see textbox on next page) and as shown in Figure 2, tourists are particularly drawn to the Island in the summer and early fall. In 2024, PEI saw 1.71 million non-resident visitors, a 5-6% increase above 2019 and 2023 volumes, and a greater number of visitors in the fall shoulder season.

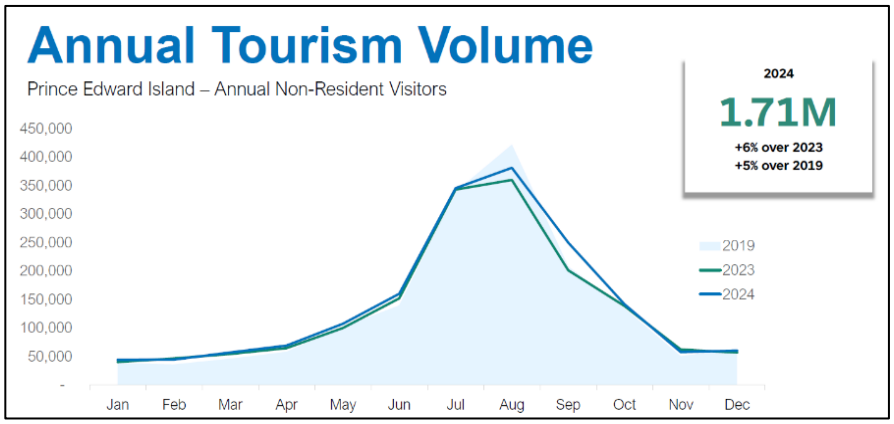


Figure 2. Annual tourism volume on PEI of non-resident visitors (source: TIAPEI AGM 2024).

Comparing PEI's annual tourism volume and seasonality patterns (Figure 2) with Canada's tourist arrivals and seasonality patterns Figure 3), PEI has a sharper peak in summer tourism. While the overall trend is similar, Canada has a smother transition from season to season.

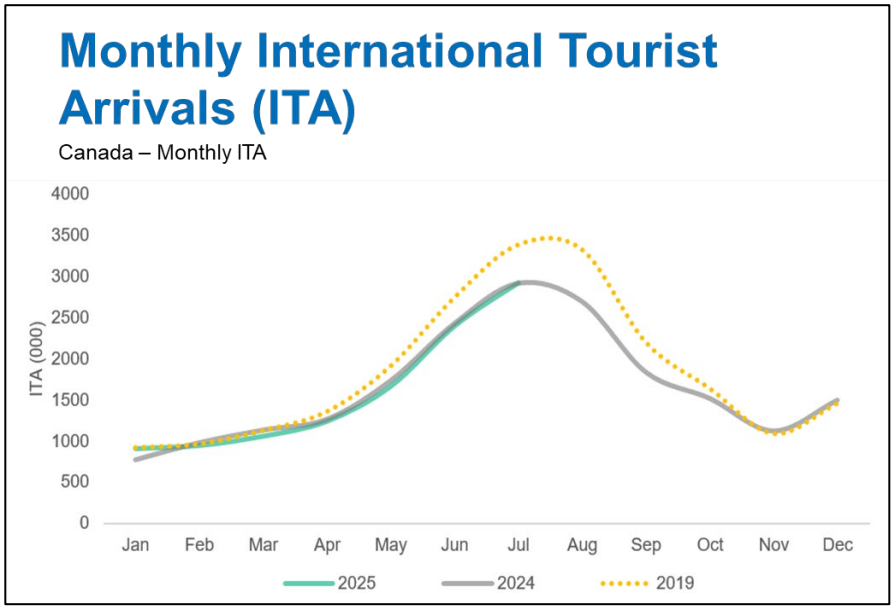


Figure 3. International Tourist Arrivals (ITA) per month in Canada for 2019, 2024, and 2025 (source: United Nations Tourism Dashboard).

As temperatures warm, there could be opportunities for PEI's

[1] TIAPEI. "How Working in Tourism Helps Build Stronger Communities on PEI." 2025. https://tiapei.ca/how-working-in-tourism-helps-build-stronger-communities-on-pei/
[2] CBC. "P.E.I. Tourism Breaks New Records in 2024, Says Province." *CBC News*, February 5, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-tourism-indicators-2024-1.7451365.
[3] Government of PEI. *Tourism PEI: Annual Report, 2024-2025.* 2025. https://www.princeedwardisland.ca/sites/default/files/b62b/tourismpei_2024-25_ar-web.pdf.

tourism industry to continue to expand in the shoulder seasons and soften the transition between seasons.

PEI's Tourism Seasonality

- **Summer season** occurs from July to August. As PEI has traditionally been viewed as a summer destination, demand can exceed supply of tourism assets during these months. This includes accommodations, restaurants, and attractions, especially during peak events like the Cavendish Beach Music Festival.
- **Winter season** typically lasts from November to April with lower tourist volumes. PEI has been actively developing winter tourism through events such as Jack Frost WinterFest, hosting national sporting events like the Para Hockey Cup, and skiing and other winter activities.
- **Shoulder seasons** occur in the spring (May to June) and the fall (September to October) and experience moderate tourism activity. These months are increasingly targeted for growth through festivals, culinary and cultural events, and expansion of summer tourism activities.

Key Takeaways

The assessment revealed that of the four hazard scenarios analyzed in this assessment, **post-tropical storms and heat waves pose the greatest risks to the tourism industry.** Key takeaways for each hazard include:



Post-tropical storms are expected to cause the most severe consequences across all eight tourism focus areas and are a high risk both now and in the future. Post-tropical storms cause widespread infrastructure damage, power outages, and lengthy closures and recovery periods. These events can also affect tourist behaviour as visitors may have a negative perception of PEI in the immediate aftermath of a storm and choose to alter or postpone their plans while recovery takes place. The industry dealt firsthand with these types of impacts from Post-Tropical Storm Dorian in 2019 and Post-Tropical Storm Fiona in 2022. Post-tropical storms are particularly concerning as peak hurricane season (August–September) overlaps with PEI's peak tourist season and the growing fall shoulder season.



While consequence severity is lower for heat waves than post-tropical storms, **heat waves are almost certain to occur and can have significant impacts on health, safety, and visitor behaviour.** Currently heat waves represent a medium risk, but by 2050 this is expected to become a high risk. PEI's limited air conditioning infrastructure may intensify discomfort during extreme heat events, discouraging participation in some outdoor and non-air-conditioned indoor activities. This is particularly concerning given that many of PEI's most popular summer attractions are outdoors. There may also be increased demand for air-conditioned accommodation options.



Heavy precipitation and inland flooding are not major concerns for the tourism industry, as the impacts are generally temporary and manageable. There may be greater demand for indoor tourism experiences when heavy precipitation events occur.



A longer warm season and shorter cold season largely presents opportunities for the tourism industry, although it may threaten some of PEI's winter tourism activities. These opportunities do not come without challenges that should be planned for and managed as discussed in the next section.

Coastal Erosion

While coastal erosion is not a widespread risk to the tourism industry, select coastal sites do face risks from coastal erosion and flooding. The overall health and function of the coast is also tied to erosion management decisions along the coastline. For example, if too much armouring occurs or occurs in specific locations, there are downstream impacts on sediment supply to beaches. PEI's tourism industry has developed around and depends upon dynamic coastal environments. Maintaining this relationship while adapting to changing coastal conditions is both a challenge and opportunity. The province's signature coastal assets can continue to provide authentic experiences of natural coastal processes while incorporating adaptive approaches that ensure long-term visitor access and tourism industry sustainability and resilience.

To better understand site-specific risks and help inform decision-making, DLE completed a coastal hazard assessment of 24 major tourism assets across PEI (provided in Appendix E: Coastal Hazard Assessment for Major Tourism Assets). The assessment examines how current and future coastal hazards may affect key tourism infrastructure, experiences, and economic activities. For each asset, the assessment characterizes flood and erosion hazards based on provincial coastal data, water level projections, shore type, and site-specific conditions. The detailed asset profiles support both provincial-level strategic planning and asset-level operational decision-making. The assessment found that four assets face high flood exposure, including both major waterfronts (Charlottetown, Summerside), West Point Lighthouse, and Wood Islands Ferry Terminal. Five assets face high erosion exposure, which all feature natural beach/dune systems or unprotected shorelines with infrastructure exposure.

A key finding is the concentration of high-hazard assets within natural beach and dune systems, PEI's signature coastal attractions. For these assets, erosion and flooding are not "damage" but natural coastal processes essential to the experiences they provide. High erosion ratings for beaches indicate active coastal dynamics requiring adaptive management of visitor facilities (parking, boardwalks, access roads), not loss of the beaches themselves. These systems naturally erode during winter storms and rebuild during calmer periods.

Although transportation assets were outside the scope of the tourism industry risk and opportunity assessment, impacts to these assets, particularly from post-tropical storms and other major storm events, can have ripple effects on the industry and tourist experience. Disruptions to travel can directly affect tourists' ability to travel to and around the Island, highlighting a co-dependence between the tourism and transportation sectors. The following textbox briefly summarizes PEI's transportation options and potential impacts.

Transportation to and from PEI

Access to PEI is limited to a few critical routes, making the Island particularly vulnerable to infrastructure disruptions from delays or closures.[4] Further, highway infrastructure, especially bridges, could take months for repair. Visitors and residents primarily rely on:

- **Confederation Bridge:** Operational since 1997, it is the only fixed link to the Island and built to withstand severe storms. The bridge is key for transporting both visitors and goods onto the Island.
- **Charlottetown Airport:** The only major airport for commercial travel.
- **Charlottetown Port:** PEI's major port for tourism, with more than 100 **cruise ships** visiting annually.[5] The port is also critical for bringing in fuel, supplies, and other goods.[6]
- **Ferry services:** Operated by Northumberland Ferries, the Wood Islands-Caribou route connects PEI and Nova Scotia from May through December. From April to November, the Coopérative de Transport Maritime et Aérien (CTMA) ferry also connects the Island to Quebec.[7]

Potential impacts to transportation include:

- **Post-tropical storms** are the greatest hazard concern for travel to PEI due to strong winds and rough waters. Post-tropical storms, including Fiona and Dorian, have resulted in short-term closures of the Confederation Bridge and ferry services.[8,9,10] These disruptions limit access to and from the Island and can impact supply chains. Intense wave action may also create navigational issues for cruises and ferries.[11] Fiona hit right before the port's two historically busiest weeks and resulted in a domino effect of people not exploring the Island and contributing to the economy.[12] Due to Fiona, there were 19 cruise cancellations, with cruise season resuming about 12 days after the storm hit.[13] An increasing concern is an extended closure of the port resulting in the impeded arrival of fuel and other goods to the Island, which generally lacks redundancy.[14] The Wood Island Ferry Terminal is also vulnerable to flooding due to the low elevation of the terminal infrastructure and access roads along Northumberland Strait.
- **Heavy precipitation and flooding** events are more common in late summer and early fall, aligning with high visitation periods.[15] These events have led to ferry cancellations and road closures, disrupting access to the Island and impacting supply chains.[16]
- A **longer warm season** could present future opportunities for PEI's transportation network and tourism industry, such as an extended cruise season.

Appendix E: Coastal Hazard Assessment for Major Tourism Assets provides more detailed profiles for the Confederation Bridge, the Wood Island Ferry Terminal, and the Charlottetown Airport (YYG).

[4] Government of PEI. "How Do I Get to Prince Edward Island?" PEI Canada, May 9, 2015. https://www.princeedwardisland.ca/en/information/executive-council-office/how-do-i-get-to-prince-edward-island.
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[7] Government of PEI. 'How do I get to Prince Edward Island?' 2025. https://www.princeedwardisland.ca/en/information/executive-council-office/how-do-i-get-to-prince-edward-island#:~:text=Sail%20aboard%20Northumberland%20Ferries%20from,leaving%20PEI%20at%20Wood%20Islands.
[8] CBC News. "Flooding Closes Roads as nor'easter Pounds P.E.I." *CBC News*, December 10, 2014. https://www.cbc.ca/news/canada/prince-edward-island/flooding-closes-roads-as-nor-easter-pounds-p-e-i-1.2868850.
[9] CBC News. 2022. "Here's what you need to know about how Fiona is affecting N.B." *CBC News,* September 24, 2022. https://www.cbc.ca/news/canada/new-brunswick/fiona-transportation-cancellations-1.6594501.
[10] Hadeel Ibrahim and Philip Drost. 2019. "Dorian brings power outages, fires, floods to province." *CBC News,* September 7, 2019. https://www.cbc.ca/news/canada/new-brunswick/tropical-cyclone-hurricane-dorian-1.5274716.
[11] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[12] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[13] PEI Department of Finance. *2022: Fiscal and Economic Update* (n.d.). Accessed October 13, 2025. https://www.princeedwardisland.ca/sites/default/files/publications/2022_fiscal_and_economic_update.pdf.
[14] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[15] Government of PEI. *PEI Climate Change Risk Assessment*.
[16] CBC News. "Flooding Closes Roads as nor'easter Pounds P.E.I."

Potential Opportunities

New and diverse opportunities are also emerging for PEI's tourism industry. The summer months already attract the highest number of visitors, and **a longer warm season and shorter cold season could allow the Island to extend its tourism offerings into the shoulder seasons of spring and fall.** This shift may boost participation in warm-weather activities such as hiking, cycling, and swimming. As other destinations face increasing extreme heat, PEI's coastal climate—with its milder, more comfortable summer temperatures—could become even more appealing to tourists seeking relief. An extended season could also encourage earlier openings for shops, restaurants, tour operators, and other businesses, supporting economic growth. Sectors like agriculture and fisheries/aquaculture may benefit as well, drawing more visitors interested in PEI's culinary offerings and heritage. New tourism products, such as expanded vineyard operations, could emerge, while campgrounds may enjoy longer operational seasons. These changes have the potential to increase revenue and extend employment opportunities for seasonal workers across the Island.

These opportunities also come with challenges that will need to be managed, such as the potential for overcrowding, misalignment of supply and demand, increased stress on critical infrastructure, and workforce challenges. While many components of the industry are at or reaching capacity for July and August, there is ample opportunity for extending tourism later into the fall and earlier into the spring.[17] However, staffing may be a key challenge for extending the tourism season, as students and seasonal staff may be unable or unwilling to work longer seasons.[18] In addition, season extension will require system-wide participation from the tourism industry to succeed. For example, more visitors participating in fall tours and festivals will also need available accommodations, restaurants, and other activities.

The following sections continue to explore key climate risks and opportunities for the industry, organized by **outdoor tourism experiences, culinary and indoor tourism experiences, and accommodations**.

Outdoor Tourism Experiences: Risk and Opportunity Summary

Visitors travel to PEI to enjoy beautiful beaches, parks, and other outdoor experiences and activities. For the purposes of this assessment, outdoor tourism is broken down into sea-sun-sand, other nature-based tourism, sports and amusement facilities, and festivals and events. Table 7 provides the climate risk ratings for each outdoor tourism focus area and climate hazard, followed by summaries for each focus area. For the details behind each individual rating, see Appendix B: Outdoor Tourism Risk and Opportunity Assessment Results.

Overall, **post-tropical storms** pose the greatest threat across all four outdoor tourism focus areas, resulting in infrastructure damage, event cancellations, and high costs for both preventive and recovery efforts. **Heavy precipitation and flooding** temporarily disrupt outdoor activities that impact visitor experience. **Heat waves**, while generally manageable, require attention to infrastructure cooling capacity and flexible programming to ensure visitor safety and comfort.

[17] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[18] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Although **longer warm seasons and shorter cold seasons** will almost entirely be beneficial for warm-weather activities, decreased reliability of natural snow cover and a shorter winter season may affect winter tourism activities like skiing, snowmobiling, and snowshoeing.

Without strategic planning and adaptation, **coastal erosion and flooding** may compromise the viability of some major outdoor tourism sites. Appendix E: Coastal Hazard Assessment for Major Tourism Assets provides profiles for the following sites:

- Charlottetown Waterfront
- Charlottetown Event Grounds
- Summerside Waterfront
- Cavendish Main Beach
- Basin Head Provincial Park
- Brackley Beach Complex
- Victoria-by-the-Sea Historic Village
- The Links at Crowbush Cove
- Confederation Trail
- West Point Lighthouse

Potential Opportunities

Longer warm seasons and shorter cold seasons will increase the number of days suitable for outdoor, warm-weather activities like golfing, cycling, recreational fishing, hiking, beach recreation, boating, and water parks. Visitation to national parks could increase by 10–40% due to extended favourable conditions.[19] The extended warm weather will also help support growth in PEI's shoulder seasons (May to June and September to October).[20] However, operators will need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season.

Overall, a warming climate positions PEI as an increasingly attractive destination, with an abundance of beaches and relatively cooler temperatures in comparison to other destinations that may become unpleasantly hot from increasing temperatures. This may create competitive advantages for PEI, attracting new visitors seeking relief from heat. It may even encourage locals to enjoy a "staycation" rather than travel to warmer destinations.[21]

[19] S Arnold and A Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report* (University of PEI Climate Lab, 2017). https://projects.upei.ca/climate/files/2018/10/PEI-Climate-Change-Adaptation-Recommendations-Report_medres.pdf.
[20] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[21] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.

Table 7. Outdoor tourism experiences climate risk assessment results

Hazard	Likelihood		Consequence						Risk	
	Current	2050	Infrastructure	Environment	Health & Safety	Economy & Livelihoods	Operations	Overall	Current	Future
Focus Area 1: Sea-sun-sand										
Post-Tropical Storm	4	4	4	4	3	4	4	3.8	**15.2**	**15.2**
Heat Wave	3	5	2	1	4	2	3	2.4	**7.2**	**12.0**
Heavy Precipitation and Flooding	3	4	2	2	2	2	2	2.0	**6.0**	**8.0**
Longer Warm Season and Shorter Cold Season	2	4	1	2	1	2	2	1.6	**3.2**	**6.4**
Focus Area 2: Other nature-based tourism										
Post-Tropical Storm	4	4	3	3	3	3	3	3.0	**12.0**	**12.0**
Heat Wave	3	5	1	2	4	2	3	2.2	**7.2**	**12.0**
Heavy Precipitation and Flooding	3	4	2	2	2	2	2	2.0	**6.0**	**8.0**
Longer Warm Season and Shorter Cold Season	2	4	1	2	1	2	2	1.6	**3.2**	**6.4**
Focus Area 3: Sports and amusement facilities										
Post-Tropical Storm	4	4	4	3	2	4	4	3.4	**13.6**	**13.6**
Heat Wave	3	5	2	2	3	1	3	2.2	**6.6**	**11.0**
Longer Warm Season and Shorter Cold Season	2	4	2	2	1	3	2	1.8	**3.6**	**7.2**
Heavy Precipitation and Flooding	3	4	2	1	1	2	2	1.6	**4.8**	**6.4**
Focus Area 4: Festivals and events										
Post-Tropical Storm	4	4	3	2	2	4	4	3.0	**12.0**	**12.0**
Heat Wave	3	5	2	1	4	1	3	2.2	**6.6**	**11.0**
Heavy Precipitation and Flooding	3	4	2	1	3	3	2	2.2	**6.6**	**8.8**
Longer Warm Season and Shorter Cold Season	2	4	1	2	1	2	2	1.6	**3.2**	**6.4**



Focus Area 1

Sea-sun-sand

Sea-sun-sand activities encompass beach and ocean-based attractions that occur in the summer tourism season, such as swimming, boating, kayaking, stand-up paddle boarding, and sport fishing. Wind, flooding, and coastal erosion associated with post-tropical storms have previously caused significant damage to the infrastructure that supports sea-sun-sand activities. These hazards are likely to continue posing threats to this tourism subsector. Because of the outdoor nature of sea-sun-sand activities, heat waves can threaten the health and safety of visitors and tourism sector workers. Longer warm seasons and shorter cold seasons present an opportunity for this subsector, lengthening the period of time during the year when sea-sun-sand activities are viable.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Infrastructure*	*Operations*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Operations*	Mid	High

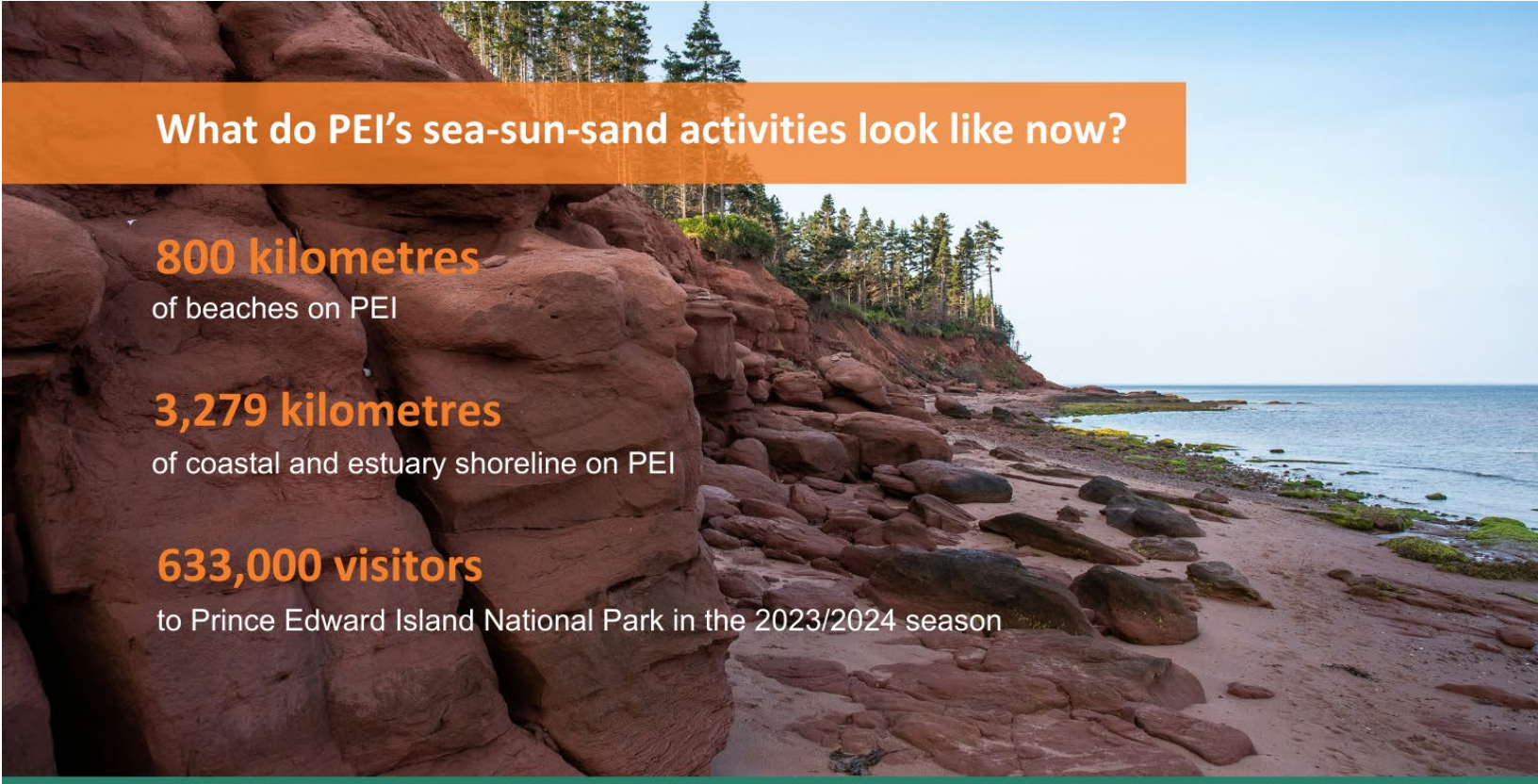
Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Tourism operators could choose to open earlier and close later in the year.



A longer operating season could mean more revenue for businesses in the sea-sun-sand subsector, as well as longer periods of employment for seasonal workers.



What do PEI's sea-sun-sand activities look like now?

800 kilometres
of beaches on PEI

3,279 kilometres
of coastal and estuary shoreline on PEI

633,000 visitors
to Prince Edward Island National Park in the 2023/2024 season

PEI's sea-sun-sand activities:

- Swimming
- Boating
- Sport fishing
- Kayaking
- Paddle boarding

How have post-tropical storms impacted PEI's coasts?



75% of infrastructure

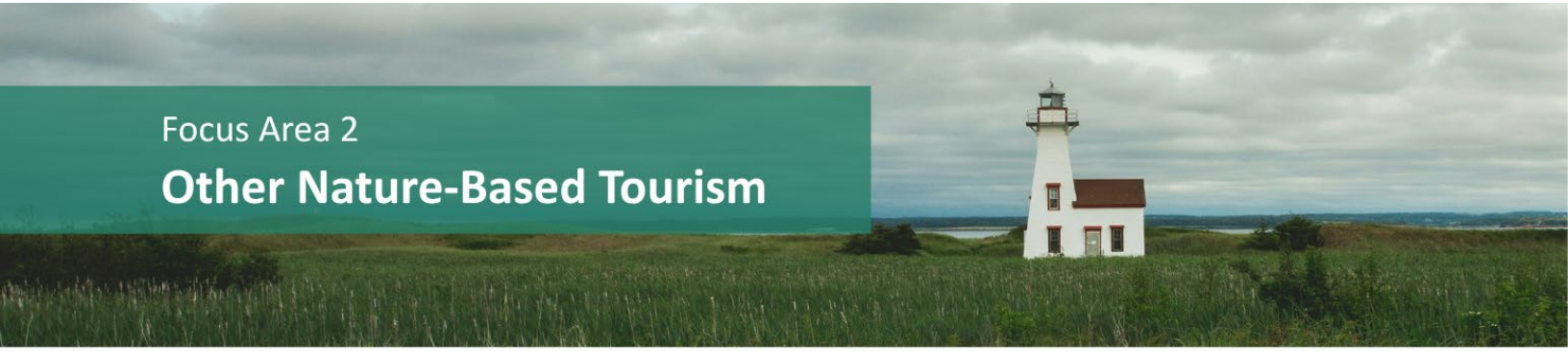
in Red Head Harbour was damaged by Post-Tropical Storm Fiona in 2022.

Only half of the beach access points

in PEI National Park had reopened 8 months after sustaining damage during Post-Tropical Storm Fiona.

6 lighthouses on PEI

are currently at high risk for flooding and erosion.



Focus Area 2

Other Nature-Based Tourism

Other nature-based tourism activities encompass road cycling and mountain biking, hiking, outdoor Indigenous experiences, such as the Path of Our Forefathers, driving scenic tours, wildlife watching, and more. In the winter, activities include cross-country skiing, snowshoeing, snowmobiling, outdoor Indigenous experiences, driving scenic tours, ATV driving, and more. Post-tropical storms can disrupt the infrastructure that supports other nature-based tourism, washing out trails and damaging scenic lookout spots. Heat waves may expose workers and visitors to extreme temperatures, increasing the risk of heat stress and exacerbating chronic health conditions. Polluted runoff that enters bodies of freshwater after extreme rainfall events can harm fish populations, disrupting freshwater fishing. Longer warm seasons present an opportunity for summer activities to begin earlier and start later, whereas changes in the timing of seasons will likely truncate the window of time when winter activities are viable.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Environment*	*Operations*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Operations*	Mid	High

Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Warm-weather activities could start earlier and end later in the year.



The other side of this opportunity, of course, is the shortening winter recreation season, as well as safety concerns associated with winter hiking and other outdoor activities that come with melting snow and ice.

What does PEI's nature-based tourism look like now?



700 kilometres
of hiking along the Island Walk

273 kilometres
along the Confederation Trail, popular for walking and cycling

24.5 kilometres
of groomed cross-country and snowshoeing trails on PEI

Some of PEI's other nature-based activities:

- Cycling
- Cross-country skiing
- Scenic drives
- Hiking

How have climate hazards impacted PEI's nature-based tourism?



Post-Tropical Storm Fiona caused significant damage to the island's ecosystems, damaging

9.4% of PEI's woodlands.

Parks Canada staff reported cases of

heat exhaustion

among visitors in recent years on outdoor trails and beaches.



Focus Area 3

Sports & Amusement Facilities

Sports and amusement facilities include golf courses, waterparks, and theme parks in the summer, and outdoor ice skating and downhill skiing in the winter. Post-tropical storms threaten sports and amusement facilities along PEI's shoreline, especially golf courses. As heat waves become more frequent and severe, visitors and workers at outdoor sports and amusement facilities that are open in the summer will be exposed to extreme temperatures, increasing health and safety risks associated with heat stress and exacerbating existing health conditions. At the same time, heat waves may increase demand for waterparks, as visitors look for ways to cool down, and longer warm seasons may increase the number of weeks when warm-weather facilities can operate.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Infrastructure*	*Economy & Livelihoods*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Operations*	Mid	High

Opportunities

Heat Wave: Three consecutive days with temperatures above 29°C

On hot days, more visitors may seek opportunities to cool down in waterparks.



PEI saw three heat waves in 2024 and record-breaking summer heat in 2025.

What do PEI's sports & amusement facilities look like now?

505,810 rounds of golf
were played on PEI in 2025

~$62 million
is golf's estimated annual contribution to PEI's GDP

73.4% increase
in the number of non-member rounds of golf played on PEI between 2019 and 2025



Some of PEI's sports & amusement facilities:

- Golf courses
- Waterparks
- Ski slopes
- Theme parks

How could climate hazards impact PEI's sports and amusements?

A 2023 study found that heavy daily rainfall between 2.6-5 mm leads to a

25% reduction in the number of rounds of golf played.





Focus Area 4

Festivals and Events

Festivals and events on PEI include professional sports events and festivals involving music, art, food, and history. Post-tropical storms and other forms of heavy precipitation are significant hazards to festival operations, especially for outdoor events. Disruptions or cancellations due to extreme weather can have major consequences for local economies and worker livelihoods. Heat waves also pose a threat to the health and safety of festival and event workers and attendees, as they face exposure to extreme temperatures and deal with the risks of heat stress. Longer warm seasons may allow festivals to occur earlier or later in the season and may change the type of activities available.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Economy & Livelihoods*	*Operations*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Operations*	Mid	High

Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

PEI is already expanding its festival offerings in the shoulder seasons to take advantage of warmer weather.



In February 2025, PEI held the **Red Dirt Ride Festival**, an ATV festival that includes three days of guided trail riding. Unlike the Island's other winter festivals (such as Jack FrostChildren's Winterfest), this festival does not depend on reliable snowfall.

As the warm season lengthens, more wintertime festivals on PEI may shift to non-snow-dependent activities.



What do PEI's festivals and events look like now?

122 business events and conferences

held on PEI in 2025

42% of attendees

at PEI's International Seafood Festival come from off the island

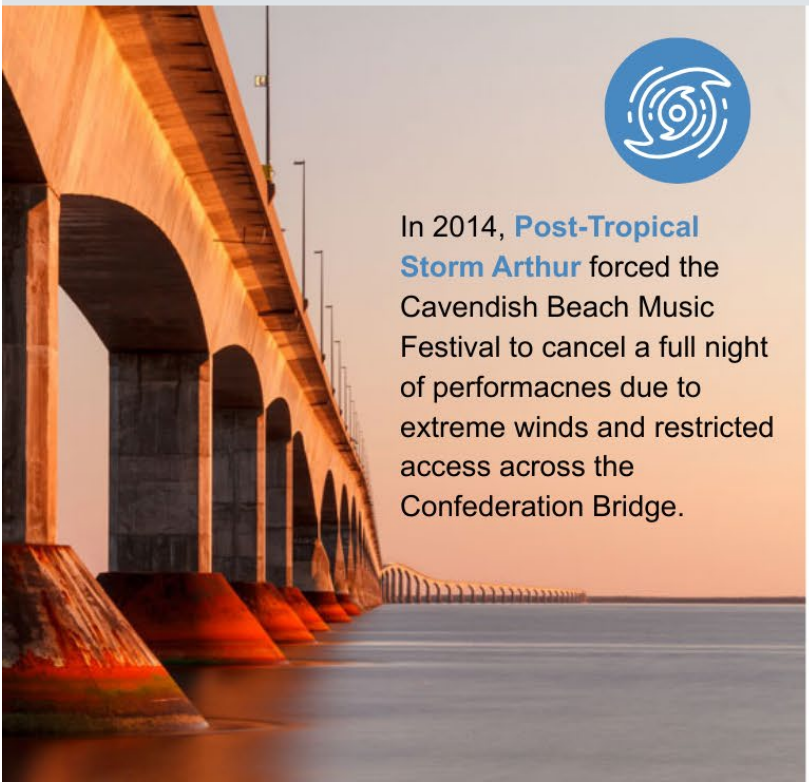
$30 million

in spinoff spending generated by the Cavendish Beach and Sommo music festivals in 2024

Some of PEI's popular festivals & events:

- Winterval
- Cavendish Beach Music Festival
- International Seafood Festival
- PEI Beer Festival
- Hockey games

How could climate hazards impact PEI's festivals and events?



In 2014, **Post-Tropical Storm Arthur** forced the Cavendish Beach Music Festival to cancel a full night of performacnes due to extreme winds and restricted access across the Confederation Bridge.

Each year, the **Cavendish Beach Music Festival** generates

$12.3 million

in direct economic impact, and the cancellation of the event due to climate hazards can have economic consequences.

Culinary and Indoor Tourism Experiences: Risk and Opportunity Summary

PEI offers a diverse range of culinary experiences that complement its outdoor attractions, such as restaurants, bars, cafes, food trucks, breweries, wineries, cooking classes, guided tastings, and farmers' markets. In addition, PEI's indoor tourism sector features cultural and retail experiences, including museums, non-food retail establishments, and arts-based programming. Table 8 provides the climate risk ratings for each focus area and climate hazard, followed by summaries for each focus area. For the details behind each individual rating, see Appendix C: Culinary and Indoor Tourism Risk and Opportunity Assessment Results.

Post-tropical storms present a serious threat to the infrastructure supporting PEI's culinary and indoor tourism experiences. These storms can cause structural damage to buildings and trigger power outages, leading to temporary closures of restaurants, museums, and other indoor tourism attractions. Such disruptions reduce business revenue and can result in lost wages and spoiled food products. **Heat waves** can increase health risks for workers and visitors especially in facilities lacking adequate cooling systems.

Without strategic planning and adaptation, **coastal erosion and flooding** may affect the operations of some major culinary and indoor tourism sites. Appendix E: Coastal Hazard Assessment for Major Tourism Assets provides profiles for the following sites:

- Confederation Centre of the Arts
- Provincial House National Historic Site
- Beaconsfield Historic House
- Greenwich Interpretation Centre
- Lennox Island Mi'kmaq Cultural Centre
- North Cape Interpretive Centre
- New Glasgow Lobster Suppers

Potential Opportunities

Climate change presents a variety of opportunities to strengthen the province's agri-tourism economy, diversify PEI's tourism offerings, and increase visitation for indoor experiences:

- A **longer warm season** could extend the tourism calendar, attracting more visitors during the shoulder seasons and benefiting the culinary and indoor tourism experiences. However, operators will need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season.
- Lobster boat tours, culinary experiences, and cultural and heritage experiences are prevalent on the Island. The *PEI Climate Change Risk and Opportunity Assessment for the Seafood Industry* found that **warming ocean temperatures** could benefit lobster populations, including increased abundance of certain food sources, potential migration of lobster populations northward to PEI, and decreased abundance of certain predators, which would continue to support these tourism experiences.[22]

[22] Government of PEI. "Climate Change Risk and Opportunity Assessment for the Seafood Industry." 2023. https://www.princeedwardisland.ca/sites/default/files/publications/pei_seafood_sector_climate_risk_and_opportunity_assessment_1.pdf.

- As environmental conditions shift, PEI may become more suitable for growing grapes, supporting the expansion of viticulture across the province.[23] Notably, **extreme heat—particularly when paired with drought—**can enhance grape quality at vineyards, producing smaller but higher quality grapes.[24] A longer warm season could also support increased visitation to wineries.
- **Heat waves** could increase visitation to or change the operations of museums and other public, air-conditioned, indoor spaces popular with tourists. For example, these spaces could take on an additional function of serving as cooling centres during heat waves.[25] Even if museums and other public, air-conditioned, indoor spaces are not formally used as cooling centres, more visitors would likely seek out indoor activities to escape the heat.
- Similarly, during **heavy precipitation events**, indoor tourism operators often see increased visitation.[26]

[23] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[24] Derek Baldwin. "Prince Edward County Wineries Grapple with 'Severe Drought.'" The Intelligencer, September 16, 2025. https://www.intelligencer.ca/news/prince-edward-county-wineries-grapple-with-severe-drought.
[25] Y Brousseau et al. *Scientific Report of the Project Mapping the Vulnerability and Exposure to Extreme Heat Waves of Populations* (Geography Department at Université Laval, 2023). https://vaguesdechaleur.ffgg.ulaval.ca/wp-content/uploads/2024/05/brousseau-et-al.-2023_en.pdf.
[26] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Table 8. Culinary and indoor tourism experiences climate risk assessment results

Hazard	Likelihood		Consequence						Risk	
	Current	2050	Infrastructure	Environment	Health & Safety	Economy & Livelihoods	Operations	Overall	Current	Future
Focus Area 5: Culinary experiences										
Post-Tropical Storm	4	4	3	3	2	4	4	3.2	**12.8**	**12.8**
Heat Wave	3	5	3	2	3	2	3	2.6	**7.8**	**13.0**
Heavy Precipitation and Flooding	3	4	2	2	2	2	2	2.0	**6.0**	**8.0**
Longer Warm Season and Shorter Cold Season	2	4	1	3	1	2	2	1.8	**3.6**	**7.2**
Focus Area 6: Other indoor tourism experiences										
Post-Tropical Storm	4	4	4	1	1	4	4	2.8	**11.2**	**11.2**
Heat Wave	3	5	3	1	3	2	2	2.2	**6.6**	**11.0**
Longer Warm Season and Shorter Cold Season	2	4	3	2	1	2	2	2.0	**4.0**	**8.0**
Heavy Precipitation and Flooding	3	4	2	1	2	2	2	1.8	**5.4**	**7.2**



Focus Area 5

Culinary Experiences

Known as Canada's "food island," PEI is home to a wide diversity of culinary experiences, including restaurants, bars, cafes, food trucks, breweries, wineries, cooking lessons, guided tasting experiences, and farmers markets. Post-tropical storms pose a threat to the physical structures of eating and drinking establishments, and the high winds and extreme precipitation associated with post-tropical storms can cause power outages that disrupt business operations, decreasing revenue and workers' wages. The environmental consequences of climate hazards can impact food systems, especially for restaurants that rely on locally harvested foods. Extreme heat can pose health risks for workers in kitchens working over hot oil or open flames without adequate climate control. Lengthening warm seasons offer opportunities for vineyards, and for seasonal eating and drinking establishments to open earlier and close later in the year, boosting revenue and increasing employment options.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Economy & Livelihoods*	*Operations*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Infrastructure*	Mid	High

Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Seasonal restaurants could choose to extend their operations into the shoulder seasons.

Ocean warming as a result of warmer temperatures, as well as longer warm seasons, could increase lobster populations by decreasing predators and improving habitat conditions.



What do PEI's culinary experiences look like now?



6.6% of workers
on PEI are employed in food services or accommodations

40,989
restaurants, cafes, and bars on PEI as of June 2025

39% increase
in the number of eating and drinking establishments on the Island between 2019 and 2024

PEI's "big five" foods

- Beef
- Potatoes
- Lobster
- Mussels
- Oysters

How have climate hazards impacted PEI's culinary experiences?

In August 2025, two restaurants on PEI **closed for an afternoon due to unsafe heat conditions** in their kitchens during a heat wave. Another restaurant restricted its menu to reduce the exposure of their staff to extreme heat in the kitchen.

Between 2015 and 2020, PEI experienced

5 shellfish harvesting closures

due to potential **water contamination from runoff** following extreme rainfall events.





Focus Area 6

Other Indoor Tourism

Other indoor tourism experiences on the Island include museums, indoor heritage sites, indoor arts experiences, and non-food retail businesses. PEI is home to many museums and heritage sites, notably the Anne of Green Gables Museum. Post-tropical storms can damage museum and business structures. Flooding and high wind speeds associated with post-tropical storms often cause power outages, leading to operational disruptions and potentially reducing revenue for businesses and wages for workers. Heat waves pose a significant threat to worker and visitor health, especially in indoor environments without air conditioning. On the other hand, increasing frequency and severity of heavy precipitation events could be an opportunity for indoor tourism, as more visitors look for rainy-weather activities.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Infrastructure*	*Economy & Livelihoods*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Infrastructure*	*Health & Safety*	Mid	High

Opportunities

Heat Wave: Three consecutive days with temperatures above 29°C

Air-conditioned indoor tourism experiences like museums could draw more visitors on very hot days as tourists seek to escape the heat.

Opportunities

Heavy Precipitation: 100 mm of rainfall in 24 hours

Indoor tourism experiences could see more visitors on rainy days.



What do PEI's indoor tourism activities look like now?

5% increase
in the number of visitors to museums and heritage sites on PEI between 2019 and 2024

$501 million
was the GDP of PEI's retail industry in 2024

60,498 visitors
to the Beaconsfield Historic House in 2025, PEI's most visited indoor heritage site that year

PEI's indoor tourism experiences:

Museums & Heritage Sites

Non-Food Retail

Indoor Arts Experiences

How have climate hazards impacted PEI's indoor tourism in the past?



The access road to the **Anne of Green Gables Heritage Place** historically experienced flooding and safety concerns following extreme rainfall events. The road was reconstructed in 2017 to address these issues.

PEI Museum and Heritage Foundation reported a decrease in visitors to their historic sites and museums in 2022 due to Post-Tropical Storm Fiona.

The Carriage House, an event venue and one of the foundation's historic sites, experienced

37 event cancellations

due to Post-Tropical Storm Fiona.

Accommodations: Risk and Opportunity Summary

PEI's overnight accommodations include fixed-roof lodgings such as hotels, resorts, inns, and short-term rentals, as well as non-fixed-roof accommodations like campgrounds and recreational vehicle (RV) parks. Table 9 provides the climate risk ratings for each focus area and climate hazard, followed by summaries for each focus area. For the details behind each individual rating, see Appendix D: Accommodations Risk and Opportunity Assessment Results.

Climate hazards such as **post-tropical storms** pose serious risks of damage and loss of critical services (e.g., power outages) for PEI's accommodation infrastructure. **Heat waves** pose health risks for outdoor workers maintaining hotel and resort grounds and for guests staying overnight in accommodations without air conditioning. Additionally, **heavy precipitation and flooding** can lead to the accumulation of debris and mud at campgrounds, creating environmental and safety challenges.

Without strategic planning and adaptation, **coastal erosion and flooding** may compromise the structural integrity and safety of some coastal accommodations. Appendix E: Coastal Hazard Assessment for Major Tourism Assets provides profiles for the Dalvay by the Sea National Historic Site and the Brudenell River Resort.

Potential Opportunities

Longer warm seasons present opportunities for both indoor and outdoor accommodations, potentially increasing the length of PEI's peak overnight visitor season and the length of the outdoor camping season. Overnight accommodation occupancy rates on PEI peak in the warm months and decrease in the cold months. As the warm season lengthens, hotels, resorts, and other fixed-roof accommodations could see the peak season for occupancy rates lengthen. Earlier spring conditions and later fall conditions could allow campgrounds to open earlier and close later in the season. These shifting seasons could increase employment periods for seasonal workers and could boost revenue for seasonal hotels and resorts, as well as for campgrounds. However, operators will need to balance the opportunities and risks of extending their seasons as the fall season coincides with hurricane season.

Table 9. Accommodations climate risk assessment results

Hazard	Likelihood		Consequence						Risk	
	Current	2050	Infrastructure	Environment	Health & Safety	Economy & Livelihoods	Operations	Overall	Current	Future
Focus Area 7: Fixed-roof accommodations										
Post-Tropical Storm	4	4	4	1	4	3	4	3.2	**12.8**	**12.8**
Heat Wave	3	5	3	1	3	2	2	2.2	**6.6**	**11.0**
Heavy Precipitation and Flooding	3	4	2	1	1	2	2	1.6	**4.8**	**6.4**
Longer Warm Season and Shorter Cold Season	2	4	2	1	1	2	2	1.6	**3.2**	**6.4**
Focus Area 8: Campground accommodations										
Post-Tropical Storm	4	4	4	4	3	4	4	3.8	**15.2**	**15.2**
Heat Wave	3	5	3	2	4	1	2	2.4	**7.2**	**12.0**
Heavy Precipitation and Flooding	3	4	3	2	2	2	3	2.4	**7.2**	**9.6**
Longer Warm Season and Shorter Cold Season	2	4	2	2	1	2	2	1.8	**3.6**	**7.2**



Focus Area 7

Fixed-Roof Accommodations

Fixed-roof, overnight accommodations on PEI include stays in hotels, motels, resorts, short-term rentals, cottages, and cabins. Post-tropical storms pose a high risk to the infrastructure that supports PEI's fixed-roof accommodations, threatening power outages and impacts to the physical structures of hotels and other buildings. Coastal erosion may damage infrastructure or, in extreme cases, force coastal accommodations to close or relocate if erosion conditions become too severe. Heat waves pose health and safety risks to both visitors and workers. This is especially true for visitors and workers in buildings without air conditioning, as well as for outdoor workers who work on the grounds of hotels and resorts. Because overnight stays on PEI tend to spike in the summer months, a lengthening warm season may extend the period of time when accommodations are at full capacity.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Infrastructure*	*Health & Safety*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Infrastructure*	*Health & Safety*	Mid	High

Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

A longer warm season may bring more overnight stays to PEI for a longer portion of the year.

In 2025, accommodations occupancy rates peaked in **August at 78% occupancy**. The minimum occupancy rate occurred in **January 2025 at 23%**. Lengthening warm seasons could increase occupancy rates in the spring and fall.





What do PEI's fixed-roof accommodations look like now?

80% of visitors
to PEI stay at least one night

89% of overnight visitors
stay in fixed-roof accommodations

158,219 stays
in fixed-roof accommodations in July 2025

Fixed-roof accommodations on PEI (% of total stays):

- **Hotels, motels & resorts** (32%)
- **With friends or family** (20%)
- **Cottage or cabin** (18%)
- **Short-term rental** (6%)
- **Two or more** (6%)

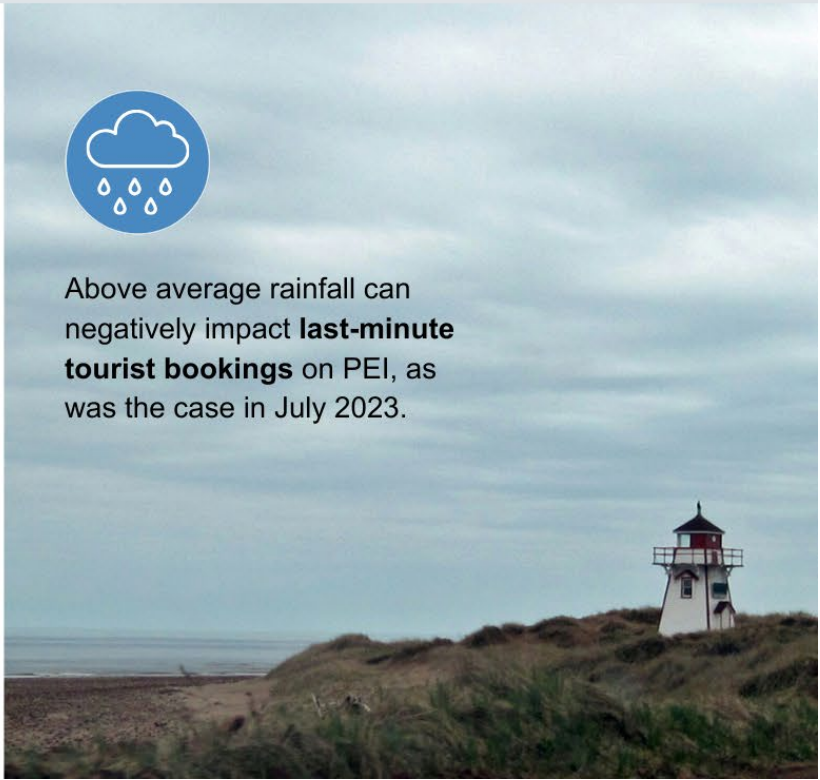
How have climate hazards impacted PEI's accomodations in the past?

The **Harbour House in Charlottetown** experienced

$30,000 in lost revenue

due to reservation cancellations in the 11 days following Post-Tropical Storm Fiona in 2022.

Above average rainfall can negatively impact **last-minute tourist bookings** on PEI, as was the case in July 2023.





Focus Area 8

Campground Accommodations

Overnight non-fixed roof accommodations on PEI include stays at campgrounds and RV parks. Post-tropical storms pose significant threats to the infrastructure that supports non-fixed-roof accommodations, such as access stairs and boardwalks. Post-tropical storms and other heavy precipitation events can lead to flooding and take down trees, forcing campgrounds to close and necessitating costly repairs. Longer warm seasons and shorter cold seasons could present an opportunity for campgrounds to extend their period of operations, boosting revenue and lengthening seasonal employment.

Highest Risk Hazards

	Key Impact Areas		Current Risk	Risk in 2050
Post-Tropical Storm: Multi-day post-tropical storm with heavy rain, storm surge, and wind	*Infrastructure*	*Environment*	High	High
Heat Wave: Three consecutive days with temperatures above 29°C	*Health & Safety*	*Infrastructure*	Mid	High

Opportunities

Longer warm season and shorter cold season: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Campgrounds and RV parks could open earlier and close later in the year.



Historically, PEI's last spring frost has occurred in mid May, and it is projected to shift to late April by 2050.

What do PEI's campgrounds look like now?

52.1% occupancy
at campgrounds on PEI in 2022, beating the previous record of 47.9% in 2019

11% of PEI's visitors
stay in campgrounds or RV parks

117,580 overnight stays
at campgrounds on PEI in July 2025

How is climate change projected to impact PEI's campgrounds?

A 2016 study found that Jacques Cartier Provincial Park is at risk of losing **38% of its campsites** to coastal erosion by 2040.

How have climate hazards impacted PEI's campgrounds in the past?



From August to September 2025, PEI instituted a ban on campfires and bonfires following a period of especially dry and hot weather in an effort to prevent human-caused wildfires.

Crystal Beach Campground sustained

$500,000 in damages

following Post-Tropical Storm Fiona in 2022, forcing it to close permanently.

Adaptation in Action: Examples from the Field

In November 2025, the project team conducted site visits across the Island at Cavendish Beach, Green Gables Heritage Place, Charlottetown Waterfront, Beaconsfield Historic House, the Links at Crowbush Cove, and Basin Head Provincial Park. The project team also interviewed the Director of Culture and Tourism for Lennox Island First Nation. These visits and discussions with staff revealed site-specific climate impacts and concerns, as well as examples of adaptation measures already in place.

Protecting Natural Assets: Prince Edward Island National Park[27]

Parks Canada is responsible for administering PEI National Park and other National Historic Sites on the Island. The widespread impacts of Post-Tropical Storm Dorian in 2019 and Post-Tropical Storm Fiona in 2022 challenged Parks Canada to take proactive steps to better protect Prince Edward Island National Park.

Fiona caused significant and widespread damage along the north shore where the wind and waves were the strongest.[28] PEI National Park was particularly hard hit. Fiona eroded up to ten metres of dunes in the Cavendish area, which had not yet fully recovered from Dorian when Fiona hit.[29,30] These impacts and the long recovery signified the need for proactive adaptation measures to better protect Parks Canada resources and be able to be more resilient in the face of future storms.

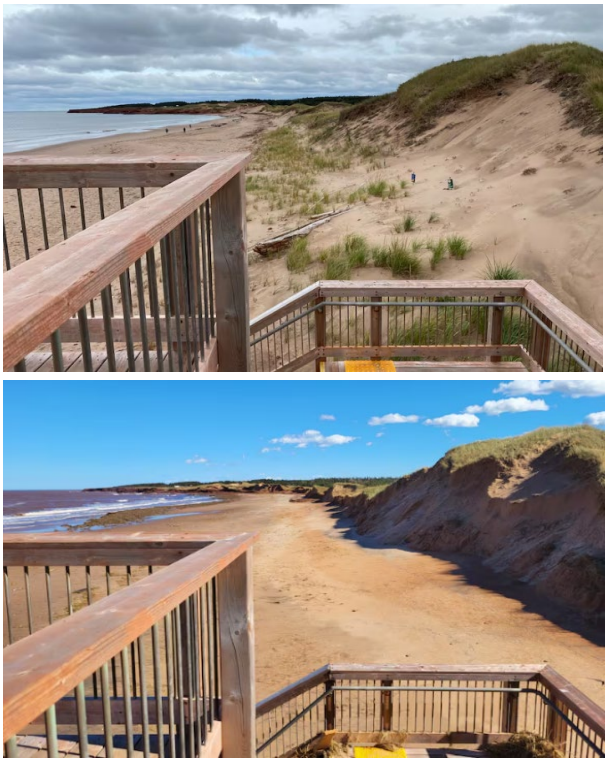


Figure 4. A "Coastie" picture of the dunes at Cavendish Beach before (top) and after (bottom) Fiona (Source: CBC News and The Coastie Initiative).

Climate considerations are embedded in Parks Canada's decision-making processes. New projects consider projected flood and erosion risks and are designed to be climate resilient. Parks Canada is also actively exploring managed adaptation strategies at various vulnerable sites throughout the park.

At Stanhope Beach, Parks Canada took an innovative approach in rebuilding the staircase and ramp down to the beach at the dune crossing. This structure was rebuilt in modular sections, similar to Lego pieces, so that they can be quickly dismantled and moved to prevent storm surge damage (Figure 5 shows the ramp pieces removed in the winter). The Cavendish

[27] PEI Tourism Site Visits – Cavendish Beach. 2025.
[28] Yarr. "P.E.I. National Park Dunes Suffer 'extremely Dramatic' Erosion from Fiona."
[29] Davidson-Arnott, Robin, Jeff Ollerhead, Elizabeth George, et al. "Assessing the Impact of Hurricane Fiona on the Coast of PEI National Park and Implications for the Effectiveness of Beach-Dune Management Policies." *Journal of Coastal Conservation* 28, no. 3 (2024): 52. https://doi.org/10.1007/s11852-024-01050-5.
[30] MacLeod. "P.E.I. Is Gearing up for Its First Post-Fiona Tourism Season. A Lot Has Changed."

and Stanhope campgrounds have also been equipped with movable “bunkies,” which can be relocated quickly in the event of a storm.



Figure 5. Ramp pieces were removed for the winter months to protect against winter storms, waves, and wind damage (Source: Parks Canada).

During repairs, Parks Canada also installed buried revetments north of highly valued assets, which is a rock core beneath layers of sand and native grasses. While the landscape appears natural, and provides habitat, it is now reinforced and stabilized against erosion, protecting infrastructure critical for Park operations. With proactive planning, Parks Canada typically takes natural approaches to erosion management – working to understand erosion rates but allowing this natural process to occur. However, due to the emergency situation, the park needed to act fast to make repairs and protect the Gulf Shore Parkway and thus opted for a nature-based solution that provides protection while allowing for time to adequately plan for the future. Parks Canada has also implemented extensive dune recovery efforts. Education, signage of an official closure of all dunes in the Park, as well as enhanced compliance efforts, help keep tourists off the dunes. Particularly important are “baby dunes,” which are flat sections of sandy beach where dunes are regenerating around vegetation.[31]



Figure 6. The Coastie set up at Cavendish Beach (Source: ICF).

Lastly, Parks Canada also promotes community science through the Coastie initiative, inviting beach-goers to help monitor coastal change by taking and uploading pictures using a designated phone cradle (Figure 6) at various locations across the parks.[32] These visual records can be an extremely helpful data for monitoring erosion over time.

Adapting after Fiona: The Links at Crowbush Cove[33]

Coastal erosion has long been a concern for the provincial golf course at the Links at Crowbush Cove. While the course sits far enough inland, several course holes are vulnerable to an encroaching shoreline, degraded dunes, and storm surge. These vulnerabilities have led to proactive rebuilding and shoreline buttressing at the course. The Links at Crowbush Cove has been proactively planning for these risks, completing shoreline revetment and dune recovery work across multiple stages.

More than a decade ago, an artificial dune reinforced with sand was constructed at the Links at Crowbush Cove. Over the years, two additional height increases have been made at Hole 16,

[31] Parks Canada. 2025. Dune recovery: Prince Edward Island. https://parks.canada.ca/pn-np/pe/pei-ipe/nature/conservation/baby-dunes-bebe
[32] Parks Canada. The Coastie Initiative. https://parks.canada.ca/pn-np/pe/pei-ipe/activ/coastie
[33] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.

which is especially exposed at the shoreline. Today, the 20-foot armoured bank provides effective protection.

When Fiona struck in 2022, the course sustained significant impacts, including power outages and relocating visitors. The storm also caused widespread environmental damage to both the course and the shoreline. Sand piled up on walkways as high as 8 ft, requiring crews to push it back onto the beach. The dunes were completely washed away down to the buried revetment layer, but they served their purpose of protecting the course from even further damage (Figure 7). The 16th hole was once again exposed and required 4,000 tons of armour stone to reconstruct the protective wall.[34] Staff have also installed sand fencing and native plantings to rebuild the dune and help stabilize the shoreline.



Figure 7. Fiona washed away dunes down to the buried revetment stone layer (Source: The Links at Crowbush Cove).

Additionally, a bridge at the course, which had been designed to sit on top of the posts, washed away and was rebuilt—attached to the posts this time to increase the resilience of the bridge (Figure 8).

The property also lost 70 acres of trees due to the extensive wind damage. Despite these challenges, the Links at Crowbush Cove has adapted to its changing landscape. Every hole now offers ocean views, and the course has evolved into a more open, links-style layout.[35]



Figure 8. Posts after the bridge washed away during Fiona (Source: The Links at Crowbush Cove).

However, risks remain prominent. Recent studies show that expected sea level rise will impact the course in the next ten to twenty years and planning has begun to manage these changes.

In the meantime, coastal erosion will continue to require close management of the course, dunes, and other shoreline protective measures.

Adapting to a Changing Climate: PEI Museum & Heritage Sites[36]

The PEI Museum and Heritage Foundation is responsible for managing seven sites and a collection facility. Each of these sites have experienced climate-related impacts in recent years and require close management to preserve the integrity of the buildings and collections.

[34] Stanley, A. 'Fully Recovered From Hurricane Fiona, Prince Edward Island Shines Again as an Underrated Golf Hotbed.' 2023. https://www.si.com/golf/news/prince-edward-island-shines-as-underrated-golf-hotbed
[35] Stanley, A. 'Fully Recovered From Hurricane Fiona, Prince Edward Island Shines Again as an Underrated Golf Hotbed.' 2023. https://www.si.com/golf/news/prince-edward-island-shines-as-underrated-golf-hotbed
[36] PEI Tourism Site Visits – Beaconsfield. 2025.

Heritage sites and museum collections are sensitive to even minor environmental changes, which can trigger cascading effects.

Universal challenges for managing these sites in a changing climate include:

- Staff have seen a noticeable increase in damages to structures, trees, and collections from invasive species (e.g., Asian Lady and Japanese beetles, Japanese Knotwood), pests (e.g., spruce beetles, moths, silverfish), and rodents (racoons). They have also seen an increase in mosquitos, which can be uncomfortable for visitors and staff. A warmer climate will support the prevalence of these species.



Figure 9. Collection staff removing insects and damaged fibers from a fur blanket (Source: PEI Museum and Heritage Foundation).

- Finding contractors and vendors who understand the unique needs of a building with artifacts and cultural objects can be difficult for making any repairs or renovations. For buildings that are designated, contractors/vendors need to follow the Standards and Guidelines[37] which require much oversight by staff.
    - Furthermore, if work is taking place in a space, all objects need to be assessed, packed, moved, and stored to ensure their protection. When the work is complete, those objects are then unpacked, cleaned and reset in the space.
- Staff need to balance preserving the historic elements of these sites with modern improvements that provide better protection from climate impacts (e.g., using materials that are more resilient to weather conditions or installing a cooling system to help with temperature control). The foundation's capital budget is also limited, meaning staff need to prioritize among projects and address emergency needs first.

Climate impacts and adaptation successes at the Beaconsfield Historic House and the Orwell Corner Historic Village are highlighted below.

Beaconsfield Historic House

Beaconsfield Historic House experienced significant damage from Post-Tropical Storm Fiona in 2022 and has also dealt with extreme heat and humidity challenges in recent years. Although Beaconsfield has not experienced major coastal flooding or erosion issues to date, a coastal hazard assessment of the property (see Appendix E: Coastal Hazard Assessment for Major Tourism Assets) rated the risk level as moderate.

Beaconsfield was most affected by high winds during Fiona. The shaking of the house from the wind caused significant damage to plaster that needed to be repaired. Due to the limited number of contractors who are specialized in plaster work, staff had to wait until they were available. This timing resulted in the house being closed during the high season for tours,

[37] Historic Places, *Standards and Guidelines for the Conservation of Historic Places in Canada. A Federal, Provincial and Territorial Collaboration. (Her Majesty the Queen in Right of Canada, 2010)* https://www.historicplaces.ca/en/pages/standards-normes.aspx

resulting in lost income. In addition, the work took longer than anticipated due to high temperatures and humidity which slowed down the process for the plaster and paint to dry.

Fiona also caused tree damage and some trees on the property were ultimately removed. The loss of trees has increased the amount of sunlight and heat inside the house. This seemingly small change required additional measures to protect the house and artifacts from increased sunlight, including adjustments to blinds. One tree hit the house, causing physical damage to the window and ceiling and a water leak. It took three to four months to repair the issue.

Hotter summer temperatures have also made the house unbearable for visitors and staff. After observing lower turnout for tours and hearing complaints from visitors, staff decided to install heat pumps to all three floors of the Beaconsfield Historic House with data monitors to track and adjust conditions as needed (Figure 10). This upgrade improved visitor experience and staff comfort and safety, while also providing better temperature control to preserve the condition of the house and collection.



Figure 10. Cooling system unit installed at the Beaconsfield Historic House (Source: ICF).

Beaconsfield has also struggled with humidity, mildew, and mould in the past. A water leakage near the basement caused a spike in humidity. The quick swing in conditions can cause wood in the house and furniture to expand and contract and support the formation of mildew and mould. Staff resolved this issue by trenching the basement, adding insulation to the foundation, installing two sump pumps and a drain to move water, and installing new industrial humidifiers and furnaces. These upgrades have successfully helped control temperature and humidity levels.

The repairs and upgrades at Beaconsfield Historic House demonstrate how preservation needs can be balanced with energy efficiency and resilience upgrades.

Orwell Corner Historic Village

The Orwell Corner Historic Village has also faced a variety of challenges from post-tropical storms, temperature and precipitation swings, and extreme heat.

Fiona primarily caused structural damage and tree loss. For example, Fiona shifted the rafters in the main barn, which had to be addressed before reopening for the safety of the animals and visitors. The roofs at the property also leaked, which has been a common issue after heavy rain events. Due to the need to fit historic standards and guidelines, staff have struggled with balancing standards with the most protective roofing materials (e.g., metal roofs vs. time period appropriate cedar roofs). Whenever work needs to be completed on these buildings, they are closed to visitors. Many trees also had to be removed and cut down after Fiona (Figure 11), which changed the landscape of the village and



Figure 11. Blown down trees at Orwell after Fiona (Source: PEI Museum and Heritage Foundation).

the sunlight levels in the Clarke general store. Time period appropriate curtains had to be specially commissioned for the general store to reduce heat and light damage to the objects on display.

As temperatures warm and seasons shift, wood-boring beetles have been especially problematic at the Orwell site. They are not dying off in the winter like they used to and staff have had to increase spraying of cultural objects displayed in site buildings. The spruce beetle has led to several standing dead spruce trees on the property that will need to be removed before they become a danger to visitors and before root rot damages the main road into the village (Figure 12). Season changes have also affected winter programing, which may be canceled, or replaced with alternate programing when there is not adequate snow for the event or the site becomes too muddy.



Figure 12. Standing dead spruce trees from spruce beetles at Orwell (Source: PEI Museum and Heritage Foundation).

Lastly, programs and offerings can be affected by extreme heat. If temperatures are too high, staff will prioritize animal welfare including cancelling horse-drawn wagon rides and putting the animals inside the barn with water and cooler temperatures.

Increasing Operational Preparedness: Lennox Island Indigenous Tourism

Lennox Island First Nation is a Mi'kmaq community located off the northwest coast of PEI. With support from the Mi'kmaq Confederacy of PEI and academic partners, the community continues to take steps to adapt to rising sea levels, coastal erosion, and extreme heat. Recent efforts have included erosion assessments and coastal engineering studies to understand past and future coastal change and evaluate potential shoreline protection and adaptation options.[38] Using GIS, the community has also mapped culturally significant sites to better understand their vulnerability to coastal change.[39] These efforts have begun to translate into on-the-ground action, such as a living shoreline pilot project.[40]

Indigenous tourism operations and experiences on Lennox Island are rooted in outdoor settings and Mi'kmaq heritage—many of which depend on access to fire and the natural environment. Lennox Island offers three signature tourism experiences: Bannock and Clams in the Sand where storytellers and traditional



Figure 13. Quill work on birch bark activity (Source: Tourism PEI).

[38] Randy Angus, Don Jardine, Adam Fenech, and Charlie Sark. "Adapting Mi'kmaq Communities of Prince Edward Island to Climate Change Impacts." *Canada's Adaptation Platform Webinar Series,* 2019. https://climateriskinstitute.ca/wp-content/uploads/2019/12/Dec.-11-2019-Webinar-Adapting-Mi%E2%80%99kmaq-Communities-of-Prince-Edward-Island-to-Climate-Change-Impacts.pdf

[39] Sabine Dietz and Stephanie Arnold. "Chapter 1: Atlantic Provinces." *Canada in a Changing Climate: Regional Perspectives Report,* 2021. https://changingclimate.ca/regional-perspectives/chapter/1-0/

[40] Government of PEI. "Climate Challenge Fund Projects." 2025. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/climate-challenge-fund-projects

teachers guide outdoor food preparation over open fire, porcupine quill work on birch bark, and the Beat of the Drum where visitors create their own hand drum. Tourism operations are increasingly affected by weather variability and extreme events. For example:

- Increased weather variability can make outdoor event planning and execution more difficult. Rain, wind, heat, and storms occasionally disrupt planned outdoor programming on Lennox Island, requiring coordinated use of limited available indoor spaces.
- Extreme weather during a past Fall Flavours Festival caused the event to move indoors. A large part of the Megapaji experience offered during this event is open fire preparation of food. While the event was still able to go on indoors, some adjustments had to be made to the experience.
- In 2025, dry conditions resulted in a weeks-long province-wide fire ban. Lennox Island fire-based sacred and culinary experiences had to be cancelled for five weeks, including the popular Bannock and Clams experience.
- Extreme heat poses safety concerns for visitors and staff, especially during outdoor ceremonies and performances. If temperatures are too hot especially for staff performing fire-based activities, the fire elements may be cancelled. Heat-sensitive visitors, such as older adults, have also needed to be moved indoors during high temperatures for safety.



Figure 14. Bannock and Clams in the Sand experience (Source: Experience Lennox Island).

In response to these challenges, Lennox Island tourism operators have made ongoing operational adjustments to prioritize health and safety while maintaining cultural integrity. Extreme weather policies are in place for staff and visitors—for example, when temperatures are unsafe or when fire bans are active, fires are removed from tourism programming. When feasible, staff provide shade and water and redirect visitors to an air-conditioned indoor space.

When outdoor or fire-based activities are not possible, operators pivot to alternate indoor programming, such as quill art, drum-making, and other cultural demonstrations or workshops. Operators also spend additional time explaining these changes to visitors, helping them understand the role of climate conditions, safety risks, and regulatory requirements.

In addition to day-to-day programming changes, Lennox Island has invested in broader emergency preparedness that considers the added complexity of hosting large events that can bring over 1,500 visitors to the Island. Tourism operators coordinate with the on-Island fire department, Health Centre, and EMO department to plan for extreme weather and other emergencies. For example, in 2025 the Lennox Island Emergency Measures Manager hosted an Emergency Preparedness Week, including guest presentations from the PEI EMO and the PEI Fire Smart Coordinator.[41] Lennox Island also has a fire safety plan developed through a

[41] Lennox Island Band Administration. “Lennox Island First Nation Community Newsletter.” 2025. https://lennoxisland.com/wp-content/uploads/May-2025.pdf

student initiative, and staff have received emergency response training. Together, these measures reflect an ongoing effort to adapt tourism operations to a changing climate while supporting community safety and resilience.

Managing Extreme Heat: Green Gables Heritage Place[42]

The Green Gables Heritage Place is the most popular heritage attraction on PEI, especially for cruise visitors. Parks Canada, who administers this site, has been proactive about emergency planning for extreme heat, major storms, and other events. They have also assessed the artifact collection and surrounding landscape for a variety of risks, including climate change.



Figure 15. Staff outside of the Green Gables House in period costume at the Green Gables Heritage Place (Source: Parks Canada).

Green Gables Heritage Place offers a great example of the types of strategies other operators can implement to manage extreme heat risks for staff and visitors. During high heat, the grounds offer little shade and the air conditioning at Green Gables House sometimes fails. Staff outside in period costumes and inside the house are vulnerable to overheating as are visitors. To address this concern, Parks Canada adjusts operations during extreme heat events. On hot days, staff will rotate more frequently between different stations to have some reprieve from the heat. For staff and visitor comfort, fans are also placed inside the house and visitors are encouraged to visit other parts of the property that offer more shade, air conditioning, or spaces to rest. These measures help maintain visitor experience while prioritizing staff safety during heat events. The property also has a backup generator on site, which has helped maintain operations during power outages.

Serving as Emergency Shelters during Fiona[43]

During Fiona, the Delta Hotel became a critical refuge for visitors and residents, alike. Equipped with an emergency back up generator, people flocked to its restaurant for food, the lobby to charge phones, and rooms for shelter. The hotel even opened its meeting rooms for people to gather. Although many visitors evacuated from the Island, the Delta reached about 80% capacity due to a spike in locals and repair teams looking for shelter. Since Fiona, the Delta has strengthened its resilience measures and now views itself as a reliable shelter for future emergencies. For example, after losing internet for weeks after Fiona, the hotel installed cellular internet connection on the roof and installed a separate fiber internet connection to have multiple back up solutions. The Delta also has various flood mitigation infrastructure

[42] PEI Tourism Site Visits – Green Gables Heritage Place. 2025.
[43] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

technologies, including sump pumps, emergency flood gates to protect the underground parking facility, and has rewritten emergency plans based on lessons learned from Fiona.

Other accommodations similarly adapted quickly to offer services for visitors and locals. In Summerside, the Quality Inn was prioritized for restoring power so that it could reopen and provide shelter. The Inn at Bay Fortune shifted its operations to function as a shelter, with staff eating and showering on site, while continuing to host guests expecting its renowned culinary experience. Emergency Management Organizations (EMOs), such as Maritime Electric Crews, stayed on PEI for nearly three months to conduct repairs, requiring rooms and meals. Hotels, including the Holman Grand Hotel and Rodd Crowbush Golf & Beach Resort, welcomed these crews, becoming de facto shelters.[44] The Holman Grand Hotel's meeting room, equipped with high-speed internet, served as a strategy centre for EMOs to work on Fiona recovery.

[44] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.

Appendix A: Climate Hazard Likelihood Ratings

This appendix details the likelihood ratings and supporting evidence base for each climate hazard scenario evaluated in the risk assessment using the scale in Table 10. Likelihood is the probability that a climate hazard scenario will occur.

This appendix also summarizes other climate hazards that have the potential to impact tourism on PEI but were not included in the risk assessment in the same capacity: coastal erosion, wildfires and smoke, seasonal drought, ice storms and freezing rain, and snowstorms.

Table 10. CCRA likelihood rating scale for discrete and ongoing climate hazards

Likelihood	Rating	Criteria for Discrete Climate Hazards	Criteria for Ongoing Climate Hazards
Almost certain	5	Event is expected to happen about once every two years or more frequently (i.e., annual chance ≥ 50%*).	Event is almost certain to cross critical threshold.
Likely	4	Event is expected to happen about once every 3-10 years (i.e., 10% ≤ annual chance < 50%).	Event is expected to cross critical threshold. It would be surprising if this did not happen.
Possible	3	Event is expected to happen about once every 11-50 years (i.e., 2% ≤ annual chance < 10%).	Event is just as likely to cross critical threshold as not.
Unlikely	2	Event is expected to happen about once every 51-100 years (i.e., 1% ≤ annual chance < 2%).	Event is not anticipated to cross critical threshold.
Rare	1	Event is expected to happen less than about once every 100 years (i.e., annual chance <1%).	Event is almost certain not to cross critical threshold.

*Annual chance is the probability that an event will occur in a given year

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Current: The current likelihood rating is based on severe storm data from 1900-2019. A severe storm is defined as having an average sustained wind speed of 63 km/hr or greater. Average sustained wind speeds between 63-118 km/hr are defined as a tropical storm and average sustained wind speeds greater than 119 km/hr are defined as a hurricane. From 1900-1949, severe storms had a 12% equivalent annual chance of occurrence on PEI. The equivalent annual chance of severe storms increased to 22% for 1950-1999 and 20% for 2000-2019, indicating an overall increase in likelihood compared to the early 20th century.[45] Atlantic Canada in general has a greater annual chance of severe storms than PEI specifically, with Nova Scotia currently experiencing a one in three, or 33% equivalent annual chance of a severe storm.[46] This evidence supports a

[45] L Ketch. *A Climatology of Hurricanes for Canada Improving Our Awareness of the Threat*. 2005.
[46] Katie Dangerfield. "Hurricanes in Canada: How Often They Hit and Who Is at Risk." Globalnews.Ca, August 28, 2017. https://globalnews.ca/news/3700345/hurricane-canada-where-storm-will-hit/.

current likelihood rating of 4 out of 5, as severe storms are likely to occur on PEI approximately once every 3-10 years.

Future: The 2050 likelihood of severe storms on PEI is less certain, although there is widespread agreement that hurricanes and post-tropical storms are expected to become more intense in the future, with a larger proportion of category 3-5 hurricanes. Additionally, post-tropical storms are projected to travel further north in the future and move more slowly, potentially worsening storm damage.[47] [48,49] Sea level and sea surface temperatures are also expected to increase by 2050, further supporting the notion that severe storms will increase in intensity.[50] Storm tracks may also change in the future, which could affect the number of post-tropical storms that reach PEI. In general, it is unclear whether the frequency of severe storms will change significantly in the future, but a higher percentage of severe storms could be stronger and cause more damage.[51] Post-tropical storms remain unlikely to occur more than once every two years, thus the **future likelihood rating remains 4 out of 5**.

The most recent post-tropical storm to hit PEI was Fiona in 2022, which caused significant impacts that are discussed as examples throughout this report. This was a particularly impactful storm for PEI. The severity of individual storms will vary greatly based on wind speed, wind direction, tide cycles, storm surge, precipitation totals, landfall location, and the specific path and speed of the storm as it travels through Atlantic Canada.

The consequence analysis for this hazard considers the severity of impacts across all components of a post-tropical storm, including storm surge, episodic coastal erosion, heavy precipitation, flooding, and high winds. See the textbox below for more details on how coastal erosion is addressed throughout this report.

[47] Carly Madge and Ryan Smith. “Hurricanes and Climate Change in Atlantic Canada.” ClimateData.Ca, September 5, 2024. https://climatedata.ca/news/hurricanes-and-climate-change-in-atlantic-canada/.
[48] Radley M. Horton and Jiping Liu. “Beyond Hurricane Sandy: What Might the Future Hold for Tropical Cyclones in the North Atlantic?” *Journal of Extreme Events* 01, no. 01 (2014): 1450007. https://doi.org/10.1142/S2345737614500079.
[49] John W Loder et al. *Aspects of Climate Change in the Northwest Atlantic off Canada*. 2013. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/350208.pdf.
[50] Loder et al. *Aspects of Climate Change in the Northwest Atlantic off Canada*.
[51] Madge and Smith. “Hurricanes and Climate Change in Atlantic Canada.”

Coastal Erosion

In close collaboration with DLE, the project team decided to discuss the impacts of episodic coastal erosion under the **post tropical storm** hazard. Post-tropical storm Fiona caused 5-12 meters of retreat at exposed sites along the north and west coasts. The highest recorded single-point loss during Fiona was 17.56 meters on the north shore.



Figure 16. Satellite images of PEI before and after Hurricane Fiona in 2022.

Episodic erosion is not limited to post-tropical storms; winter storms also drive significant retreat, particularly as sea ice cover declines. Ice historically buffered the coast from winter wave energy, but with ice declining, winter storms increasingly reach exposed shorelines during months that were previously protected. This effectively extends the erosion season and exposes the coast to storm impacts year-round. The implications of less sea ice are briefly discussed within the **longer warm season and shorter cold season** hazard.

Recognizing that coastal processes are complex and vary significantly across the island**, DLE completed a Coastal Hazard Assessment** of 24 major tourism assets to complement the industry-wide risk and opportunity assessment. For more details on PEI's unique coastal hazard processes, methodology, and results per tourism asset, see Appendix E: Coastal Hazard Assessment for Major Tourism Assets.

Coordinated coastal erosion management will be very important as erosion risk is also heavily influenced by intervention practices across the island. Reactive responses to erosion risk, particularly large armour rock installations, can have cascading negative impacts such as altered viewscapes, loss of beach access, and disruption of sediment supply that starves downdrift beaches. These decisions are particularly relevant for tourism as hard armouring can degrade the natural assets the industry needs to protect. Proactive approaches such as appropriate setbacks informed by coastal hazard assessments, nature-based solutions where feasible, and managed retreat where necessary can maintain both coastal function and tourism value.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Current: Modelled historical climate data indicate that heat waves of at least 3 consecutive days above 29°C have occurred, on average, 0.05 times per year, in the period 1980-2020.[52] This translates to a 5% annual chance of occurring, or a **current likelihood rating of 3 out of 5**.

Future: Temperatures have been rising in PEI, and this trend is expected to continue in the future, resulting in more frequent and longer-lasting heat waves.[53] PEI saw three heat waves in 2024, and in August 2025, PEI saw the hottest day in recorded history when temperatures hit 39.5°C.[54, 55] Projected data for the 2041-2060 time period estimate that heat waves of at least 3 consecutive days above 29°C will occur 2.1 times per year on average, by mid-century. This is consistent with other sources that indicate a likely increase in the frequency of heat waves across North America as well as an increase in overall frequency of extreme hot days (>27.5°C) on PEI.[56, 57] This translates to **a future likelihood rating of 5 out of 5.**

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Current: The scenario of 100 mm of rainfall in 24 hours is equivalent to today's "1-in-25-year" rain event, which currently has a 4% chance of occurring in any year.[58] This evidence supports a **current likelihood rating of 3 out of 5**.

Future: The historical 24-hour, 25-year rain event (based on Charlottetown data from 1967-2016) is expected to become the 5-year rain event by 2050 under a high emissions scenario (SSP5-8.5).[59, 60] This means that this rainfall scenario is expected to happen more frequently, as a 5-year rain event has a 20% annual chance of occurring. This is consistent with other sources that indicate an increase in the frequency and intensity of extreme precipitation events in Atlantic Canada, which is expected to continue beyond 2050. This results in a **future likelihood rating of 4 out of 5**.

Future increases in rainfall intensity have the potential to significantly worsen flooding extent and depth on PEI. A recent modelling study on flooding due to extreme rain events indicates

[52] Value based on ICF analysis of data from ClimateData.ca. Values are for the PCIC12 multi-model ensemble. To represent the climate of the entire Island, climate projections were pulled from 3 grids, located in the west (near O'Leary), central (near Charlottetown), and east (near Souris) areas of the province. Projected values are under SSP5-8.5 50th percentile.
[53] USGCRP. *Fifth National Climate Assessment*.
[54] Delaney Kelly. "Temperatures Recorded at 2 Sites Break P.E.I. Record for Hottest Day in Recorded History." *CBC News*, August 13, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-heatwave-record-break-hot-maple-plains-1.7607997.
[55] Stephen Brun. "With Heat Waves More Frequent, P.E.I. Public Health Officials Are Preparing an Alert System." *CBC News*, June 7, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-public-health-heat-alert-response-system-1.7550200.
[56] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[57] National Research Council. *Climate and Social Stress: Implications for Security Analysis*. 2013.
[58] Environment and Climate Change Canada. "Climate Data Canada." ClimateData.Ca, 2025. https://climatedata.ca/variables/.
[59] Environment and Climate Change Canada. "Climate Data Canada." Intensity Duration Frequency (IDF) Curve.
[60] Shared Socioeconomic Pathways (SSPs) are scenarios of projected socioeconomic global changes that, together with and Representative Concentration Pathways (RCPs), can be used to determine how greenhouse gas (GHG) emissions may change with different climate policies. These combined SSP/RCP scenarios were used to inform the IPCC's Sixth Assessment Report. The high emissions scenario (SSP5-8.5) assumes GHG concentrations continue to rise throughout the 21st century, whereas the moderate emissions scenario (SSP2-4.5) assumes significant GHG emission mitigation prior to mid-century.

that flood extent on the Island could increase by approximately 20% by late-century under SSP5-8.5 (see Figure 17).[61]

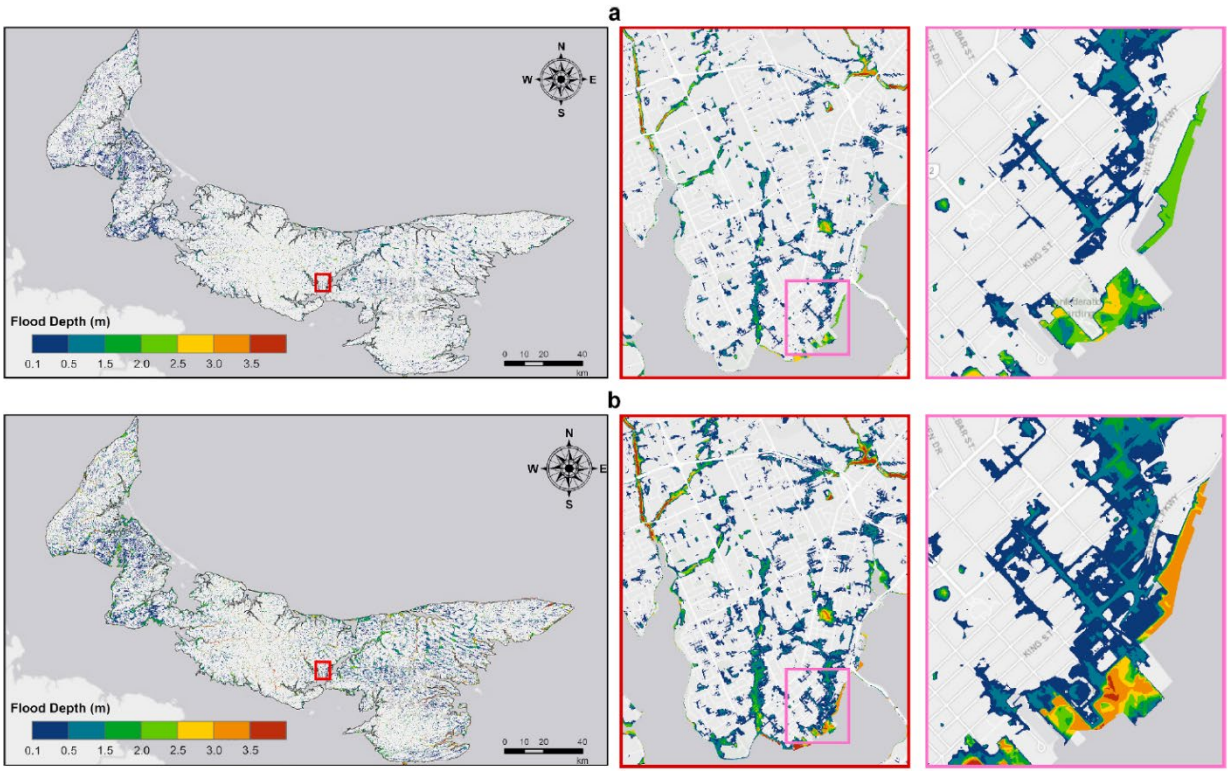


Figure 17. Flood hazards mapping on PEI for a 100-year return period storm (1% annual chance of occurring) for (a) present day and (b) late-century under SSP5-8.5.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Current: The earlier onset of warm spring temperatures and delayed onset of cold fall temperatures are an ongoing climate hazard that will happen gradually, resulting in a longer warm season and shorter cold season. This gradual shift may also be punctuated by short-term warm spells and variability in temperature. To better assess likelihood and consequences, this scenario is focused on a shift in freezing temperatures, with above-freezing temperatures starting two weeks earlier in spring, and below-freezing temperatures starting two weeks later in fall. For the period of 1981 to 2010, Charlottetown had an average of 160 frost days (days with minimum temperatures below 0°C) per year. During this period, the average date of last spring frost in Charlottetown was May 16, and the average date of first fall frost was October 17.[62,63] Recent studies indicate that the average number of frost days per year in PEI has decreased by approximately one week over the last decade.[64] However,

[61] Quan Van Dau et al. "Pluvial Flood Modeling for Coastal Areas under Future Climate Change – A Case Study for Prince Edward Island, Canada." *Journal of Hydrology* 641 (September 2024): 131769. https://doi.org/10.1016/j.jhydrol.2024.131769.
[62] Environment and Climate Change Canada. "Canadian Climate Normals, 1981-2010 Data." Accessed October 14, 2025. https://climate.weather.gc.ca/climate_normals/index_e.html.
[63] Environment and Climate Change Canada. "Climate Data Canada."
[64] Chung. "Canada's Cities Are Losing up to 19 Days of Winter."

freezing temperatures have not yet shifted by two weeks in PEI, therefore the **current likelihood rating is 2**.

Future: As temperatures warm in the future, the average annual number of frost days in Charlottetown is projected to decrease to 112 days per year by mid-century under a high emissions scenario. Additionally, the last spring frost date is projected to shift by over two weeks to April 24, and the length of the frost-free season is projected to increase by approximately 40 days across the Island. The first fall frost date is also projected to shift by over two weeks to November 8.[65] Thus, the **future likelihood rating is 4**.

Other Climate Hazards

The risk and opportunity assessment is focused on climate hazards that have significant and distinct impacts to different tourism areas on PEI. This section discusses other climate hazards that have the potential to impact tourism on PEI but may be more difficult to quantify or have similar impacts across tourism areas. This section summarizes available information on wildfires and smoke, seasonal drought, ice storms and freezing rain, and snowstorms that could impact tourism to support decision-making.

Wildfires and Smoke

Wildfire activity in Canada has been increasing over time, both in terms of number of fires and area burned.[66] **The wildfire season is also getting longer, and wildfires are becoming more frequent and severe.** This is primarily due to shorter and drier winter seasons and elevated drought conditions, increasing wildfire risk. 2023 was the most destructive wildfire season ever in Canada (Figure 18), with 16.5 million hectares burned, which is almost seven times greater than the historical average (2.5 million hectares).[67,68] 2023 saw the warmest May-July period in over 80 years, creating abnormally dry conditions that increased the flammability of wildfire fuels, such as trees and underbrush.[69] 2024 was the sixth-most destructive wildfire season on record in Canada, with over 5.3 million



Figure 18. Smoke from wildfire in Nova Scotia in 2023 (Source: Province of Nova Scotia via AP).

[65] Environment and Climate Change Canada. “Climate Data Canada.”
[66] Natural Resources Canada. “Climate Change and Fire.” July 9, 2013. https://natural-resources.canada.ca/forest-forestry/insects-disturbances/climate-change-fire.
[67] “FACT SHEET: Climate Change and Wildfires in Canada.” *Canadian Climate Institute*, July 24, 2023. https://climateinstitute.ca/news/fact-sheet-wildfires/.
[68] Natural Resources Canada. “Canada’s Record-Breaking Wildfires in 2023: A Fiery Wake-up Call.” September 7, 2023. https://natural-resources.canada.ca/stories/simply-science/canada-s-record-breaking-wildfires-2023-fiery-wake-call.
[69] Natural Resources Canada. “Canada’s Record-Breaking Wildfires in 2023.”

hectares burned. In 2025, Canada had experienced over 5,300 wildfires by September, burning over 8.7 million hectares (Figure 19).[70]

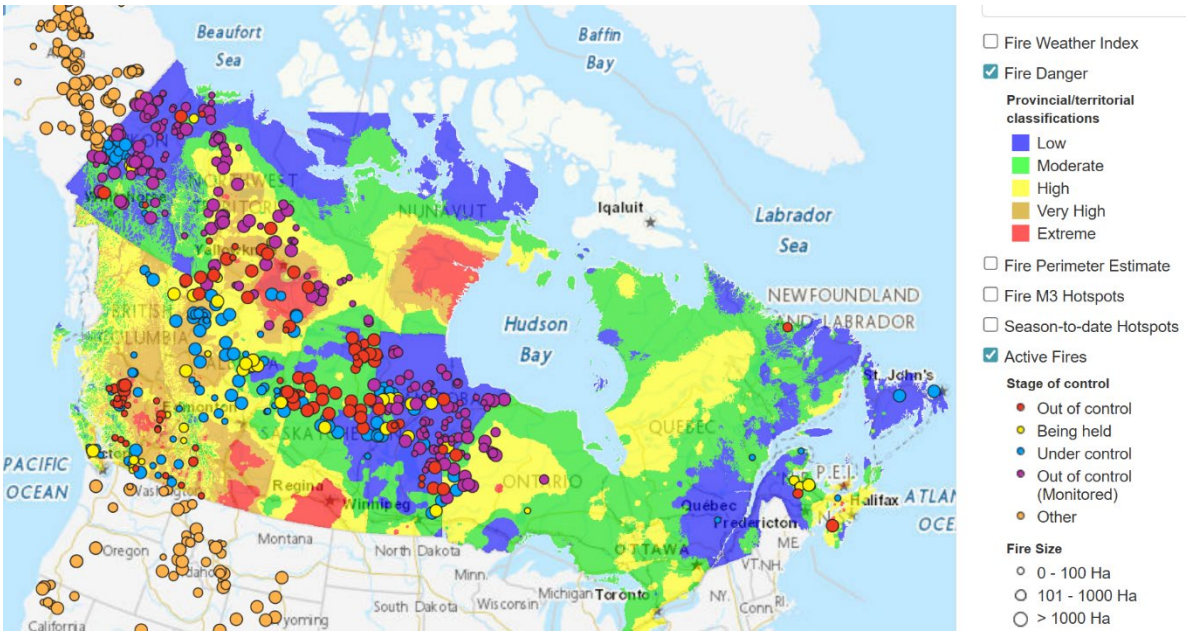


Figure 19. Map of active wildfires across Canada in September 2025 (Source: Canadian Wildland Fire Information System).

PEI rarely experiences major wildfires, however, wildfire risk is increasing on the Island due to climate change.[71] PEI has, on average, seven wildfires per year, and over 90% of recorded wildfires on the Island have been human-caused and could have been prevented. In 2023, PEI had eight small wildfires, and each was under 3 hectares and contained within a day, burning a total of 7.8 hectares of forests across the Island.[72] In August–September 2025, PEI had uncharacteristically dry weather, resulting in a multi-week fire ban to reduce wildfire risk.[73]

Future wildfire likelihood is more difficult to quantify than other climate hazards as wildfires are driven by many different climatological variables, such as temperature, precipitation, wind, and atmospheric moisture. Wildfire activity is also heavily influenced by human decisions, such as land management. In general, there is consensus in the scientific literature that the increasing trend in wildfire activity across North America is projected to continue in the future. Under future climate change, fire-prone conditions are predicted to increase across Canada, with the amount of area burned potentially doubling by the end of the century. [74] One study found that some regions in Canada may see an increase in burn probability of up to 40-60% by the end of the century compared to the historical baseline (1981-2010), especially in western and northern Canada.[75] The length of the fire season could also

[70] Natural Resources Canada. "National Wildland Fire Situation Report." Canadian Wildland Fire Information System. Accessed October 14, 2025. https://cwfis.cfs.nrcan.gc.ca/report.
[71] Government of PEI. "Wildfire Response in PEI." June 4, 2024. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/wildfire-response-in-pei.
[72] Government of PEI. "Wildfire." Accessed October 14, 2025. https://www.princeedwardisland.ca/en/topic/wildfire.
[73] Ryan McKellop and Marilee Devries. "P.E.I.'s Fire Ban Extended for 2 More Weeks as Rain Fails to Dampen Risk." *CBC News*, August 25, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-air-quality-wildfire-annapolis-county-prince-county-1.7616848.
[74] Natural Resources Canada. "Climate Change and Fire."
[75] Burn probability of a given area is defined as "the degree to which available fuel, topography, and environmental conditions correspond to those of known burned areas rather than the potential for ignition or fire spread." See the full study for more details.

increase by several weeks under a high emissions scenario.[76] Another study found that the number of fire spread days could increase by more than 50% in western Canada and 200-300% in eastern Canada by end of the century under a high emissions scenario.[77,78]

Although the risk of wildfires on PEI is relatively low, tourism on PEI can be impacted by smoke from wildfires in other provinces. Wildfire smoke can lead to **travel disruptions** due to cancelled or delayed flights. Additionally, outdoor tourism activities may be **shut down due to public health concerns** from wildfire smoke. This is a concern as PEI is known for its high air quality and is a selling point for visitors.[79] Canada has already experienced **declines in visitors** due to wildfires. For example, in 2023, many domestic and international visitors cancelled trips due to wildfires and smoke. News about fires in other parts of Canada can also influence tourism on PEI. For example, during the 2023 fires, a study of American tourists found that more than half of them were rethinking their plans due to headlines about Canada being on fire.[80] There has also been a shift in how visitors book their trips to Canada due to concerns about weather conditions, with a reduction in guests booking in advance.[81] On the other hand, some PEI hotels saw an increase in inquiries about last-minute hotel availability during wildfires in New Brunswick as travellers were looking to change their plans from New Brunswick to PEI.[82]

Proactive Wildfire Preparedness on PEI

The Government of PEI is proactive in addressing wildfire risks and has multiple ongoing efforts to increase wildfire preparedness:

- Replacement of forest fire fleet, including specialized off-road equipment.
- Updated forest satellite imagery and expanded weather stations to improve wildfire prediction capabilities.
- Mutual aid agreements with all Canadian provinces and an active member of the North Eastern Forest Fire Protection Compact.
- $550,000 forest fire prevention fund, including for more forest fire training.

Seasonal Drought

Atlantic Canada is increasingly experiencing “flash droughts” and water stress, especially following hot, dry summers. According to the Canadian Drought Monitor, moderate drought occurs once every 5-10 years on PEI, and severe drought (-3.0 to -3.9 on the Palmer Drought Severity Index) occurs once every 10-20 years.[83] In general, climate change is making droughts more frequent and severe around the world due to more variable rainfall patterns.[84]

[76] Christopher Mulverhill et al. “Projected Future Changes in Burn Probability in Canada’s Forests and Communities Under Different Climate Change Scenarios.” *Canadian Journal of Remote Sensing* 51, no. 1 (2025): 2560347. https://doi.org/10.1080/07038992.2025.2560347.
[77] “FACT SHEET: Climate Change and Wildfires in Canada.” *Canadian Climate Institute.*
[78] Fire spread days are defined as days with “hot, dry, and windy conditions that are likely to result in significant fire spread should a fire occur.” See the full study for more details.
[79] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[80] Mia Rabson. “Wildfires, Climate Change Creating Challenges for Canadian Tourism Industry.” *CBC News*, May 15, 2024. https://www.cbc.ca/news/canada/edmonton/wildfires-climate-change-creating-challenges-for-canadian-tourism-industry-1.7205625.
[81] Sarah Milner. “Canada’s Wildfire Season Is Getting Worse: What That Means for Tourism.” Travel Market Report. July 30, 2024. https://www.travelmarketreport.com/destinations/articles/canadas-wildfire-season-is-getting-worse-what-that-means-for-tourism.
[82] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[83] Agriculture and Agri-Food Canada. “Canadian Drought Monitor.” Accessed October 14, 2025. https://open.canada.ca/data/en/dataset/292646cd-619f-4200-afb1-8b2c52f984a2.
[84] Canadian Climate Institute. *Climate Change and Drought.* 2025. https://climateinstitute.ca/wp-content/uploads/2024/09/Fact-sheet_-Drought_CanadianClimateInstitute.pdf.

Droughts are projected to become more frequent across Canada, especially in areas that are already relatively dry, such as interior British Columbia and the southern Prairies.[85] **Future likelihood of severe seasonal drought on PEI specifically is difficult to ascertain.** Globally, models predict increases of dryness during the summer and associated increased risk of droughts. In North America specifically, evaporation and surface drying are expected to increase, leading to more frequent drought events, especially in the summer.[86] In PEI, total precipitation has decreased over the past 50 years—a trend that could continue. The direction of change for preliminary projections is uncertain. Some sources indicate PEI could experience a 6% decrease on average from the current levels of precipitation through the 2040s.[87] However, these changes may not necessarily influence drought likelihood on PEI; the Atlantic region of Canada is expected to experience limited changes in the annual climate moisture index over the next 100 years and some projections expect Atlantic Canada to become wetter in the future.[88,89]

In general, the tourism industry on PEI is unlikely to be dramatically affected by drought events. In fact, less rainy days during the peak tourism months may actually **benefit visitation to outdoor tourism areas** like beaches.[90] However, drought periods can lead to significant **increases in water usage at golf courses** in order to maintain the irrigation required for the greens.[91] Further, if the grounds do not meet visitors standards because of stressed vegetation, visitors may choose to go to other golf courses instead.[92] Gardens, and some agriculture-related tourist attractions (e.g., flowering potato crops, gardens at heritage sites) may also face temporary impacts from **stressed vegetation**. One of the largest impacts from seasonal droughts will be on the agricultural sector and **decreased crop production**. Disruptions to the local food supply could impact the restaurant industry and tourist food experiences.

Ice Storm and Freezing Rain

Ice storms and freezing rain events can be highly disruptive on PEI, particularly due to extended power outages. While projections are not readily available for the frequency of severe ice storms or freezing rain events, climate variables such as ice days,[93] frost days, ice accretion thickness, and patterns in total precipitation are useful proxies for understanding this hazard. From 1981 to 2010, Charlottetown averaged approximately 73 ice days and 160 frost days annually, but both have declined over time.[94] These downward trends are projected to continue, with mid-century projections (2041-2060, SSP5-8.5) showing a 52% decrease in ice days and 30% decrease in frost days from the historical average. Change in ice accretion thickness [95] is also projected to decline in Atlantic Canada relative to the 1986-2016 baseline, though there is

[85] Natural Resources Canada. “Drought.” September 10, 2015. https://natural-resources.canada.ca/climate-change/climate-change-impacts-forests/drought.
[86] Yusa, Anna, Peter Berry, June J Cheng, et al. “Climate Change, Drought and Human Health in Canada.” *International Journal of Environmental Research and Public Health* 12, no. 7 (2015): 8359–412. https://doi.org/10.3390/ijerph120708359.
[87] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[88] Parnham et al. *Prince Edward Island State of the Coast Report*.
[89] Natural Resources Canada. “Drought.”
[90] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[91] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[92] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[93] Ice days are defined as days when the daily maximum temperature does not exceed 0°C.
[94] Environment and Climate Change Canada. “Climate Data Canada.”
[95] Ice accretion thickness can also provide insights on freezing rain, particularly for how much ice accumulates on exposed surfaces.

high uncertainty and internal model variability in these projections.[96] The direction of change for future precipitation projections is also uncertain. In PEI, total precipitation has decreased over the past 50 years.[97] Some sources indicate PEI could experience a 6% decrease from the current levels of precipitation through the 2040s,[98] while others indicate that Charlottetown, for example, may experience an 9.5% increase in total annual precipitation for 2041-2060 compared to 1950-2005.[99] However, given the historic and projected trends of increased temperatures and decreased ice and frost days and ice accretion thickness, it is expected that precipitation will increasingly fall as rain rather than snow and ice. There is some uncertainty—winters are projected to become milder, but precipitation is expected to become more variable.



Figure 20. Ice on power lines (Source: DE Jardine).

The primary concern to PEI's tourism industry from severe ice storms and freezing rain is **multi-day power outages,** as ice accumulates on infrastructure and weighs down tree limbs. For example, an ice storm in January 2021 caused almost 95% of the Island to lose power for at least a few hours[100] and a third of residents were without power for multiple days.[101] Loss of heating is particularly concerning for operations and staff and visitor safety. **Hazardous road conditions** can also impede travel, and severe ice storms and freezing rain can deter participation in outdoor winter activities, such as skiing and snowshoeing, or lead to cancellations and temporary closures, while indoor venues face heating and power disruptions. Meanwhile, hotels and other fixed-roof accommodations may experience frozen pipes and service disruptions. The winter season is the quietest season for the industry, with less visitors and many operators closed during the winter season reducing some of these risks.

[96] Cannon, Alex J., et al. *2020 Climate-Resilient Buildings and Core Public Infrastructure: An Assessment of the Impact of Climate Change on Climatic Design Data in Canada.* Environment and Climate Change Canada, 2020. https://publications.gc.ca/site/eng/9.893021/publication.html.
[97] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[98] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[99] Environment and Climate Change Canada. "Climate Data Canada."

Snowstorms



Figure 21. A plow moving through heavy snow on PEI's North Shore in 2015.

Long winters and heavy snowfalls are typical in many parts of Canada. PEI receives an average of 283 cm of snow each year and does not frequently experience extreme snowstorms.[102] **During an average winter, PEI sees less than two storms with a snowfall greater than 25 cm.** However, PEI has occasionally experienced periods of extreme snowfall, most notably in 2015 and 2024. PEI's snowiest winter on record was in 2015, with back-to-back storms resulting in a total of 551 cm of snow by the end of the season (Figure 22).[103] A snowstorm in February 2015 dropped over 80 cm of snow in just two days. During the snowstorms, some people were snowed in for multiple days.[104] In February of 2024, PEI received 64 cm of snowfall in three days, making it the biggest single snowfall since February 2015 (Figure 22).[105]

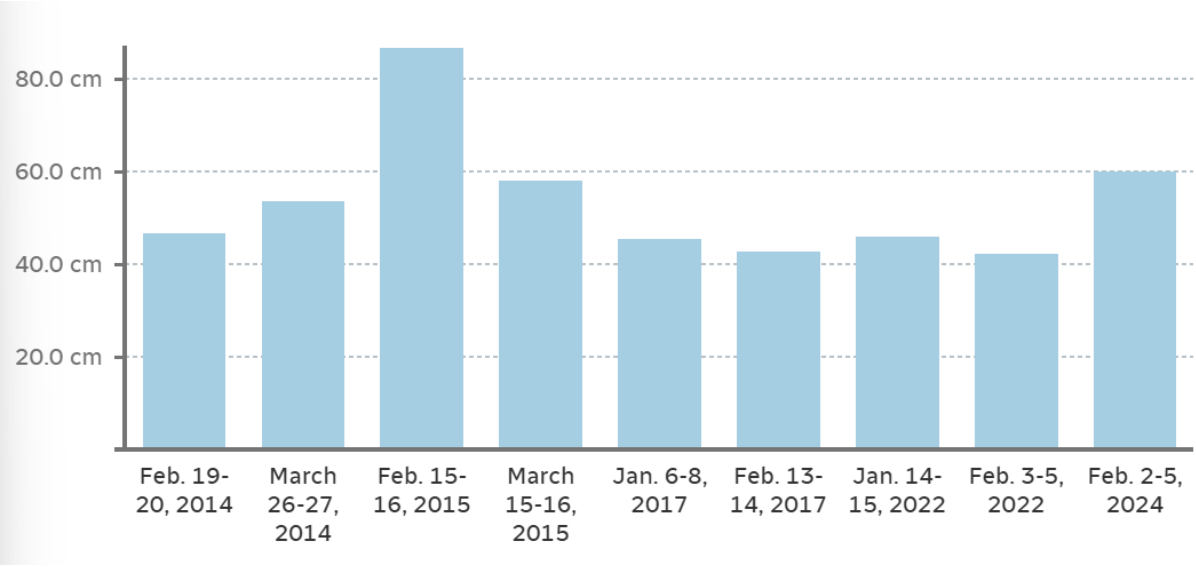


Figure 22. Major PEI snowfalls from 2014-2024, measured at Charlottetown Airport.

[102] Webster, Bell R. "How Cold Is PEI in Winter?" *New Canadian Life*, n.d. Accessed October 14, 2025. https://newcanadianlife.com/how-cold-is-pei-in-winter/.
[103] CBC. "Maritime Winter of 2015 Remembered in New Book, Deep Freeze." *CBC News*, October 21, 2015. https://www.cbc.ca/news/canada/prince-edward-island/pei-storms-winter-book-1.3274570.
[104] PNI Atlantic News. "Remembering Snowmageddon: P.E.I.'s Back-to-Back Snowstorms in 2015 Still Talked about Today." Accessed October 14, 2025. https://www.saltwire.com/prince-edward-island/remembering-snowmageddon-pei-back-to-back-snowstorms-in-2015-still-talked-about-today.
[105] Yarr, Kevin. "This Was P.E.I.'s 2nd Biggest Snowfall of the Last Decade." *CBC News*, February 5, 2024. https://www.cbc.ca/news/canada/prince-edward-island/pei-big-snowfall-february-2024-1.7105066.

In general, severe snowstorms associated with nor'easters have become less frequent in Canada over time. However, studies show that these storms have become more intense. A study of nor'easters from 1940 to 2025 found that the maximum wind speeds of these storms increased over time, from approximately 69 to 71 mph. Although this appears to be a relatively minimal increase in wind speed, this corresponds to a 17% increase in the destructive potential of a nor'easter. The hourly precipitation rates of these storms have also increased over time.[106,107]

There is uncertainty regarding how snowstorms, including nor'easters, will change in the future. However, there is a general consensus that the frequency of nor'easters will decline in the future, but the intensity of these storms may continue to increase.[108] A 2021 study of extreme snowfall events under future warming found that while mean daily snowfall is projected to decrease, extreme snowfall is projected to increase across North America under a high emissions scenario.[109] A 2023 study of winter storm activity across Canada confirmed that while the frequency of extreme snowstorms is projected to decrease, snowstorms are projected to be more intense and last longer across Canada by the end of the century.[110]

Severe snowstorms **physically damage infrastructure,** such as by downing trees or powerlines, in addition to **disrupting transportation systems** due to blocked roads and unsafe driving conditions. For example, a blizzard in 2004 brought 120 k/h winds and 74 cm of snow at Charlottetown and caused a provincewide state of emergency.[111,112] In 1982, a severe snowstorm with 100 km/h winds and up to 60 cm of snowfall shut down PEI for a week, cutting off the Island from the mainland and burying trains in snowdrifts up to seven metres high.[113]

Intensifying snowstorms could benefit some winter activities on PEI, such as skiing and snowmobiling, as when snowstorms do occur, they will likely bring more snow. This can also potentially decrease costs for operators as they can likely reduce snowmaking following snowstorms.

[106] Chen, Kevin, Xueke Li, Mackenzie M. Weaver, Shannon A. Christiansen, Annabelle L. Horton, and Michael E. Mann. "The Intensification of the Strongest nor'easters." *Proceedings of the National Academy of Sciences* 122, no. 29 (2025): e2510029122. https://doi.org/10.1073/pnas.2510029122.
[107] Berwyn, Bob. "New Research Shows More Extreme Global Warming Impacts Looming for the Northeast." *Eos*, July 21, 2025. https://eos.org/articles/new-research-shows-more-extreme-global-warming-impacts-looming-for-the-northeast.
[108] Paddison, Laura. "Blockbuster nor'easters Are Getting Worse, New Study Shows." CNN News, July 14, 2025. https://www.cnn.com/2025/07/14/climate/noreaster-storm-global-warming.
[109] Quante, Lennart, Sven N. Willner, Robin Middelanis, and Anders Levermann. "Regions of Intensification of Extreme Snowfall under Future Warming." *Scientific Reports* 11, no. 1 (2021): 16621. https://doi.org/10.1038/s41598-021-95979-4.
[110] Basu, Soumik, and David Sauchyn. "Winter Storm Activity across Canada at the End of the Century: A CMIP5 Multi-Model Projection." *Atmosphere-Ocean* 62, no. 2 (2024): 183–91. https://doi.org/10.1080/07055900.2023.2277710.
[111] Fenech, Adam. *A Winter Not Seen for 42 Years | UPEI Climate Lab*. UPEI Climate Lab. n.d. Accessed October 14, 2025. https://projects.upei.ca/climate/2014/03/27/a-winter-not-seen-for-42-years/.
[112] "Recalling When N.S. and P.E.I. Were Hit by Hurricane Juan and 'White Juan.'" The Weather Network, February 18, 2021. https://www.theweathernetwork.com/en/news/weather/severe/this-day-in-weather-history-february-18-2004-white-juan.
[113] CBC. "Blasts from the Past: Canada's Worst Snowstorms." *CBC News*, February 8, 2013. https://www.cbc.ca/news/canada/blasts-from-the-past-canada-s-worst-snowstorms-1.1370387.

Appendix B: Outdoor Tourism Risk and Opportunity Assessment Results

The following sections summarize the overall risk scores and the consequences, or impacts, of each climate hazard scenario on outdoor tourism, which includes sea-sun-sand, other nature-based tourism, sports and amusement facilities, and festivals and events. The supporting evidence for the likelihood, consequence, and risk ratings was collected through literature, discussions with industry representatives at a November 2025 workshop and series of site visits, and professional judgment.

Focus Area 1: Sea-Sun-Sand

Sea-sun-sand encompasses beach and ocean-based activities that occur in the summer tourism season, such as swimming, boating, kayaking, stand-up paddle boarding, and sport fishing. PEI's beaches are a significant contributor to the tourism industry, with more than 800km of beaches along its 1,100km of shoreline.[114] Popular destinations include Cavendish Beach, Basin Head Beach, and Thunder Cove Beach. Cavendish Beach saw a 25% increase in visitors in the 2025 season.[115] PEI also offers multiple ocean-based tours and excursions, as well as kayak and other equipment rentals.[116,117]



Figure 23. Visitor on one of PEI's many beaches (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's sea-sun-sand tourism industry. This risk remains **high** in mid-century (Table 11).

Table 11. Sea-sun-sand risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 1: Sea-sun-sand									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	4	4	3	4	4	3.8	**15.2**	**15.2**

[114] "Must-See PEI Beaches." *Welcome PEI*, n.d. Accessed October 14, 2025. https://welcomepei.com/beaches/.
[115] PEI Tourism Site Visits – Cavendish Beach. 2025.
[116] Government of PEI. "Boating & Sailing." Tourism PEI, June 1, 2024. https://www.tourismpei.com/what-to-do/outdoor-activities/boating-sailing.
[117] Government of PEI. "Deep-Sea & Sport Fishing." Tourism PEI, July 5, 2025. https://www.tourismpei.com/what-to-do/outdoor-activities/deep-sea-sport-fishing.

Likelihood

See Appendix A: Post-Tropical Storm for details.

Consequences

The overall **consequence rating is 3.8 out of 5.** Impacts to infrastructure and operations could be catastrophic. See below for rating details.

Infrastructure (Rating: 4 – Major)

Post-tropical storms can cause significant disruption to infrastructure services. Repairs or improved resilience measures (e.g., installing back-up generators) can also be costly for operators and could take weeks to months following severe events.[118] Rating considerations include:

- Popular coastal destinations often require temporary closure to visitors during cleanup and recovery from damage and debris.
    - Fiona caused significant damage or destruction of beach infrastructure (e.g., stairs, boardwalks), especially along the north shore where the wind and waves were strongest.[119] Infrastructure repair took extensive time in some locations.[120] Nearly eight months after Fiona hit, only about half of the beach access points to PEI National Park had reopened.[121] For example, the Brackley Beach dune stairs were reopened in early June 2023, after more than eight months of closure.[122] Some coastal infrastructure has not yet been rebuilt following Fiona.[123]
    - Storm surge from Post-Tropical Storm Juan lifted up the boards of the Victoria Park Boardwalk causing damage.[124]
    - Storm surge has damaged the Brighton Beach Front Range Lighthouse, Beach Point Range Light in Murray Harbour, and the West Point Lighthouse.[125] Six lighthouses (e.g., West Point, St. Peters Harbour, Cascumpec, Murray Harbour Range Front) are considered high risk to coastal erosion and flooding as they are in flood zones and mostly on sand dunes or low plains.[126]
    - In severe cases, other sites were permanently closed following Fiona, including popular look-out spots such as Flat Rock and Orby Head.[127]
- Other key coastal infrastructure, such as the port and harbours, face wind damage, storm surge, and flood debris.
    - For example, Fiona destroyed approximately 75% of Red Head Harbour, necessitating years-long repairs, and left a section of the wharf at Covehead

[118] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[119] Yarr. "P.E.I. National Park Dunes Suffer 'extremely Dramatic' Erosion from Fiona."
[120] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[121] Morse, Jack. "Half of P.E.I. National Park Access Points yet to Reopen after Fiona." CTVNews, May 8, 2023. https://www.ctvnews.ca/atlantic/article/half-of-pei-national-park-access-points-yet-to-reopen-after-fiona/.
[122] Parks Canada. "Prince Edward Island National Park Post-Fiona Operational Updates."
[123] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[124] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[125] 2023 State of the Coast Report.
[126] PEI Department of Environment, Energy and Climate Action. 2025. Preliminary PEI Lighthouse Coastal Risk Assessment.
[127] Parks Canada. "Prince Edward Island National Park Post-Fiona Operational Updates." June 9, 2023. https://www.canada.ca/en/parks-canada/news/2023/06/prince-edward-island-national-park-post-fiona-operational-updates.html.

Harbour condemned and in need of substantial repair.[128,129] Storm surge also overtook the North Rustico Harbour.[130]
    - In 2014, Post-Tropical Storm Arthur moored boats at the Charlottetown Yacht Club and other marinas were significantly damaged.[131]
- Access routes and trails can also be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to waterfronts, beaches, and harbours.[132,133] For example, Fiona washed out access roads to Stanhope Beach.[134]
    - Significant erosion may require relocating beach parking lots, bathroom facilities, and roadways that are too close to the shoreline.
- Power outages across the Island can also affect beach facility (e.g., washrooms, campgrounds) and other coastal infrastructure if there is not a back-up generator on site.[135]

Environment (Rating: 4 – Major)

Post-tropical storms can cause widespread damage to beaches, dunes, and coastal natural assets. Rating considerations include:

- Coastal erosion can narrow beaches, reducing space available for both tourism and ecological habitat.[136,137]
- Dunes are critical to supporting important coastal species and habitats and protecting PEI's coastline from erosion and storm surge. Post-tropical storms can cause significant damage to dunes that can take years to recover. If dunes and coastal vegetation are not able to sufficiently recover sediment and vegetation before the next event, the damage can be more severe.[138,139,140]
    - Fiona eroded up to ten metres of dunes in the Brackley Beach and Cavendish areas.[141] The frequency of storms further poses risks, as these dunes had not completely recovered from Post-Tropical Storm Dorian in 2019 before Fiona struck.[142,143]
- Iconic natural landmarks that serve as major tourist attractions may be permanently lost. For example:

[128] Nickel, Rod. "Storm Fiona Batters Canada's Eastern Fishery, Farms." World. *Reuters*, September 26, 2022. https://www.reuters.com/world/storm-fiona-batters-canadas-eastern-fishery-farms-2022-09-26/.
[129] Russell, Nancy. "P.E.I. Harbours Damaged by Fiona Being Readied for Spring Lobster Season." *CBC News*, April 24, 2023. https://www.cbc.ca/news/canada/prince-edward-island/pei-harbours-spring-lobster-fishing-fiona-damage-1.6816939.
[130] MacLeod, Nicola. "P.E.I. Is Gearing up for Its First Post-Fiona Tourism Season. A Lot Has Changed." *CBC News*, June 1, 2023. https://www.cbc.ca/news/canada/prince-edward-island/changed-by-fiona-tourism-1.6854223.
[131] Davies, M. and MacDonald, N. Charlottetown Waterfront Assessment. 2016.
[132] Government of PEI. *PEI Climate Change Risk Assessment*.
[133] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[134] PEI Tourism Site Visits – Cavendish Beach. 2025.
[135] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[136] Russell, Nancy. "UPEI Data Analysis Confirms Island Suffered 'shocking' Coastline Loss from Fiona." *CBC News*, October 31, 2023. https://www.cbc.ca/news/canada/prince-edward-island/pei-coastline-loss-2022-post-fiona-report-1.7010862.
[137] Yarr, Kevin. "Tourism 'can't Be a Blind Spot' for Climate Change Strategy." *CBC News*, March 9, 2020. https://www.cbc.ca/news/canada/prince-edward-island/pei-tourism-climate-change-1.5490705.
[138] Logan. "Hurricane Fiona Washed Away P.E.I. Coastline in Hours."
[139] Silliman, Brian R., Qiang He, Christine Angelini, et al. "Field Experiments and Meta-Analysis Reveal Wetland Vegetation as a Crucial Element in the Coastal Protection Paradigm." *Current Biology* 29, no. 11 (2019): 1800-1806.e3. https://doi.org/10.1016/j.cub.2019.05.017.
[140] Grace Robertson. "Coastal Erosion in PEI." Nova Scotia Environmental Network, January 20, 2023. https://www.nsenvironmentalnetwork.com/blog/coastal-erosion-in-pei.
[141] MacLeod. "P.E.I. Is Gearing up for Its First Post-Fiona Tourism Season. A Lot Has Changed."
[142] Davidson-Arnott, Robin, Jeff Ollerhead, Elizabeth George, et al. "Assessing the Impact of Hurricane Fiona on the Coast of PEI National Park and Implications for the Effectiveness of Beach-Dune Management Policies." *Journal of Coastal Conservation* 28, no. 3 (2024): 52. https://doi.org/10.1007/s11852-024-01050-5.
[143] MacLeod. "P.E.I. Is Gearing up for Its First Post-Fiona Tourism Season. A Lot Has Changed."

- Fiona destroyed Teacup Rock—one of the Island's most photographed natural features.[144]
- The MacKenzie's Brook Arch, weakened by Fiona, later collapsed during Tropical Depression Nicole.[145]

Health & Safety (Rating: 3 – Moderate)

Although sea-sun-sand destinations and activities are assumed to be closed during a post-tropical storm, some visitors and staff may be at risk in the aftermath and during recovery from the event, though with a low potential for loss of life. Rating considerations include:

- Physical hazards such as fast-moving floodwaters, debris, and falling trees create injury potential for both tourists and workers.[146] For example:
  - Post-storm conditions may include dangerous surf conditions and unstable cliff areas that create ongoing safety hazards for beach-goers.
  - Injuries are possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[147]
- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[148]

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms typically cause severe disruptions to sea-sun-sand for the remainder of the season. Fortunately, Fiona occurred in late September only a couple weeks before many operators would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[149] Rating considerations include:

- Scheduled events and activities (e.g., boat rides, charter services) may need to be postponed or cancelled leading to loss of revenue.[150]
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[151]
- Tourism operators may face significant repair costs. Fiona cleanup costs totalled approximately $5.3 million for Provincial parks, golf courses and other Province-owned properties.[152] Some tourism operators may also choose to invest in protective measures

[144] Goodsell, Devon. "P.E.I.'s Iconic Teacup Rock Is Gone after Post-Tropical Storm Fiona." *CBC News*, September 26, 2022. https://www.cbc.ca/news/canada/prince-edward-island/pei-teacup-rock-gone-1.6595695.
[145] Ross, Shane. "Weakened by Fiona, Iconic P.E.I. Rock Formation Brought down by Nicole." *CBC News*, November 13, 2022. https://www.cbc.ca/news/canada/prince-edward-island/pei-arch-orby-head-mackenzies-brook-collapse-1.6650293.
[146] Government of PEI. "Extreme Weather Safety." March 30, 2016. https://www.princeedwardisland.ca/en/information/justice-and-public-safety/extreme-weather-safety.
[147] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[148] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[149] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[150] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[151] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[152] PEI Department of Finance, *2022: Fiscal and Economic Update*.

to help mitigate risks, increasing construction and maintenance costs for tourism operators.

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for sea-sun-sand tourism can take weeks to months. Rating considerations include:

- Following Fiona, most activities were back to normal operations by the next summer season. However, some popular beaches including Brackley, Cavendish and Greenwich for example, remained closed as the 2023 summer tourism season began.[153]
- Beach access points may also need to change depending on the impacts of coastal erosion and sedimentation following an event.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's sea-sun-sand tourism industry. This risk becomes **high** in mid-century (Table 12).

Table 12. Sea-sun-sand risk summary for heat waves

Heat Wave – Focus Area 1: Sea-sun-sand									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	2	1	4	2	3	2.4	**7.2**	**12.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.4 out of 5.** Major impacts to health and safety are possible. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Heat waves are not expected to directly damage sea-sun-sand infrastructure. However, heat waves could lead to power outages due to the additional strain on the grid to support cooling systems.[154]

Environment (Rating: 1 – Insignificant)

Environmental impacts from a multi-day heat wave are limited. However, if the heat wave coincides with drought or prolonged summer heat, the event could amplify the potential for algae blooms, impacting water quality and water-based activities, and increase stress on coastal vegetation and marine life.

[153] Goodsell, Devon. "Some P.E.I. National Park Landmarks Still Aren't Open to the Public after Fiona's Wrath." *CBC News*, May 8, 2023. https://www.cbc.ca/news/canada/prince-edward-island/pei-national-park-fiona-1.6834421.
[154] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Health & Safety (Rating: 4 – Major)

Many tourists and workers may be exposed to potential heat-related health concerns. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[155]
    - Parks Canada staff have seen cases of heat exhaustion at beaches and outdoor trails. Staff have also noticed that visitors are not always adequately prepared for extreme heat (e.g., sufficient water, breathable clothing).[156]
    - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
- Outdoor workers are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[157]
- Heat events can also decrease air quality, affecting outdoor recreation experience and, in extreme scenarios, increasing cardiovascular and respiratory illness risks.[158]
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to quickly cool down.[159]

Economy & Livelihoods (Rating: 2 – Minor)

While heat may generally drive more visitors to beaches, it can also reduce participation in other outdoor activities and require management changes regarding heat safety. Rating considerations include:

- Outdoor tours and activities may need to shift to cooler parts of the day or be cancelled during extreme heat due to health and safety concerns.[160]
- Outdoor tourism operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[161]
    - Currently, an older demographic visits the Island in the fall and heat waves would be a concern for these populations and potentially alter their visitation.[162]
- If periods of extreme heat are paired with drought, outdoor events like fireworks celebrations or bonfires may be cancelled to reduce fire-risk. Operators may need to adjust rental offerings to visitors as well to comply (e.g., cooking devices, campfires). The Government of PEI puts burning restrictions in place when fire risk is high from water-stressed vegetation.[163]

[155] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[156] PEI Tourism Site Visits – Cavendish Beach. 2025.
[157] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[158] Environment and Climate Change Canada. "Extreme Heat Events." February 27, 2025. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/extreme-heat-events.html.
[159] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[160] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[161] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[162] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[163] Government of PEI. "Burning Restrictions." March 13, 2024. https://www.princeedwardisland.ca/en/feature/burning-restrictions.

Operations (Rating: 3 – Moderate)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and outdoor workers and potential power outage impacts.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's sea-sun-sand tourism industry. This risk remains **medium** in mid-century (Table 13).

Table 13. Sea-sun-sand risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 1: Sea-sun-sand									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	2	2	2	2	2.0	**6.0**	**8.0**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 2.0 out of 5.** Minor impacts are expected across all consequence categories. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Heavy precipitation and flooding typically causes temporary infrastructure disruptions for tourism. Rating considerations include:

- Road or trail closures due to high water or washouts may limit access to tourist sites or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[164,165]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[166,167]
- If a tourism site is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the foundation and underground systems from water seepage, damage to the first floor, and damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[168,169]

[164] Government of PEI. *PEI Climate Change Risk Assessment*.
[165] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[166] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[167] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[168] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[169] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Environment (Rating: 2 – Minor)

PEI's natural environment is generally resilient to heavy precipitation and flooding. Water quality for swimming and water-based recreation may be compromised by runoff or combined sewer overflows, causing temporary closures.[170,171]

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts, which are expected to be temporary and with low potential for loss of life. Rating considerations include:

- Contaminated runoff or combined sewer overflows may create health risks for swimming and other water-based activities.[172,173]
- Reduced visibility can affect marine navigation safety for tour operators.
- Standing water increases mosquito populations, affecting outdoor comfort and increasing the likelihood of disease transmission.
- Access to emergency and medical services may be compromised by flooded roads.[174]

Economy & Livelihoods (Rating: 2 – Minor)

Rainy weather—especially during the peak summer months—can cause revenue losses for sea-sun-sand tourism. Rating considerations include:

- Heavy rainfall often leads to outdoor activity cancellations.
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[175]
- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[176]
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[177]
- Flood-related damage may lead to costly repairs for tourism operators, further straining seasonal revenues.

Operations (Rating: 2 – Minor)

Tourism operations can bounce back quickly from a heavy precipitation event, generally within hours. Sea-sun-sand tourism activities are largely dependent on weather conditions and excessive rainfall may disrupt outdoor operations.

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[170] Health Canada. "Guidelines for Canadian Recreational Water Quality: Summary Document." March 1, 2024. https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-recreational-water-quality-summary-document.html.
[171] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[172] Health Canada. "Guidelines for Canadian Recreational Water Quality: Summary Document." March 1, 2024. https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-recreational-water-quality-summary-document.html.
[173] Kelly, Delaney. "Signs Urge Beachgoers to Avoid Streams in P.E.I. National Park Due to High Bacteria Levels." *CBC News*, July 16, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-coliform-levels-streams-beaches-1.7586476.
[174] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report.*
[175] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.
[176] Fenech. "PEI Tourism Is Down? Blame the Weather."
[177] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's sea-sun-sand tourism industry. This risk is **medium** in mid-century (Table 14) and presents opportunities for the industry.

Table 14. Sea-sun-sand risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 1: Sea-sun-sand									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	1	2	1	2	2	1.6	**3.2**	**6.4**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 1 – Insignificant)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure, but overall impacts would be minimal.

Environment (Rating: 2 – Minor)

Seasonal changes may have long-term, minor environmental impacts for sea-sun-sand tourism. Rating considerations include:

- Fishing tourism may be impacted by changing seasons, as an earlier onset of warm temperatures can alter the timing of key lifecycle stages and species distribution, including for lobster.[178]
- Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later, breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[179]
- Warmer temperatures may lead to an increase in mosquitoes and other pests.[180]

[178] Tourism PEI. PEI Seasons. No date.
[179] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[180] PEI Tourism Site Visits – PEIMF. 2025.

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for tourism on PEI. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand the sea-sun-sand tourism season, allowing tourism businesses to generate revenue beyond the traditional summer window.[181]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[182]
- A longer warm season can also translate into a higher return on total investment in tourism assets.[183]
- However, staffing is an anticipated challenge to a longer summer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[184]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[185]

[181] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[182] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[183] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[184] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[185] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Focus Area 2: Other nature-based tourism

Other nature-based tourism encompasses non-coastal, nature-based tourism activities. In the summer, activities include cycling and mountain biking, hiking, outdoor Indigenous experiences, such as the Path of Our Forefathers and the Skmaqn-Port-la-Joye-Fort Amherst National Historic Site,[186] wildlife watching, horseback riding, and more. PEI offers numerous outdoor trails, including the 273 km Confederation Trail, popular for walking and biking, and the 700 km Island Walk.[187] PEI's many scenic coastal driving routes include North Cape, Central Coastal, and Points East Coastal Drive.[188]

In the winter, activities include cross-country skiing, snowshoeing, snowmobiling, ice fishing, outdoor Indigenous experiences, driving scenic tours, ATV driving, and more. The Mark Arendz Provincial Ski Park at Brookvale offers 24.5 km of groomed cross-country and snowshoeing trails.[189] PEI also offers ice fishing, such as the Tranquility Cove's Ice Fishing for Oysters excursions.[190]



Figure 24. Mountain biking and cross-country skiing (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's other nature-based tourism. This risk remains **high** in mid-century (Table 15).

Table 15. Other nature-based tourism risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 2: Other nature-based tourism									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	3	3	3	3	3	3.0	**12.0**	**12.0**

Likelihood

See Appendix A: Post-Tropical Storm for details.

[186] "Things to Do." *Experience Indigenous PEI*, n.d. Accessed October 14, 2025. https://indigenouspei.ca/things-to-do/.
[187] Government of PEI. "Hiking & Walking Trails." Tourism PEI. Accessed October 14, 2025. https://www.tourismpei.com/what-to-do/outdoor-activities/hiking-walking-trails.
[188] Government of PEI. "Coastal Drives." Tourism PEI. Accessed October 14, 2025. https://www.tourismpei.com/trip-ideas/coastal-drives.
[189] Government of PEI. "Mark Arendz Park Guide & Hours." Accessed October 14, 2025. https://www.tourismpei.com/brookvale-activity-park/park-guide.
[190] Government of PEI. "Tranquility Cove's Ice Fishing for Oysters." Tourism PEI, January 1, 2024. https://www.tourismpei.com/experiences/tranquility-coves-ice-fishing-for-oysters.

Consequences

The overall **consequence rating is 3.6 out of 5.** Major impacts are expected across all consequence categories. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Post-tropical storms can cause disruptions to infrastructure services, although nature-based tourism does not rely heavily on hard infrastructure. Repairs or improved resilience measures can also be costly for operators and could take days to weeks following severe events.[191] Rating considerations include:

- Popular tourist destinations may require temporary closure to visitors during cleanup and recovery from storm damage and debris:
    - Post-Tropical Storm Dorian caused closures for several days to weeks to the PEI National Park, Cedar Dunes Provincial Park, Panmure Island Provincial Park, Cabot Beach Provincial Park, and Confederation Trail.[192] Dorian also damaged trails at the Green Gables Heritage Place.[193]
    - Fiona caused significant damage or destruction of parks and trails across the Island.[194]
- Access routes and trails can also be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to scenic routes, viewpoints, and other nature-based tourism locations.[195,196,197]
- Power outages across the Island can also affect Park facility (e.g., washrooms) and other infrastructure if there is not a back-up generator on site.[198]

Environment (Rating: 3 – Moderate)

Nature-based tourism largely relies on the environment to draw in tourists, and post-tropical storms can cause damage to the parks, trails, and other natural environment. Rating considerations include:

- Strong winds can alter the natural landscapes that visitors expect when exploring PEI.
    - Fiona damaged 9.4% of PEI's woodlands,[199] including thousands of trees throughout the PEI National Park which resulted in prolonged road and trail closures.[200]

[191] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[192] Eric McCarthy. "P.E.I. Provincial Parks Impacted by Dorian Storm Surge, Wind." The Guardian. Accessed October 14, 2025. https://www.saltwire.com/prince-edward-island/pei-provincial-parks-impacted-by-dorian-storm-surge-wind-351709.
[193] Parks Canada. "Government of Canada Invests $1.76 Million in Restoration at PEI National Park and Green Gables Heritage Place Following Post-Tropical Storm Dorian." Cision. Accessed October 14, 2025. https://www.newswire.ca/news-releases/government-of-canada-invests-1-76-million-in-restoration-at-pei-national-park-and-green-gables-heritage-place-following-post-tropical-storm-dorian-889325560.html.
[194] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[195] Government of PEI. *PEI Climate Change Risk Assessment*.
[196] Government of PEI. *Post-Fiona Update Report.* 2024. https://www.princeedwardisland.ca/sites/default/files/publications/post-fiona_forest_update.pdf.
[197] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[198] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report.* Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[199] Government of PEI. *Post-Fiona Update Report.* 2024. https://www.princeedwardisland.ca/sites/default/files/publications/post-fiona_forest_update.pdf.
[200] Yarr. "P.E.I. National Park Dunes Suffer 'extremely Dramatic' Erosion from Fiona."

Health & Safety (Rating: 3 – Moderate)

Although nature-based tourism activities are assumed to be closed during a post-tropical storm, many visitors and staff may be at risk in the aftermath and during recovery from the event, with a potential for loss of life. Rating considerations include:

- Physical hazards such as fast-moving floodwaters, debris, and falling trees create potential injury for both tourists and workers.[201] For example:
    - Injuries are possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[202]
- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[203]

Economy & Livelihoods (Rating: 3 – Moderate)

Post-tropical storms typically cause moderate disruptions to other nature-based tourism for weeks up to the remainder of the season. Fortunately, Fiona occurred in late September only a couple weeks before many operators would have closed for the summer season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[204] Rating considerations include:

- Scheduled events and activities (e.g., scenic tours) may need to be postponed or cancelled leading to loss of revenue.[205]
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[206]
- Outdoor gear rental businesses (e.g., bike shops) may face reduced demand due to trail closures.
- Tourism operators may face significant repair costs. Fiona cleanup costs totalled approximately $5.3 million for Provincial parks, golf courses and other Province-owned properties.[207]

Operations (Rating: 3 – Moderate)

Recovery from the impacts described above and the return to normal operations for other nature-based tourism can take days to weeks. Following Fiona, most activities were back to normal operations by the next summer season.

[201] Government of PEI. “Extreme Weather Safety.”
[202] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[203] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[204] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[205] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[206] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[207] PEI Department of Finance, *2022: Fiscal and Economic Update*.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's other nature-based tourism. This risk is **high** in mid-century (Table 16).

Table 16. Other nature-based tourism risk summary for heat waves

Heat Wave – Focus Area 2: Other nature-based tourism									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	1	1	4	2	3	2.4	**7.2**	**12.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.4 out of 5.** Major impacts to health and safety are possible. See below for rating details.

Infrastructure (Rating: 1 – Insignificant)

Heat waves are not expected to directly damage nature-based tourism infrastructure. However, heat waves could lead to power outages due to the additional strain on the grid to support cooling systems. [208]

Environment (Rating: 2 – Minor)

Environmental impacts from a multi-day heat wave are limited. However, if the heat wave coincides with prolonged summer heat, the event could amplify the potential for algae blooms, impacting water quality and water-based activities. Extreme heat and drought could also increase fire risk.

Health & Safety (Rating: 4 – Major)

Many tourists and workers may be at risk to potential heat-related health concerns, with a potential for loss of life. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[209]
  - Parks Canada staff have seen cases of heat exhaustion on outdoor trails. Staff have also noticed that visitors are not always adequately prepared for extreme heat (e.g., sufficient water, breathable clothing).[210]
  - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.

[208] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[209] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[210] PEI Tourism Site Visits – Cavendish Beach. 2025.

- Outdoor workers are also more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[211]
- There is also an increased concern for animal welfare during extreme heat events.[212]
    - The Orwell Corner Historic Village, for example, cancels horse carriage rides and goats do not roam free during periods of high heat.[213]
- Heat events can also decrease air quality, affecting outdoor recreation experience and, in extreme scenarios, increasing cardiovascular and respiratory illness risks.[214]
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to quickly cool down.[215]
- Extreme heat can increase wildfire risk during a drought, creating potential safety and evacuation concerns. For more details on wildfire risk and impacts, see the Wildfires and Smoke section in Appendix A.

Economy & Livelihoods (Rating: 2 – Minor)

Extreme heat can reduce participation in outdoor activities and require management changes regarding heat safety. Rating considerations include:

- Outdoor tours and activities may need to shift to cooler parts of the day or be cancelled during extreme heat due to health and safety concerns. Tourists may choose to instead opt for cooler activities (e.g., indoor, water-based).
- Outdoor tourism operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[216]
- If periods of extreme heat are paired with drought, outdoor events like fireworks celebrations or bonfires may be cancelled to reduce fire-risk. Operators may need to adjust rental offerings to visitors as well to comply (e.g., cooking devices, campfires). The Government of PEI puts burning restrictions in place when fire risk is high from water-stressed vegetation.[217]

Operations (Rating: 3 – Moderate)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists, outdoor workers, and animals and potential power outage impacts.

[211] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[212] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[213] PEI Tourism Site Visits – PEIMF. 2025.
[214] Environment and Climate Change Canada. "Extreme Heat Events." February 27, 2025. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/extreme-heat-events.html.
[215] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[216] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[217] Government of PEI. "Burning Restrictions." March 13, 2024. https://www.princeedwardisland.ca/en/feature/burning-restrictions.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's other nature-based tourism. This risk remains **medium** in mid-century (Table 17).

Table 17. Other nature-based tourism risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 2: Other nature-based tourism									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	2	2	2	2	2.0	**6.0**	**8.0**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 2.0 out of 5.** Minor impacts are expected across all consequence categories. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Heavy precipitation and flooding typically causes temporary infrastructure disruptions for tourism. Rating considerations include:

- Road or trail closures due to high water or washouts may limit access to tourist sites or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[218,219]
    - For example, March 2013 storms caused road washouts that limited access to at least one entrance to PEI National Park, though there were alternate access options for visitors.[220]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[221,222]
- If a nature-based tourism site is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the facilities, trails, parking lots, or any other critical equipment that is not elevated (e.g., electrical system).[223, 224]

Environment (Rating: 2 – Minor)

PEI's natural environment is generally resilient to heavy precipitation and flooding. Rating considerations include:

[218] Government of PEI. *PEI Climate Change Risk Assessment*.
[219] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[220] The Guardian. "Flooding forces Prince Edward Island road closures." 2013.
[221] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[222] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[223] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[224] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Freshwater quality for swimming, fishing, and other water-based activities may be compromised by runoff or combined sewer overflows, causing temporary closures.[225]

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts, which are expected to be temporary and with low potential for loss of life. Rating considerations include:

- Contaminated runoff or combined sewer overflows may create health risks for freshwater swimming and other water-based activities.[226,227]
- Standing water increases mosquito populations, affecting outdoor comfort and increasing the likelihood of disease transmission.
- Muddy, slippery conditions and flash flooding can increase injury risks for hikers and others participating in outdoor activities.
- Access to emergency and medical services may be compromised by flooded roads.[228]

Economy & Livelihoods (Rating: 2 – Minor)

Rainy weather—especially during the peak summer months—can cause revenue losses for nature-based tourism. Rating considerations include:

- Heavy rainfall leads to outdoor activity cancellations and reduced outdoor gear rentals.
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[229]
- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[230]
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[231]
- Flood-related damage may lead to costly repairs for tourism operators, further straining seasonal revenues.

Operations (Rating: 2 – Minor)

Tourism operations can bounce back quickly from a heavy precipitation event, generally within hours to days. Nature-based tourism activities are largely dependent on weather conditions and excessive rainfall may disrupt outdoor operations.

[225] Fisheries and Oceans Canada. Survey of Recreational Fishing in Canada. 2015.
[226] Health Canada. "Guidelines for Canadian Recreational Water Quality: Summary Document." March 1, 2024. https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-recreational-water-quality-summary-document.html.
[227] Kelly, Delaney. "Signs Urge Beachgoers to Avoid Streams in P.E.I. National Park Due to High Bacteria Levels." *CBC News*, July 16, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-coliform-levels-streams-beaches-1.7586476.
[228] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report.*
[229] Fenech. "PEI Tourism Is Down? Blame the Weather."
[230] Fenech. "PEI Tourism Is Down? Blame the Weather."
[231] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's other nature-based tourism. This risk is **medium** in mid-century (Table 18) and presents opportunities for the industry.

Table 18. Other nature-based tourism risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 2: Other nature-based tourism									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	1	2	1	2	2	1.6	**3.2**	**6.4**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 1 – Insignificant)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure, but overall impacts would be minimal. For winter tourism, there may be a greater reliance on artificial snowmaking infrastructure to maintain winter activities.

Environment (Rating: 2 – Minor)

Seasonal changes may have long-term, minor environmental impacts on other nature-based tourism. Rating considerations include:

- Shifting seasons may favour different or invasive species, gradually altering the natural landscapes.
- Shorter cold seasons may reduce the reliability of natural snow cover for winter activities. Rainfall that melts existing snow—and a growing proportion of winter precipitation falling as rain rather than snow—can shorten the winter recreation season. The window for activities like ice fishing that depend on sustained cold conditions may also be shortened.
- Warmer temperatures may lead to an increase in mosquitoes and other pests.[232]

[232] PEI Tourism Site Visits – PEIMF. 2025.

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for nature-based tourism on PEI. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand the nature-based tourism season, allowing tourism operators to generate revenue beyond the traditional summer window. [233] A longer warm season can also translate into a higher return on total investment in tourism assets.[234]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[235]
- However, for winter tourism operators, a shorter cold season may negatively impact revenue and operations.
    - Rising temperatures are already making ski seasons shorter across Canada. A recent study found that PEI lost approximately one week of winter weather per year from 2014 to 2023, and some Canadian cities lost over two weeks of winter weather.[236, 237]
    - A week or two decline in winter days can have significant impacts on ski resorts. For example, in March 2024, Jiminy Peak Mountain Resort in Hancock, Massachusetts saw a 73% drop in revenue due to uncharacteristically warm and rainy weather that month, putting the property in the red for the entire season.[238]
- However, staffing is an anticipated challenge to a longer summer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[239]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded summer operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[240]

[233] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[234] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[235] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[236] Winter weather days are defined as days with a minimum temperature below 0°C.
[237] Emily Chung. "Canada's Cities Are Losing up to 19 Days of Winter." *CBC News*, December 17, 2024. https://www.cbc.ca/news/science/lost-winter-climate-central-1.7411756.
[238] Katie Dupere. "Disturbing Data Reveals New Trend Impacting Seasonal Businesses: 'It's Kind of a Nightmare,'" *The Cool Down*, January 24, 2025. https://www.thecooldown.com/green-business/ski-resort-business-climate-change-economics-revenue-trends/.
[239] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[240] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Focus Area 3: Sports and amusement facilities

Sports and amusement facilities are highly seasonal. In the summer, golf courses, waterparks, and theme parks are popular spots on PEI. Notable destinations include Red Shores Racetrack, Burlington Go-Karts, Sandspit Amusement Park, Shining Waters Family Fun Park, and Green Gables Shore Golf.[241] In 2025, PEI had a record-breaking 505,810 rounds of golf played, contributing an estimated annual $62.2 million toward PEI's GDP, with total direct economic activity estimated at $105 million.[242]

In the winter, recreational activities shift to a range of snow- and ice-based offerings. The Mark Arendz Provincial Ski Park at Brookvale serves as the primary winter sports attraction, offering, downhill skiing, snowboarding, and tubing. In addition to popular indoor skating and hockey venues, select sites across PEI also provide outdoor ice skating and winter disk golf.[243]





Figure 25. Green Gables Golf Club and the Mark Arendz Provincial Ski Park at Brookvale (Source: Green Gables Golf and Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's sports and amusement facilities. This risk remains **high** in mid-century (Table 19).

Table 19. Sports and amusement facilities risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 3: Sports and amusement facilities									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	4	3	2	4	4	3.4	**13.6**	**13.6**

Likelihood

See Appendix A: Post-Tropical Storm for details.

[241] Government of PEI. "Amusement & Theme Parks." Tourism PEI, January 1, 2025. https://www.tourismpei.com/what-to-do/attractions-sightseeing/amusement-theme-parks.
[242] Golf PEI. *2024 Annual Report*. 2025. https://golfpei.ca/wp-content/uploads/2025/03/Golf-PEI-2024-Annual-Report.pdf.
[243] Government of PEI. "Winter Activities." Tourism PEI. Accessed October 14, 2025. https://www.tourismpei.com/what-to-do/winter-activities.

Consequences

The overall **consequence rating is 3.4 out of 5.** Major impacts are expected to infrastructure, economy and livelihoods, and operations. See below for rating details.

Infrastructure (Rating: 4 – Major)

Post-tropical storms can cause significant damage to infrastructure. Repairs or improved resilience measures (e.g., installing back-up generators) can also be costly for operators and could take weeks following severe events. Rating considerations include:

- Several golf courses experienced damage to facilities and properties from Fiona:
  - Charlottetown's Belvedere Golf Club experienced substantial water damage and lost drains across the course due to strong winds.[244]
  - Stanhope Golf & Country Club was also heavily affected. The clubhouse was destroyed by a fire during the storm.[245]
  - The Links at Crowbush Cove had debris strewn across the course, loss of protective dunes, and a bridge on the property was swept away.[246]
- Power outages across the Island can also affect sport and amusement facility and other infrastructure if there is not a back-up generator on site.[247]
  - For example, ten ice rinks lost their ice during Fiona's extended power outage, including the Eastlink Centre ice facility in Charlottetown.[248,249]
- Access routes may be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to sports and amusement facilities.[250,251]

Environment (Rating: 3 – Moderate)

Post-tropical storms can cause localized damage, particularly to trees and dunes. Rating considerations include:

- Many trees were blown down during Fiona, altering the natural scenery that visitors expect. For example:
  - The Links at Crowbush Cove lost a total of 70 acres of trees, changing the look and feel of the golf course.[252]
  - Charlottetown's Belvedere Golf Club lost an estimated 80% of trees between Holes 12 and 13, with many of the trees older than 120 years.[253]
- Forest damage also affects natural windbreak protection and snow accumulation patterns around ski facilities, and in extreme cases storm damage can also alter terrain features important for skiing and other winter sports activities.

[244] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[245] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[246] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[247] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[248] Jeremy Fraser. "Cape Breton's Centre 200 Loses Ice after Power Outage Caused by Fiona Shuts down Plant." PNI Atlantic News, September 30, 2022. https://www.saltwire.com/atlantic-canada/cape-bretons-centre-200-loses-ice-after-power-outage-caused-by-fiona-shuts-down-plant-100778720.
[249] Jason Simmonds. "UPDATED: P.E.I. Rinks Deal with Effects of Post-Tropical Storm Fiona." PNI Atlantic News. Accessed October 14, 2025. https://www.saltwire.com/atlantic-canada/updated-pei-rinks-deal-with-effects-of-post-tropical-storm-fiona-100776984.
[250] Government of PEI. *PEI Climate Change Risk Assessment*.
[251] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[252] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[253] "Hurricane Fiona Has Changed the Landscape at Some of P.E.I.'s Golf Courses." News. *Turf & Rec*. https://www.turfandrec.com/hurricane-fiona-has-changed-the-landscape-at-some-of-p-e-i-s-golf-courses/

    - For example, the forest near the Mark Arendz Provincial Ski Park at Brookvale suffered extensive damage from high winds that toppled trees and necessitated a major cleanup effort.[254]
- During Fiona, the dunes at the Links at Crowbush Cove eroded to nearly a fifth of their original size.[255] The dunes provide critical protection to the course from storm surge and coastal erosion.

Health & Safety (Rating: 2 – Minor)

Although sports and amusement facilities are assumed to be closed during a post-tropical storm, few visitors and staff may be at risk in the aftermath and during recovery from the event. Rating considerations include:

- Physical hazards such as fast-moving floodwaters, debris, and falling trees can create injury potential for tourists, operators, and workers.[256] Injuries are possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[257]
- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[258]

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms typically cause severe disruptions to sports and amusement facilities for the remainder of the season. Fortunately, Fiona occurred in late September only a couple weeks before many operators would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[259] Rating considerations include:

- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[260]
    - For example, several golfers inquired with the Links at Crowbush Cove about whether the property would be in good shape to visit the following season.[261] The property landscape also changed significantly from extensive tress loss and staff have received mixed feedback from visitors.[262]
- Tourism operators may face repair costs. Fiona cleanup costs totalled approximately $5.3 million for Provincial parks, golf courses and other Province-owned properties.[263]

[254] Government of PEI. *Post-Fiona Update Report*.
[255] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[256] Government of PEI. "Extreme Weather Safety."
[257] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[258] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[259] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[260] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[261] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[262] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[263] PEI Department of Finance, *2022: Fiscal and Economic Update*.

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for sports and amusement facilities can vary. For example, the Links at Crowbush Cove closed after Fiona hit, losing about 30 to 40 days at the end of the season, whereas other properties reopened just a week later.[264] Following Fiona, most activities were back to normal operations by the next summer season.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's sports and amusement facilities. This risk is **high** in mid-century (Table 20).

Table 20. Sports and amusement facilities risk summary for heat waves

Heat Wave – Focus Area 3: Sports and amusement facilities									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	2	2	3	1	3	2.2	**6.6**	**11.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Moderate impacts to health and safety and operations are possible. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Minor damage and disruption to sports and amusement facility infrastructure is possible. Rating considerations include:

- Some assets may face surface damage and deterioration from the heat, including tennis courts, tracks, and other outdoor sports surfaces.
- Heat waves can also lead to power outages due to the additional strain on the grid to support cooling systems. [265]

Environment (Rating: 2 – Minor)

During heat waves, there may be a temporary increase in water demand, particularly at golf courses. Rating considerations include:

- Golf course watering systems may be strained or require more water supply.[266,267]
- If the grounds are not beautiful because of stressed vegetation, visitors may choose to go to other golf courses or other destinations instead.[268]

[264] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[265] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[266] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[267] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[268] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Decorative ponds and other water features may experience increased evaporation and algae growth.

Health & Safety (Rating: 3 – Moderate)

Some visitors and staff may be exposed to potential heat-related health concerns. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[269]
    - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
- There is an increased concern for animal welfare, such as for horses at the racetrack.[270]
- Outdoor workers are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[271]
- Heat events can also decrease air quality, affecting outdoor recreation experience and, in extreme scenarios, increasing cardiovascular and respiratory illness risks.[272]
- For pool and water-based activities, higher water temperatures and increased bacterial growth may create health risks.[273]
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to quickly cool down.[274]

Economy & Livelihoods (Rating: 1 – Insignificant)

While heat may drive more visitors to indoor or water-based sports and amusement activities, it can also reduce participation in outdoor activities like golfing, resulting in a mixture of positive and negative impacts on revenue:

- Outdoor tours and activities may need to shift to cooler parts of the day or be cancelled during extreme heat due to health and safety concerns.[275]
- Tourism operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
- Golf courses may have higher costs related to increased irrigation to maintain adequate turf quality.
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[276]
    - Currently, an older demographic visits the Island in the fall and heat waves would be a concern for these populations and potentially alter their visitation.[277]

[269] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[270] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[271] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[272] Environment and Climate Change Canada. "Extreme Heat Events."
[273] Rising Sun Pools. "Managing Pool Chemistry During Heatwaves." June 5, 2025. https://www.risingsunpools.com/managing-pool-chemistry-during-heatwaves-a-summer-survival-guide/.
[274] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[275] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[276] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[277] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Operations (Rating: 3 – Moderate)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and outdoor workers and potential power outage impacts.

- If extended periods of extreme heat are paired with drought and lead to water use restrictions, golf course operators' ability to use irrigation may be disrupted.[278]

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **low** risk to PEI's sports and amusement facilities. This risk is **medium** in mid-century (Table 21).

Table 21. Sports and amusement facilities risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 3: Sports and amusement facilities									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	1	1	2	2	1.6	**4.8**	**6.4**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Heavy precipitation and flooding typically causes temporary infrastructure disruptions. Rating considerations include:

- Road closures due to washouts may limit access to sports and amusement facilities or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[279,280]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[281,282] Heavy precipitation can also exceed designed drainage capacity at golf courses and other outdoor facilities.[283]
- If a tourism site is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the foundation and underground systems from water seepage,

[278] Jardine, Donald. *Master of Science in Environmental Science Thesis Defense: Selection Of Scientific Indicators For Tracking, Understanding, And Communicating Climate Change In Prince Edward Island, Canada*. University of PEI, 2020. https://www.upei.ca/notice/2020/08/master-science-environmental-science-thesis-defense-donald-e-jardine.
[279] Government of PEI. *PEI Climate Change Risk Assessment*.
[280] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[281] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[282] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[283] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

damage to the first floor, and damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[284, 285]
    - For water facilities, excessive rainfall can dilute pool chemicals, cause overflow, and generally create unsafe conditions that require facility closure.
    - For sport facility surfaces, including tennis courts, standing water may accelerate degradation.

Environment (Rating: 1 – Insignificant)

PEI's natural environment is generally resilient to heavy precipitation and flooding. Saturated conditions can affect the quality of the green at golf courses.

Health & Safety (Rating: 1 – Insignificant)

Heavy precipitation and flooding are not expected to threaten health or safety at sports and amusement facilities. Access to emergency and medical services may be temporarily compromised by flooded roads.[286]

Economy & Livelihoods (Rating: 2 – Minor)

Rainy weather, particularly during summer months, can translate to revenue losses for the outdoor sports or amusement facilities. Rating considerations include:

- Heavy rainfall often leads to outdoor activity cancellations.
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[287]
    - Golf courses may lose significant revenue if visitors choose to switch to indoor activities.[288] A study shows that precipitation reduces the number of rounds of golf played by about 25% when the daily rainfall is between 2.6–5 mm and by 100% if the daily rainfall is more than 10 mm; when rain is above 20 mm in a day, no rounds of golf are played the following day either.[289]
- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[290]
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[291]
- Flood-related damage may lead to costly repairs (e.g., turf recovery, facility repairs) or adaptation measures (e.g., improved drainage capacity) for tourism operators, further straining seasonal revenues.

[284] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[285] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[286] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report*.
[287] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.
[288] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[289] Fenech. "PEI Tourism Is Down? Blame the Weather."
[290] Fenech. "PEI Tourism Is Down? Blame the Weather."
[291] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.

Operations (Rating: 2 – Minor)

Tourism operations can bounce back quickly from a heavy precipitation event, generally within hours. Outdoor sports and amusement facilities rely on weather conditions, and excessive rainfall may deter outdoor recreation activities, dropping tourism participation.

- Golf is an important tourism industry on PEI. Though historically there is no evidence of golf courses being inoperable for long periods of time due to inland flooding and heavy precipitation, low-lying courses or those with poor drainage may face some concerns.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's sports and amusement facilities. This risk is **medium** in mid-century (Table 22).

Table 22. Sports and amusement facilities risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 3: Sports and amusement facilities									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	2	2	1	2	2	1.8	**3.6**	**7.2**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.8 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 2 – Minor)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure. Rating considerations include:

- Maintenance schedule extensions of outdoor facilities, like golf courses, need to be extended to align with longer warm seasons.
- Ski operations already heavily rely on artificial snow to maintain winter activities.[292]

Environment (Rating: 2 – Minor)

Seasonal changes may have long-term, minor environmental impacts on sports and amusement facilities. Rating considerations include:

[292] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Longer warm seasons can increase pressure on water resources needed for irrigation and facility maintenance, such as for maintaining the grass of golf courses.
- Shorter cold seasons are reducing the reliability of natural snow cover for winter recreation. Rainfall that melts existing snow—and a rising proportion of winter precipitation falling as rain rather than snow—can shorten the winter recreation season, such as skiing at Brookvale.
    - Between 2014 and 2023, PEI experienced a loss of approximately one week of winter weather per year.[293,294]
- Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later, breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[295]
- Warmer temperatures may lead to an increase in mosquitoes and other pests.[296]

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for warm-weather tourism on PEI and a risk to winter tourism, potentially altering the demand and duration of seasonal employment.[297] Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand the warm-weather sports and amusement tourism, allowing businesses to generate revenue beyond the traditional summer window. [298] A longer warm season can also translate into a higher return on total investment in tourism assets.[299]
    - The Links at Crowbush Cove has seen busier fall and spring months in recent years.[300]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[301]
- Winter tourism, like skiing, may be negatively impacted by a shortened cold season, possibly shorten the season and decreasing revenue from winter tourism activities.[302]
- Staffing is an anticipated challenge to a longer and warmer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[303]

[293] Winter weather days are defined as days with a minimum temperature below 0°C.
[294] Chung. “Canada’s Cities Are Losing up to 19 Days of Winter.”
[295] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[296] PEI Tourism Site Visits – PEIMF. 2025.
[297] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[298] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[299] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI’s Tourism Industry*.
[300] PEI Tourism Site Visits – The Links at Crowbush Cove. 2025.
[301] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[302] PEI Department of Environment, Water, and Climate Change. *Climate Change and Island Tourism*. 2016.
[303] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[304] Winter operations may be negatively disrupted by these changing seasons.

[304] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Focus Area 4: Festivals and events

Festivals and events include music, art, food, history, and professional sporting events. Popular summer events include the Cavendish Beach Music Festival and PEI International Shellfish Festival. The Sommo and Cavendish Beach music festivals in 2024 generated an estimated $30 million in spinoff spending, such as accommodations, shopping, and restaurants.[305] There are also many Indigenous festivals and events, including an Indigenous theatre group called the Mi'kmaq Heritage Actors and the A'Tuken Tell Stories program.[306] Winter events include the Jack Frost Children's Winterfest, Winterval, the PEI Beer Festival, and professional winter sporting events.[307] For example, PEI hosts the 2024 Para Hockey Cup, 2025 Mixed Curling Champions, and many other sport events.[308]



Figure 26. The PEI International Shellfish Festival (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's festivals and events. This risk remains **high** in mid-century (Table 23).

Table 23. Festivals and events risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 4: Festivals and events									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	3	2	2	4	4	3.0	**12.0**	**12.0**

Likelihood

See Appendix A: Post-Tropical Storm for details.

Consequences

The overall **consequence rating is 3.0 out of 5.** Major impacts are expected to economy and livelihoods and operations. See below for rating details.

[305] MacLeod, Nicola. "Sommo's Move to September Proved Better for P.E.I. Tourism Industry, Statistics Show." *CBC News*, December 11, 2024. https://www.cbc.ca/news/canada/prince-edward-island/pei-sommo-cbmf-2024-1.7407956.
[306] "Things to Do." *Experience Indigenous PEI.*
[307] "30 Things to Do This Winter in Prince Edward Island." *To Do Canada*, January 3, 2025. https://www.todocanada.ca/25-things-winter-prince-edward-island/.
[308] Government of PEI. "Tourism Strategy Pillar 2." Tourism PEI. Accessed October 14, 2025. https://www.tourismpei.com/industry/what-we-do/tourism-strategy-for-prince-edward-island/pillar-2.

Infrastructure (Rating: 3 – Moderate)

Post-tropical storms can cause days-long disruption in infrastructure services. Repairs can also take time.[309] Rating considerations include:

- Access routes can be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to festivals and event.[310,311]
    - In 2014, Post-Tropical Storm Arthur forced the Cavendish Beach Music Festival to cancel an entire night of performances due to "extreme high winds" and restricted access across the Confederation Bridge.[312]
- Festivals and events primarily use infrastructure and equipment that can be easily moved and installed as needed. In advance of a post-tropical storm, infrastructure can typically be secured or relocated ahead of time to help minimize damage and losses. Any permanent structures, such as the stage for the Cavendish Beach Music Festival, may experience damage and require repairs.[313]
- Assuming festivals and events are cancelled in advance as well as in the days following a storm, power outages across the Island will not have a direct effect on festivals and events.

Environment (Rating: 2 – Minor)

Post-tropical storms can cause localized damage to outdoor venues' natural environment. For example, many trees were blown down during Fiona, including around the Cavendish Beach Music Festival grounds, altering the venue's natural scenery that visitors expect.[314]

Health & Safety (Rating: 2 – Minor)

Assuming that festivals and events are cancelled, or postponed, ahead of a post-tropical storm, there is low potential for health and safety concerns. However, if a storm coincides with a large outdoor festival or event and visitors have already travelled to the Island, organizers may need to evacuate thousands of attendees, creating massive logistical and safety challenges.

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms can cause cancellations or postponements of festivals and events. Many of PEI's festivals are held in the late summer and fall shoulder season, which coincides with hurricane season increasing the potential for impacts from a post-tropical storm.[315] Rating considerations include:

- Festivals and events could lose millions in revenue when forced to cancel because of a post-tropical storm. There are not many spaces with high visitor capacity on the Island that can serve as an alternative to outside events.[316]
    - Post-Tropical Storm Arthur forced the cancellation of the Cavendish Beach Music Festival in 2014 and the event allowed refunds for the missed day, or discounts

[309] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[310] Government of PEI. *PEI Climate Change Risk Assessment*.
[311] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[312] CBC. "Storm Arthur Cancels Cavendish Beach Music Festival Saturday." *CBC News*, July 5, 2014. https://www.cbc.ca/news/canada/prince-edward-island/storm-arthur-cancels-cavendish-beach-music-festival-saturday-1.2697540.
[313] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[315] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[316] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

toward next year's event.[317] Cancellation of large-scale summer events may have cascading economic impacts, including losses for workers, vendors, accommodations, and local restaurants.[318] The Cavendish Beach Music Festival, with 60,000 attendees, generates approximately $12.3 million in direct economic impact annually, and leads to an increase of 40–45% in sales for local restaurants during the festival.[319]

- Smaller events and conferences can also be affected.[320]
    - For example, debris and hindered access in the aftermath of Fiona led to the Fall Flavours Food & Drink Festival being postponed two weeks.[321,322]
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[323]

Operations (Rating: 4 – Major)

Festivals and events may experience partial or complete cancellation due to post-tropical storms. Major festivals or events are more difficult to reschedule due to artist availability and seasonal constraints. Recovery from the impacts described above and the return to normal operations for festivals and events can take weeks or until the next season depending on the ability to reschedule.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's festivals and events. This risk is **high** in mid-century (Table 24).

Table 24. Festivals and events risk summary for heat waves

Heat Wave – Focus Area 4: Festivals and events									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	2	1	4	1	3	2.2	**6.6**	**11.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Major impacts to health and safety are possible. See below for rating details.

[317] CBC. "Storm Arthur Cancels Cavendish Beach Music Festival Saturday." *CBC News*, July 5, 2014. https://www.cbc.ca/news/canada/prince-edward-island/storm-arthur-cancels-cavendish-beach-music-festival-saturday-1.2697540.
[318] CBC. "Storm Arthur Cancels Cavendish Beach Music Festival Saturday." *CBC*
[319] Carter. "Cavendish Beach Music Festival 2025 Returns, Boosting P.E.I. Economy." Canada. *CO24*, July 9, 2025. https://co24.ca/cavendish-music-fest-2025/.
[320] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[321] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[322] Fall Flavours. 2022. It's a Wrap! A Retrospective of the 2022 PEI Fall Flavours Festival presented by Sobeys/ https://fallflavours.ca/its-a-wrap-a-retrospective-of-the-2022-pei-fall-flavours-festival-presented-by-sobeys/
[323] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Infrastructure (Rating: 2 – Minor)

Heat waves are not expected to directly damage festival and event infrastructure. However, heat waves could lead to power outages due to the additional strain on the grid to support cooling systems. [324]

Environment (Rating: 1 – Insignificant)

Environmental impacts from a multi-day heat wave are limited. However, if the heat wave coincides with drought or prolonged summer heat, there may be increased wildfire risk.[325]

Health & Safety (Rating: 4 – Major)

Many visitors and workers may be at risk to potential heat-related health concerns, particularly at outdoor festivals and events. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[326]
    - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
- Outdoor workers are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[327]
- Heat events can also decrease air quality, affecting outdoor recreation experience and, in extreme scenarios, increasing cardiovascular and respiratory illness risks.[328]
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to quickly cool down.[329]

Economy & Livelihoods (Rating: 1 – Insignificant)

A multi-day heat wave might decrease attendance at some outdoor events, but not to the extent of causing a significant impact on revenue. Rating considerations include:

- Tourists may choose not to attend an outdoor event due to heat discomfort.
- Outdoor festivals and events may need to shift to cooler parts of the day or season or be cancelled during heat waves.[330]
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[331]

Operations (Rating: 3 – Moderate)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and outdoor workers. Rating considerations include:

- During a heat wave, operations of a large outdoor event would need to ensure safety for its attendees and workers (e.g., increased demand for water and shade).

[324] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[325] Government of PEI. "Burning Restrictions." March 13, 2024. https://www.princeedwardisland.ca/en/feature/burning-restrictions.
[326] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[327] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[328] Environment and Climate Change Canada. "Extreme Heat Events."
[329] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[330] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[331] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- If periods of extreme heat are paired with drought, outdoor events like fireworks celebrations or bonfires may be cancelled to reduce fire-risk. Operators may need to adjust rental offerings to visitors as well to comply (e.g., cooking devices, campfires). The Government of PEI puts burning restrictions in place when fire risk is high from water-stressed vegetation.[332]

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's festivals and events. This risk remains **medium** in mid-century (Table 25).

Table 25. Festivals and events risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 4: Festivals and events									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	1	3	3	2	2.2	**6.6**	**8.8**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Moderate impacts to health and safety and economy and livelihoods are possible. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Heavy precipitation and flooding typically causes temporary infrastructure disruptions for outdoor festivals and events. Rating considerations include:

- Road or parking lot closures due to high water or washouts may limit access to event sites or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[333,334]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[335,336]
- If an event site is located in a low-lying or flood-prone area, floodwaters may cause physical damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[337,338]

[332] Government of PEI. "Burning Restrictions." March 13, 2024. https://www.princeedwardisland.ca/en/feature/burning-restrictions.
[333] Government of PEI. *PEI Climate Change Risk Assessment*.
[334] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[335] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[336] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[337] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[338] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Environment (Rating: 1 – Insignificant)

PEI's natural environment is generally resilient to heavy precipitation and flooding, though waterlogged event grounds can create muddy conditions that can persist for days after rainfall events.

Health & Safety (Rating: 3 – Moderate)

Some visitors and staff may be at risk to potential health and safety concerns. Rating considerations include:

- Sudden storms with lightning may require rapid evacuation or sheltering procedures to ensure safety, especially for outdoor venues.
- Event grounds can become waterlogged and muddy, creating injury risks for attendees and staff.
- Standing water increases mosquito populations, affecting outdoor comfort and increasing likelihood of disease transmission.
- Access to emergency and medical services may be compromised by flooded roads.[339]

Economy & Livelihoods (Rating: 3 – Moderate)

Rainy weather can translate to revenue losses for outdoor festivals and events, including losses for vendors, accommodations, and local restaurants.[340]Rating considerations include:

- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[341]
- There are also not many spaces with high visitor capacity on the Island that can serve as an alternative location for outside events, meaning outdoor events may need to be cancelled or postponed.[342]
    - Outdoor festivals and events could lose millions in revenue when forced to delay or cancel because of heavy precipitation and flooding. For example, a storm forced the cancellation of the Cavendish Beach Music Festival in 2014 and the event allowed refunds for the missed day, or discounts toward next year's event.[343] The Cavendish Beach Music Festival, with 60,000 attendees, generates approximately $12.3 million in direct economic impact annually, and leads to an increase of 40–45% in sales for local restaurants during the festival.[344]

Operations (Rating: 2 – Minor)

Tourism operations can bounce back quickly from a heavy precipitation event, generally within hours. If weather-dependent (e.g., outdoors), a festival or event may be delayed to allow a storm to pass through first, or even be completely cancelled, or rescheduled. Rating considerations include:

[339] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report.*
[340] CBC. "Storm Arthur Cancels Cavendish Beach Music Festival Saturday." *CBC*
[341] Fenech. "PEI Tourism Is Down? Blame the Weather."
[342] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[343] CBC. "Storm Arthur Cancels Cavendish Beach Music Festival Saturday." *CBC*
[344] Carter. "Cavendish Beach Music Festival 2025 Returns, Boosting P.E.I. Economy."

- Employees' ability to access tourism or recreation sites may also be hindered, potentially extending the length of destination closure periods.[345]
- Major festivals or events typically cannot be rescheduled due to artist availability and seasonal constraints.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's festivals and events. This risk is **medium** in mid-century (Table 26) and presents opportunities for the industry.

Table 26. Festivals and events risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 4: Festivals and events									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	1	2	1	2	2	1.6	**3.2**	**6.4**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 1 – Insignificant)

There is no expected impact on festival and event infrastructure from a longer warm season and a shorter cold season.

Environment (Rating: 2 – Minor)

Seasonal changes may result in fewer days with natural snow on the ground for winter festivals and events. Rating considerations include:

- Shorter cold seasons may reduce the reliability natural snow cover for winter festivals, such as the Jack Frost Children's Winterfest.
    - Rainfall that melts existing snow—along with a rising proportion of winter precipitation falling as rain rather than snow—can significantly shorten the winter recreation season, potentially impacting the aesthetic of these winter festivals.
- Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later,

[345] Government of PEI staff, *Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity*. 2021.

breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[346]

- Warmer temperatures may lead to an increase in mosquitoes and other pests.[347]

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for tourism on PEI for warm-weather festivals and events. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand the potential window for festivals and events, allowing businesses to generate revenue beyond the traditional summer window. [348] A longer warm season can also translate into a higher return on total investment in tourism assets.[349]
    - The fall season, in particular, is seen as an opportunity for more festivals and events that can help drive increased visitors.[350]
    - However, holding more festivals and events in the fall shoulder season when post-tropical storms typically occur does present potential risks (see post-tropical storm section).[351]
- Staffing is an anticipated challenge to a longer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[352]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Rating considerations include:

- Operators would need to make adjustments to successfully extend their season such as shifting the typical timing of annual festivals and events.[353] For example:
    - Street Feast, for example, was moved to the spring and was a success.[354]
    - An ATV festival was also successfully held last season instead of a more snow-focused event to avoid relying on the unpredictable snow.[355]

[346] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[347] PEI Tourism Site Visits – PEIMF. 2025.
[348] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[349] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[350] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[351] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[352] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[353] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[354] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[355] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Appendix C: Culinary and Indoor Tourism Risk and Opportunity Assessment Results

The following sections summarize the overall risk scores and the consequences, or impacts, of each climate hazard scenario on culinary and indoor tourism. The supporting evidence for the likelihood, consequence, and risk ratings was collected through literature, discussions with industry representatives at a November 2025 workshop and series of site visits, and professional judgment.

Focus Area 5: Culinary experiences

Known as Canada's "food island," PEI is home to a wide diversity of culinary experiences, including restaurants, bars, cafes, food trucks, breweries, wineries, cooking lessons, guided tasting experiences, and farmers markets. Indigenous culinary experiences include the Bannock and Clams in the Sand experience.[356] As of June 2025, there were 40,989 restaurants, cafes, and bars on the Island.[357] In 2024, the number of receipts from eating and drinking establishments on the Island increased 2% from 2023 and 39% from 2019.[358] In 2024, food services and accommodations were responsible for 6.6% of Island employment.[359] Farm-to-table restaurants that grow, prepare, and serve food locally are growing in popularity on the Island.[360] The "big five" foods that PEI produces are beef, potatoes, mussels, oysters, and lobsters.[361]



Figure 27. Local culinary experience with lobster (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's culinary experiences. This risk remains **high** in mid-century (Table 27).

[356] "Things to Do." *Experience Indigenous PEI*.
[357] Statistics Canada. "Monthly Survey of Food Services and Drinking Places." June 27, 2018. https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2110001901.
[358] Government of PEI. "Prince Edward Island Achieves a Record Year for Tourism." February 5, 2025. https://www.princeedwardisland.ca/en/news/prince-edward-island-achieves-a-record-year-for-tourism.
[359] PEI Statistics Bureau. *Summary of Selected Economic Indicators.* 2025. https://www.princeedwardisland.ca/sites/default/files/publications/pt_summary_sele_0.pdf.
[360] Robin Catalano. "How Canada's Prince Edward Island Became a Culinary Wonderland." National Geographic, October 15, 2025. https://www.nationalgeographic.com/travel/article/where-to-eat-in-prince-edward-island.
[361] Catalano. "How Canada's Prince Edward Island Became a Culinary Wonderland."

Table 27. Culinary experiences risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 5: Culinary experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	3	3	2	4	4	3.2	**12.8**	**12.8**

Likelihood

See Appendix A: Post-Tropical Storm for details.

Consequences

The overall **consequence rating is 3.0 out of 5.** Major impacts are expected to infrastructure, economy and livelihoods, and operations. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Post-tropical storms can cause damage to facilities, especially facilities located in the coastal zone, and cause widespread power outages. Repairs or improved resilience measures can also be costly for operators and could take weeks following severe events.[362] Rating considerations include:

- Wind, storm surge, and debris can cause structural damage to restaurants, farms, and other culinary infrastructure and equipment.
    - For example, Blue Mussel Café, a waterfront restaurant in North Rustico Harbour, experienced severe damage from Fiona to its insulation, plumbing, electrical equipment, and walk-in fridges. The restaurant was forced to close several weeks earlier than scheduled for the 2022 season and is now relocating to avoid future damages.[363,364]
    - High winds also caused a cattle barn to collapse during Fiona.[365]
- Power outages across the Island can affect culinary infrastructure (e.g., refrigerators, freezers) if there is not a back-up generator on site,[366] potentially causing food to spoil and impeding the ability to process electronic payments.[367]
    - Without adequate back-up generators, power outages have been devastating for restaurants and producers, leaving them without refrigeration or cooking capabilities.[368]

[362] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[363] MacIsaac, Alex, and Wayne Thibodeau. "How Tourism Operators in P.E.I. Are Learning to Prepare for, and Live with, Climate Change." *CBC News*, July 18, 2024. https://www.cbc.ca/news/canada/prince-edward-island/pei-tourism-climate-change-1.7268422.
[364] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[365] MacLeod, Nicola. "P.E.I. Farmers Building Back Better as They Move on from Fiona's Damage." CBC News, May 31, 2023. https://www.cbc.ca/news/canada/prince-edward-island/pei-changed-by-fiona-farms-1.6854123.
[366] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[367] Kimberly Zeuli, Austin Nijhuis, and Zachary Gerson-Nieder. "Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System." Toronto Public Health and the Initiative for Competitive Inner City. 2018. https://www.toronto.ca/legdocs/mmis/2018/hl/bgrd/backgroundfile-118076.pdf
[368] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

    - In the Mix Bakery in Mount Stewart is just one example of a restaurant that closed done for 1.5 weeks until power was restored following Fiona.[369]
    - A potato farmer on PEI reported disruptions to crop storage, due to Fiona's power outage and inability to refrigerate crops like potatoes.[370]
- Seafood harvesting can also be severely disrupted, potentially disrupting food supplies for local restaurants.
    - Intense wave action during Fiona damaged mussel aquaculture lines, buoys, and anchors (e.g., snapped lines, tangled gear) impacting yields.[371]
- Access routes may be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to restaurants and other culinary experiences.[372,373]

Environment (Rating: 3 – Moderate)

Post-tropical storms can cause significant localized impacts on the Island's agriculture and marine products. Rating considerations include:

- As a result of Post-Tropical Storm Dorian, farmers on PEI suffered significant damage and yield loses to corn, wheat, soybean, apple, and potato crops. Strong winds can flatten stems and stalks of crops, damage leaves, disrupt harvest lines creating difficulty at harvest time, as well as damage the crop itself.[374]
- In particular, the potato crop has suffered from storms in recent years.
    - Post-Tropical Storm Hannah resulted in a significant portion of the potato crop being severely damaged and in 2011 flooding washed out over 100 acres of potato fields.[375, 376] These storms can cause significant damage to crops during the growing season (June to late fall, depending on variety) and harvest.[377]
- Orchards are vulnerable to high winds. PEI lost more than 100,000 fruit trees during Fiona.[378]
- Nearshore clams are vulnerable to excessive substrate erosion or suffocation from sedimentation burial from storm waves and surge. Bed burials were reported after Fiona.[379]
- Lobsters are sensitive to salinity, which can be affected by storms, and may lead to lethal outcomes.

[369] CBC News. "Island businesses lament lost revenue from post-Fiona power outages." 2022. https://www.cbc.ca/news/canada/prince-edward-island/pei-business-power-out-1.6606246
[370] Doucette, Keith. "Atlantic Canada's Economy Likely to Take Big Hit from Post-Tropical Storm Fiona." The Canadian Press, September 26, 2022. https://globalnews.ca/news/9156653/atlantic-canada-economy-hurricane-fiona/.
[371] Government of PEI. "Climate Change Risk and Opportunity Assessment for the Seafood Industry."
[372] Government of PEI. *PEI Climate Change Risk Assessment*.
[373] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[374] Yarr, Kevin. "Dorian's Winds Batter P.E.I. Crops." *CBC News*, September 9, 2019. https://www.cbc.ca/news/canada/prince-edward-island/pei-dorian-farm-damage-1.5275750.
[375] "P.E.I. Potato Growers' Flood Aid Extended." *AgCanada*, May 7, 2009. https://www.agcanada.com/daily/p-e-i-potato-growers-flood-aid-extended.
[376] The Eastern Graphic. "Sudden Sunday Storm Erodes and Floods Some Potato Fields - Strawberries Spared." June 22, 2011. https://www.peicanada.com/eastern_graphic/news/sudden-sunday-storm-erodes-and-floods-some-potato-fields---strawberries-spared/article_784261da-8975-5975-8bb0-044060ad2398.html.
[377] British Columbia Agriculture & Food Climate Action Initiative. BC Agriculture Climate Change Adaptation Risk + Opportunity Assessment. 2012.
[378] MacLeod. "P.E.I. Farmers Building Back Better as They Move on from Fiona's Damage."
[379] Government of PEI. *PEI Climate Change Risk Assessment*.

- After a heavy storm, the salinity can fall significantly to levels below the lethal threshold for adult lobster. Lobster may also migrate to deeper water in response to the salinity level, potentially disrupting lobster harvesting.[380,381]

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts during and after post-tropical storms. Rating considerations include:

- Physical hazards such as fast-moving floodwaters, debris, and falling trees create injury potential for both tourists and workers.[382] For example:
  - Injuries are possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[383]
- Power outages may make it difficult for restaurants to adequately store food, causing food to spoil and potentially leading to public health risks associated with consuming spoiled food.
- Nutrient-rich or contaminated runoff (among other factors) can contribute to harmful algal blooms or contaminate water in shellfish harvesting areas, which could lead to human health concerns.[384]
- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[385]

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms typically cause severe disruptions to culinary experiences for the remainder of the season. Fortunately, Fiona occurred in late September only a couple weeks before many operators would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[386] Rating considerations include:

- Restaurants and other culinary businesses could experience costly damage to their buildings and may need to stay closed for extended periods of time, losing revenue and forcing workers to miss out on wages.
  - Blue Mussel Café sustained thousands of dollars in damages during Fiona and staff lost wages because the café had to close early for the season.[387]
  - Laurie's Country Kitchen closed for two weeks because the owner could not find enough workers available to maintain operations as usual.[388]

[380] Government of PEI. *PEI Climate Change Risk Assessment*.
[381] Jury et al. "Lobster Movements in Response to a Hurricane."
[382] Government of PEI. "Extreme Weather Safety." March 30, 2016. https://www.princeedwardisland.ca/en/information/justice-and-public-safety/extreme-weather-safety.
[383] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[384] Government of PEI. "Climate Change Risk and Opportunity Assessment for the Seafood Industry."
[385] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[386] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[387] MacIsaac and Thibodeau. "How Tourism Operators in P.E.I. Are Learning to Prepare for, and Live with, Climate Change."
[388] CBC News. "Island businesses lament lost revenue from post-Fiona power outages."

  - Operations for Cows Ice Cream were disrupted for a week.[389]
  - Visitors already on the Island during Fiona struggled to find open restaurants.[390]
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[391]

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for culinary experiences can take weeks. Most operators were back to normal operations by the next summer season.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's culinary experiences. This risk is **high** in mid-century (Table 28).

Table 28. Culinary experiences risk summary for heat waves

Heat Wave – Focus Area 5: Culinary experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	3	2	3	2	3	2.6	**7.8**	**13.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.6 out of 5.** Moderate impacts to infrastructure, health and safety, and operations are possible. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Heat waves may have moderate infrastructure impacts that affect PEI's culinary experiences. Rating considerations include:

- Heat waves can lead to power outages due to the additional strain on the grid to support cooling systems.[392]
  - If PEI faces a summer blackout, restaurants without back-up generators may experience disruptions to core operations, including storing and preparing food.
- Many restaurant kitchens on PEI lack of air conditioning, leading to high temperatures in the workspace.[393]

[389] MacIsaac and Thibodeau. "How Tourism Operators in P.E.I. Are Learning to Prepare for, and Live with, Climate Change."
[390] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[391] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[392] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[393] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- It can be especially challenging to add cooling systems to old buildings that were not designed for this infrastructure, as well as food trucks.[394]
- In some restaurants, even existing cooling infrastructure such as heat pumps have been unable to keep up with high temperatures during a heat wave.[395]

Environment (Rating: 2 – Minor)

The environmental consequences of heat waves can have localized, moderate impacts on locally grown and harvested food. Rating considerations include:

- Heat waves can negatively affect oyster and mussel growth due to increases in water temperatures and invasive species.[396]
- Farmers' production can also be affected by extreme heat.[397] For example, cattle are especially sensitive to dramatic shifts in temperature and may experience heat stress.[398]

Health & Safety (Rating: 3 – Moderate)

Some visitors and food industry staff may be at risk to potential heat-related health concerns, especially those working in hot kitchens without air conditioning. Rating considerations include:

- Workers may experience health concerns from hot temperatures in restaurant kitchens, dining rooms, and food trucks, which can result in closures for a few hours to mitigate staff safety during extreme heat event.[399]
  - In August 2025, at least two restaurants on PEI closed for an afternoon due to unsafe temperatures in their kitchens.[400] A combination of hot outdoor temperatures and heat generated by open flames and hot oil in restaurant kitchens can lead to unsafe conditions. Dreadnaught Eatery also reduced its menu to cold items to keep kitchen temperatures manageable for staff.[401]
- Outdoor workers, such as farmers, are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[402]
  - Farm managers have had to change shifts and working times in order to avoid heat stress on workers.[403] There is also an increased concern for animal welfare, such as cattle, that require management during an event.[404]
- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors at outdoor venues or venues without air conditioning.[405]
  - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.

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[394] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[395] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[396] Government of PEI. "Climate Change Risk and Opportunity Assessment for the Seafood Industry."
[397] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[398] Sukie Kevane. "Extreme Heat Puts Pressure on Cows and Farmers." Environmental Defense Fund, 2025. https://blogs.edf.org/growingreturns/2025/09/10/extreme-heat-puts-pressure-on-cows-and-farmers/.
[399] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[400] Delaney Kelly. "You think it's hot outside? It's even hotter in these P.E.I. kitchens." 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-restaurants-heatwave-kitchens-foodtrucks-fire-1.7608163.
[401] Kelly. "You think it's hot outside? It's even hotter in these P.E.I. kitchens."
[402] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[403] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[404] PEI Tourism Workshop - PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[405] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.

- At a global scale, rising temperatures due to climate change have been found to increase the risk of food-borne illness by improving the conditions for bacteria to grow and multiply, potentially contaminating food supplies.[406]

Economy & Livelihoods (Rating: 2 – Minor)

Heat waves can have minor economic impacts during the days-long event, but impacts are expected to be temporary. Rating considerations include:

- If a restaurant needs to temporarily close due to a power outage or unsafe working conditions, restaurants can lose revenue and workers can lose wages.[407]
    - In August 2025, at least two restaurants closed for an afternoon due to unsafe temperatures in their kitchens.[408]
- Restaurants could also lose revenue if worker productivity decreases due to hot temperatures in restaurant kitchens and dining rooms.
    - Decreases in worker productivity are likely as temperatures above 24-26°C are associated with reduced labour productivity and temperatures above 33-34°C reduce productivity (of moderate intensity work) by 50%.[409]
- Operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
    - Farmers may also need to increase water usage during heat waves.
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[410]
    - Currently, an older demographic visits the Island in the fall and heat waves would be a concern for these populations and potentially alter their visitation.[411]

Operations (Rating: 3 – Moderate)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and staff. Rating considerations include:

- Hot kitchens can force restaurants to restrict their menu or reduce their hours of operation.
- If periods of extreme heat are paired with drought, outdoor events like fireworks celebrations or open fire cooking may be cancelled to reduce fire-risk. The Government of PEI puts burning restrictions in place when fire risk is high from water-stressed vegetation.[412] For example, the Inn at Bay Fortune's Fireworks Feast may need to be postponed or altered if burning restrictions are in place.[413]

[406] Jain, Sanket. "Climate Change Is Spoiling Food Faster, Making Hundreds of Millions of People Sick around the World." *Yale Climate Connections*, November 19, 2024. https://yaleclimateconnections.org/2024/11/climate-change-is-spoiling-food-faster-making-hundreds-of-millions-of-people-sick-around-the-world/.
[407] Zeuli et al. "Resilient Food Systems, Resilient Cities: A High-Level Vulnerability Assessment of Toronto's Food System."
[408] Kelly. "You think it's hot outside? It's even hotter in these P.E.I. kitchens."
409 Geneva. Working on a warmer planet: The impact of heat stress on labour productivity and decent work. 2019.
[410] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[411] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[412] Government of PEI. "Burning Restrictions." March 13, 2024. https://www.princeedwardisland.ca/en/feature/burning-restrictions.
[413] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's culinary experiences. This risk remains **medium** in mid-century (Table 29).

Table 29. Culinary experiences risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 5: Culinary experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	2	2	2	2	2.0	**6.0**	**8.0**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 2.0 out of 5.** Minor impacts are expected across all consequence categories. See below for rating details.

Infrastructure (Rating: 2 – Minor)

For facilities in flood-prone areas, heavy precipitation and flooding may cause temporary infrastructure disruptions. Rating considerations include:

- Road closures due to high water or washouts may limit access to restaurants and other facilities or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[414,415]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. Hide tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[416,417]
- If a site is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the foundation and underground systems from water seepage, damage to the first floor, and damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[418, 419]
    - Various restaurants in Charlottetown have flooded in the past, such as Merchant Man, the Delta restaurants, and Lobster on the Wharf.[420] Some locations, such as The Delta, have invested in costly infrastructure, such as sump pumps and portable gas, to better prepare for these types of events.[421]

[414] Government of PEI. *PEI Climate Change Risk Assessment*.
[415] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[416] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[417] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[418] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[419] PEI Tourism Workshop - PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[420] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[421] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Environment (Rating: 2 – Minor)

PEI's natural environment is generally resilient to heavy precipitation and flooding, though restaurants serving local food could face supply chain disruptions from a major event. Rating considerations include:

- Heavy precipitation can disrupt fishing and seafood harvesting processes.
  - Freshwater fish kills are possible from pesticide runoff and other contaminants.[422]
  - From 2015–2020, rainfall events on PEI caused at least five shellfish harvesting closures due to potential contamination.[423]
  - Oysters and mussel fisheries may be impacted by inland flooding as storms can damage culture equipment and cause erosion and heavy silt formation in rivers which can smother oysters and mussels living on the river bottom.[424]
- The potato crop on PEI has suffered from severe storm events in the recent years.
  - In 2011, flooding washed out over 100 acres of potato fields.[425,426]
  - The timing of storms is also important. Damage in early in agricultural cycles may impact seeding and planting (occurring in April–May), which may cause ripple effects later in the season. Storms during the growing season (June to late fall, depending on variety) can damage the crop near harvest time.[427]
- Higher moisture in the air can promote mould and fungus growth that damage grape plants for wineries and vineyards.[428]

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts, which are expected to be temporary and with low potential for loss of life. Rating considerations include:

- Nutrient-rich or contaminated runoff (among other factors) from heavy precipitation can contribute to harmful algal blooms or contaminate water in shellfish harvesting areas.[429]
- In September 2024, 550 people were infected by norovirus at the International Seafood Festival on PEI, resulting in at least four emergency department visits and one hospitalization.[430] Other outbreaks of norovirus due to consuming Canadian oysters have been linked to sewage contamination.[431]

Economy & Livelihoods (Rating: 2 – Minor)

Heavy precipitation and flooding are not expected to have a significant impact on culinary experiences on the Island. Rating considerations include:

- Visitors may choose to pivot to indoor activities on a rainy day (e.g., cooking class), but are generally still going to seek food experiences on their visit.[432]

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[422] National Post. "P.E.I. Farmer Fined $72,000 over Pesticide."
[423] PEI Department of Fisheries and Oceans. CSSP Conditional Area Annual Reports. 2015-2020.
[424] Government of Canada. Climate Change in Prince Edward Island.
[425] "P.E.I. Potato Growers' Flood Aid Extended." *AgCanada*.
[426] The Eastern Graphic. "Sudden Sunday Storm Erodes and Floods Some Potato Fields - Strawberries Spared."
[427] British Columbia Agriculture & Food Climate Action Initiative. BC Agriculture Climate Change Adaptation Risk + Opportunity Assessment. 2012.
[428] Baldwin. "Prince Edward County Wineries Grapple with 'Severe Drought."
[429] Government of PEI. "Climate Change Risk and Opportunity Assessment for the Seafood Industry."
[430] MacIsaac, Alex. "550 People Report Illness after P.E.I. Shellfish Festival, Health Officials Say." *CBC News*, September 27, 2024. https://www.cbc.ca/news/canada/prince-edward-island/pei-shellfish-festival-illness-outbreak-update-1.7336061.
[431] Agatha Khishchenko, Andy Lehren, Dori Seeman, Robert Cribb and Molly MacNaughton. "Sewage Taints Canadian Oysters. Then Americans Eat Them." Inside Climate News, 2025. https://insideclimatenews.org/news/24082025/canada-oysters-tainted-by-sewage-supplied-to-united-states-norovirus/.
[432] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- A 2024 study of Canadian provinces found that service sector workers are likely to experience a decrease in wages in the immediate aftermath of a flooding event.[433]

Operations (Rating: 2 – Minor)

Operators can bounce back quickly from a heavy precipitation event, generally within hours. For flood-prone locations, recovery may take days.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's culinary experiences. This risk is **medium** in mid-century (Table 30) and presents opportunities for the industry.

Table 30. Culinary experiences risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 5: Culinary experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	1	3	1	2	2	1.8	**3.6**	**7.2**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.8 out of 5.** Most impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. Environmental impacts could be moderate. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 1 – Insignificant)

A longer warm season and a shorter cold season is not expected to impact the infrastructure that supports PEI's culinary experiences.

Environment (Rating: 3 – Moderate)

Seasonal changes may have long-term, moderate environmental impacts for culinary experiences. Rating considerations include:

- Changing temperatures and shifting seasons can impact cattle production:
  - When temperatures on PEI fluctuated between 7°C and -16°C in just one day in January 2017, farmers reported difficulties maintaining the health of their cattle.[434]

[433] Thibaut Duprey, Soojin Jo, Genevieve Vallee. "Let's Get Physical: Impacts of Climate Change Physical Risks on Provincial Employment." Bank of Canada. 2024. https://www.bankofcanada.ca/wp-content/uploads/2024/09/swp2024-32.pdf.
[434] Nicole Williams. "Farmers fight to keep cows healthy in extreme temperature swings." CBC News, 2017. https://www.cbc.ca/news/canada/prince-edward-island/farmers-fight-to-keep-cows-healthy-in-extreme-temperature-swings-1.3934731.

    - Warmer winter temperatures can promote the circulation of viruses and bacteria among cattle.[435]
- Changing temperatures and shifting seasons can impact seafood harvest:
    - Earlier melting of sea ice can lead to earlier spring blooms of phytoplankton, causing a mismatch for zooplankton that feed on phytoplankton, resulting in ripple effects up the food chain. It can affect lobster and oysters that feed on species that rely on plankton.[436,437]
    - The lobster season has started earlier in recent years as the fecundity of the species changes.[438]
    - There is also a growing distribution of invasive species in the oceans that could impact or displace existing species, such as oysters.[439,440]
- Changing seasons presents both challenges and benefits for agriculture:
    - Farmers have been able to grow crops longer and plant earlier.[441]
    - As the spring has become more volatile some farmers have invested in new infrastructure, such as greenhouses, to protect crops.[442]
    - Warmer temperatures support the prevalence of invasive species, mosquitos, and pests.[443]
        - There has been an increase in invasive species, such as leek moth, from the south.[444]
        - Milder and shorter winters also increase the survival rate of pests.[445]
- For any facilities or agricultural land along the coast, winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later, breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[446]

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

There are both concerns and opportunities resulting from changing seasons for PEI's culinary experiences. Rating considerations include:

- For seasonal culinary experiences (e.g., outdoor restaurant decks or food trucks with only outdoor seating) a longer warm season could extend the period of operations into the spring and fall shoulder seasons.[447]

[435] Nicole Williams. "Farmers fight to keep cows healthy in extreme temperature swings." CBC News, 2017. https://www.cbc.ca/news/canada/prince-edward-island/farmers-fight-to-keep-cows-healthy-in-extreme-temperature-swings-1.3934731.
[436] Arnold and Fenech. *PEI Climate Change Adaptation Plan: Recommendations Report*.
[437] Howarth et al. "Assessing Climate Change Vulnerability of Seafood Industry-Dependent Communities in Nova Scotia."
[438] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[439] https://www.princeedwardisland.ca/en/information/fisheries-tourism-sport-and-culture/aquatic-invasive-species
[440] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[441] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[442] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[443] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[444] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[445] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[446] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[447] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

    - However, expanding operations into the fall when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[448]
- Staffing is an anticipated challenge to a longer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[449]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into the spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[450]

[448] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[449] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[450] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Focus Area 6: Other indoor tourism experiences

Other indoor tourism experiences on the Island include museums, non-food retail businesses, and indoor arts experiences. The Island is home to many museums and heritage sites, including the Green Gables Heritage Place, which is one of the most popular tourist sites. In 2025, Beaconsfield Historic House was PEI's most visited provincial indoor heritage site, welcoming a total of 60,498 visitors that year.[451] Indigenous indoor tourism experiences includes visiting the Lennox Island Mi'kmaq Cultural Centre and participating in experiences such as the Quill Work on Birch Bark and the Beat of the Drum.[452] In 2024, museums and heritage sites on the Island saw a record number of visitors, up 5% from the previous record in 2019.[453] In 2024, the GDP of PEI's retail industry was $50.1 million.[454] Meetings at the Convention Centre and across the Island are important as well, bringing in $40M in a year.[455]



Figure 28. Lucy Maud Montgomery Birthplace (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's other indoor tourism experiences. This risk remains **high** in mid-century (Table 31).

Table 31. Other indoor experiences risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 6: Other indoor experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	4	1	1	4	4	2.8	**11.2**	**11.2**

Likelihood

See Appendix A: Post-Tropical Storm for details.

[451] Government of PEI. *PEI Tourism Indicators December 2019*. n.d. Accessed October 15, 2025. https://www.princeedwardisland.ca/sites/default/files/publications/201912tourismindicatorsrptfin.pdf.
[452] "Things to Do." *Experience Indigenous PEI*.
[453] Government of PEI. "Prince Edward Island Achieves a Record Year for Tourism."
[454] Government of PEI. "Gross Domestic Product (GDP) by Industry." May 1, 2025. https://www.princeedwardisland.ca/en/information/finance/gross-domestic-product-gdp-by-industry.
[455] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.

Consequences

The overall **consequence rating is 2.8 out of 5.** Major impacts are expected to infrastructure, economy and livelihoods, and operations. See below for rating details.

Infrastructure (Rating: 4 – Major)

Post-tropical storms can cause widespread disruption to infrastructure services. Repairs or improved resilience measures (e.g., installing back-up generators) can also be costly for operators and could take weeks to months following severe events.[456] Rating considerations include:

- Post-tropical storms can cause structural damage to historic buildings, heritage sites, museums, and other indoor tourism attractions.
    - Cineplex theatres in Charlottetown and Summerside sustained significant structural damage from Fiona. The Charlottetown theatre had damage to the roof, floors, and walls, and lost five heating and ventilation units.[457]
    - The steeple of the Keir Memorial Museum fell during Fiona.[458]
    - The Government House,[459] barns on site of the Green Park Shipbuilding Museum, and roofs at the Orwell Corner Historic Village also sustained structural damage from Fiona.[460]
    - At historical buildings, including Beaconsfield Historic House and the Yeo House, humidity and the shaking of the buildings from Fiona caused plaster to fall.[461] There was also direct physical damage to the house from downed trees and debris.[462]
    - Loss of trees can also change the amount of sunlight historic buildings and artifacts receive, requiring a shift in maintenance measures for protecting the structures and artifacts from degradation.
- Flooding and erosion risk are a concern for three PEI Museum and Heritage Foundation sites: the Eptek Arts and Cultural Centre, the Cannery at the Basin Head Fisheries Museum, and the Beaconsfield Historic House.[463]
- Coastal erosion has also led to an increase in new fossils being found across the Island. However, this increases demand for limited space at museums and collection facilities.[464]
- Access routes may be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to indoor tourism sites.[465,466]
    - Lennox Island is particularly vulnerable as it has just one access route.[467]

[456] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[457] Marhnouj, Safiyah. "Summerside Cineplex Reopens, but Charlottetown Location Won't Be Ready until 2023." *CBC News*, November 14, 2022. https://www.cbc.ca/news/canada/prince-edward-island/cineplex-theatre-charlottetown-summerside-opening-1.6647846.
[458] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[459] PEI Museum and Heritage Foundation. *Annual Report 2022-2023*.
[460] PEI Tourism Site Visits – PEIMF. 2025.
[461] PEI Tourism Site Visits – PEIMF. 2025.
[462] PEI Tourism Site Visits – PEIMF. 2025.
[463] PEI Tourism Site Visits – PEIMF. 2025.
[464] PEI Tourism Site Visits – PEIMF. 2025.
[465] Government of PEI. *PEI Climate Change Risk Assessment*.
[466] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[467] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Power outages across the Island can also affect indoor sites (e.g., museums) if there is not a back-up generator on site.[468]
    - Loss of power in the past caused cold storage of furs to defrost at the PEI Museum and Heritage's storage facility.[469]

Environment (Rating: 1 – Insignificant)

Environmental impacts of post-tropical storms may have impacts on the properties of indoor tourism sites but largely will not affect indoor tourism. For example, strong winds during Fiona blew down trees at the Beaconsfield Historic House and the Orwell Corner Historic Village.[470]

Health & Safety (Rating: 1 – Insignificant)

Indoor tourism sites are assumed to be closed during a post-tropical storm and thus health and safety impacts are not expected. Tourism operators could get injured during post-storm cleanup, such as from clearing debris and using heavy equipment.[471]

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms typically cause severe disruptions to indoor tourism for the remainder of the peak season. Fortunately, Fiona occurred in late September only a couple weeks before many operators would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[472] Rating considerations include:

- Businesses may have to close due to post-tropical storms, causing employees to lose wages and for businesses to lose revenue.
    - Workers at the Cineplex in Charlottetown were out of work for five months as the location underwent repairs following Fiona.[473]
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[474]
    - PEI Museum and Heritage Foundation—which operates three museums, two historic houses, one culture centre, and one historic village—reported a decrease in visitors and revenue in 2022 due to Fiona.[475]
    - The Carriage House, a historic event venue operated by the PEI Museum and Heritage Foundation, experienced 37 reservation cancellations due to Fiona.[476]
- Tourism operators may face significant repair costs. Fiona cleanup costs totalled approximately $5.3 million for Provincial parks, golf courses and other Province-owned properties.[477]

[468] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[469] PEI Tourism Site Visits – PEIMF. 2025.
[470] PEI Tourism Site Visits – PEIMF. 2025.
[471] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[472] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[473] Marhnouj. "Summerside Cineplex Reopens, but Charlottetown Location Won't Be Ready until 2023."
[474] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[475] PEI Museum and Heritage Foundation. *Annual Report 2022-2023*. 2023. https://www.peimuseum.ca/sites/www.peimuseum.ca/files/2022-2023%20PEI%20Museum%20%26%20Heritage%20Foundation%20Annual%20Report%20-%20digital%20version%20(1)_0.pdf.
[476] PEI Museum and Heritage Foundation. *Annual Report 2022-2023*.
[477] PEI Department of Finance, *2022: Fiscal and Economic Update*.

- Further, it is both costly and difficult to find appropriate contractors and vendors to do repairs and preventive maintenance, while preserving historic and heritage sites.[478,479]

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for indoor tourism can take weeks. However, hard hit locations may take until the following season to return to normal operations.

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's other indoor tourism experiences. This risk is **high** in mid-century (Table 32).

Table 32. Other indoor experiences risk summary for heat waves

Heat Wave – Focus Area 6: Other indoor experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	3	1	3	2	2	2.2	**6.6**	**11.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Moderate impacts to infrastructure and health and safety are possible. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Heat waves can have moderate infrastructure impacts on indoor tourism. Rating considerations include:

- Heat waves can lead to power outages due to the additional strain on the grid to support cooling systems.[480]
  - If PEI faces a summer blackout, indoor tourism sites without back-up generators may not be able to provide adequate lighting or air conditioning for visitors or may not be able to keep artifacts at the necessary temperature for preservation purposes in the case of museums and heritage sites.
- Old museums and heritage sites, such as Beaconsfield Historic House, typically do not have air conditioning, making them unappealing to visitors during heat waves.[481]
- Heat and humidity can physically damage heritage sites.

[478] Contractors and vendors must follow the Standards and Guidelines for the Conservation of Historic Places in Canada.
[479] PEI Tourism Site Visits – PEIMF. 2025.
[480] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[481] PEI Tourism Site Visits – PEIMF - 2025.

- For example, the Beaconsfield Historic House saw an increase in basement humidity to about 80 percent during an event.[482] Plaster repairs also took double the amount of normal time to dry due to high temperatures, causing the site to be closed during the busiest season.[483] Humidity has also caused exterior wood doors to swell and stick, leading to reduced accessibility to the house on a few occasions.[484]

Environment (Rating: 1 – Insignificant)

Environmental impacts will not affect indoor tourism experiences.

Health & Safety (Rating: 3 – Moderate)

Some visitors and staff may be at risk to potential heat-related health concerns if indoor tourism attractions are not air-conditioned or well-ventilated. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[485]
  - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to cool down.[486] This is particularly true at historic buildings that lack air conditioning.
  - At the Green Gables Heritage Place, extreme temperatures also tend to knock out the air conditioning in the Green Gables House. Although staff deploy fans if the air conditioning fails, the temperature in the house can become uncomfortable for visitors and staff.
  - The Basin Head Fisheries Museum and giftshop can get very hot in the summer, becoming uncomfortable and even dangerous for staff and visitors.[487]

Economy & Livelihoods (Rating: 2 – Minor)

Heat may drive more visitors to indoor activities, though visitors may avoid some indoor tourism experiences if cooling is not sufficient during hot weather, potentially affecting revenue. Rating considerations include:

- The Green Gables Heritage Place, which does have air conditioning in some of its spaces, has seen a noticeable increase in visitors on very hot days.[488]
- Operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
  - Because some historical artifacts and artworks need to be kept at certain temperatures for preservation purposes, museums may face increased energy costs during heat waves.[489]

[482] PEI Tourism Site Visits – PEIMF. 2025.
[483] PEI Tourism Site Visits – PEIMF. 2025.
[484] PEI Tourism Site Visits – PEIMF. 2025.
[485] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[486] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[487] PEI Tourism Site Visits – PEIMF. 2025.
[488] PEI Tourism Site Visits – Green Gables Heritage Place. 2025.
[489] Keenan, Annabel. "Why 'Devastating' Climate Control Rules for Museum Collections Need a Rethink." The Art Newspaper, July 11, 2025. https://www.theartnewspaper.com/2025/07/11/why-devastating-climate-control-rules-for-museum-collections-need-a-rethink.

- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks.[490]
    - Currently, an older demographic visits the Island in the fall and heat waves would be a concern for these populations and potentially alter their visitation.[491]

Operations (Rating: 2 – Minor)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for visitors and potential power outage impacts. Some indoor tourism attractions, particularly those with cooling infrastructure, may see an increase as visitors escape the heat.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's other indoor tourism experiences. This risk remains **medium** in mid-century (Table 33).

Table 33. Other indoor experiences risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 6: Other indoor experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	1	2	2	2	1.8	**5.4**	**7.2**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 1.8 out of 5.** All impacts are expected to be minor or insignificant. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Precipitation-driven flooding could cause minor damage to indoor tourism infrastructure, especially in low-lying areas. Rating considerations include:

- If a tourism site is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the foundation and underground systems from water seepage, damage to the first floor, and damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[492, 493]
    - Some museums on the Island have storage areas or exhibits in the basements, which would be especially at risk to flooding events.[494] The Beaconsfield Historic House, for example, uses the basement for storage and has dealt with water seepage and high humidity.[495]

[490] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[491] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[492] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[493] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[494] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[495] PEI Tourism Site Visits – PEIMF. 2025.

- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[496,497]
- Road closures due to washouts may limit access to tourist sites or disrupt tourist itineraries, but disruptions are expected to be minimal and short-term.[498,499]

Environment (Rating: 1 – Insignificant)

Environmental impacts will not affect indoor tourism experiences.

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts. Rating considerations include:

- Increased precipitation and more moisture in the air can promote indoor mould growth, which can negatively affect human health.[500]
- Access to emergency and medical services may be compromised by flooded roads.[501]

Economy and Livelihoods (Rating: 2 – Minor)

The Island has seen visitors pivot to indoor activities on rainy days, potentially increasing revenue for museums and other indoor tourism.[502]

- For example, the Green Gables Heritage Place has seen a noticeable increase in visitors on rainy days.[503]
- However, indoor tourism sites may not all have the capacity to handle a high number of visitors in the peak summer months during rain events.[504]

Operations (Rating: 2 – Minor)

In severe cases, museums or businesses in low-lying areas may need to temporarily close during heavy precipitation. However, many indoor sites would likely see an increase in visitation.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's other indoor tourism experiences. This risk is **medium** in mid-century (Table 34) and presents opportunities for the industry.

[496] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[497] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[498] Government of PEI. *PEI Climate Change Risk Assessment*.
[499] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[500] US EPA. "Indoor Air Quality and Changing Outdoor Environments." Accessed October 15, 2025. https://www.epa.gov/indoor-air-quality-iaq/indoor-air-quality-and-changing-outdoor-environments.
[501] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report*.
[502] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[503] PEI Tourism Site Visits – Green Gables Heritage Place. 2025.
[504] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Table 34. Other indoor tourism experiences risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 6: Other indoor tourism experiences									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	3	2	1	2	2	2.0	**4.0**	**8.0**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 2.0 out of 5.** Most impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. Infrastructure impacts could be moderate. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure. Environmental impacts from a longer warm season can be disruptive to infrastructure assets. Rating considerations include:

- Invasive species and pests have become an increasing concern at heritage sites.
  - Pests have destroyed buildings and are burrowing into windowpanes, especially at the Orwell Corner Historic Village, and pest maintenance can be expensive.[505]
  - Insects have been a growing challenge at PEI's Collection Facility, damaging assets including furs and taxidermy.[506]
- High humidity on a hot summer day caused a mould boom in the Yeo House overnight in 2023.[507] The house had to be shut down while collection division staff in personal protective equipment cleaned the artifacts and house.

Environment (Rating: 2 – Minor)

Seasonal changes may have long-term environmental impacts for indoor tourism, especially for museums and heritage sites. Rating considerations include:

- Warmer temperatures may lead to an increase in mosquitoes and other pests.[508]
- Invasive species, including Asian lady beetles and wood-boring beetles, have become an increasing concern at heritage sites, as they have moved north due to warming temperatures and higher numbers are surviving the milder winters.
  - Invasive pests have started damaging trees at historic sites, including spruce beetles at the Orwell Corner Historic Village.[509]

[505] PEI Tourism Site Visits – PEIMF. 2025.
[506] PEI Tourism Site Visits – PEIMF. 2025.
[507] PEI Tourism Site Visits – PEIMF. 2025.
[508] PEI Tourism Site Visits – PEIMF. 2025.
[509] PEI Tourism Site Visits – PEIMF. 2025.

- Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later, breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[510]

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season are not expected to have any significant health or safety impacts. Some temporary concerns include:

- Increased precipitation and more moisture in the air can promote indoor mould growth, which can negatively affect human health.[511]
    - Mould appeared in the D.E. Clarke General Store basement at the Orwell Corner Historic Village in 2023, resulting in an air quality issue. The house was closed until the mould was addressed.[512]

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents some economic opportunities for indoor tourism. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand the indoor tourism season, allowing businesses to generate revenue beyond the traditional summer window.[513] A longer warm season can also translate into a higher return on total investment in tourism assets.[514]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[515]
- There may be some negative impacts for indoor-outdoor tourism sites like the Orwell Corner Historic Village that also have winter programming. Some programming has had to be cancelled (or alternate programs planned) when there is inadequate snow or a site becomes too muddy.[516]
- Staffing is also an anticipated challenge to a longer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[517]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[518] Winter programming and operations may be negatively disrupted by the changing seasons.

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[510] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[511] US EPA. "Indoor Air Quality and Changing Outdoor Environments." Accessed October 15, 2025. https://www.epa.gov/indoor-air-quality-iaq/indoor-air-quality-and-changing-outdoor-environments.
[512] PEI Tourism Site Visits – PEIMF. 2025.
[513] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[514] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[515] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[516] PEI Tourism Site Visits – PEIMF. 2025.
[517] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[518] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Appendix D: Accommodations Risk and Opportunity Assessment Results

The following sections summarize the overall risk scores and the consequences, or impacts, of each climate hazard scenario on accommodations, which includes fixed-roof and campground accommodations. The supporting evidence for the likelihood, consequence, and risk ratings was collected through literature, discussions with industry representatives at a November 2025 workshop and series of site visits, and professional judgment.

Focus Area 7: Fixed-roof accommodations

Fixed-roof overnight accommodations on PEI include hotels, motels, resorts, short-term rentals, cottages, and cabins. In 2023, 80% of visitors to PEI stayed at least one night. 32% stayed in hotels, motels, or resorts, 20% stayed with friends or relatives, 18% stayed in a cottage or cabin, 6% stayed in a short-term rental, 6% stayed at two or more types of accommodations, 3% stayed at an inn, and 3% stayed in an owned property.[519] The number of overnight stays on PEI increased by 3% between 2023 and 2024.[520] In July 2025, there were 158,219 overnight stays in fixed-roof accommodations on the Island.[521] Accommodations and food services were responsible for 6.6% of Island employment in 2024.[522]



Figure 29. Rodd Crowbush Golf & Beach Resort (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's fixed-roof accommodations. This risk remains **high** in mid-century (Table 35).

Table 35. Fixed-roof accommodations risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 7: Fixed-roof accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	4	1	4	3	4	3.2	**12.8**	**12.8**

[519] Prince Edward Island Department of Fisheries, Tourism, Sport, and Culture. "A Profile of Pleasure Camper Parties by PEI Region Stayed." 2024. https://www.tourismpei.com/sites/default/files/2025-02/ES2023-49_PEI%20Campers%20Profile%20by%20Region%20Stayed_Final_2024.11.28.pdf
[520] Government of PEI. "Prince Edward Island Achieves a Record Year for Tourism."
[521] Government of PEI. "Accommodations Occupancy Dashboards." 2025. https://www.tourismpei.com/industry/research/tourism-indicator-dashboards/accommodation-occupancy.
[522] PEI Statistics Bureau. *Summary of Selected Economic Indicators*.

Likelihood

See Appendix A: Post-Tropical Storm for details.

Consequences

The overall **consequence rating is 3.2 out of 5.** Major impacts are expected to infrastructure, health and safety, and operations. See below for rating details.

Infrastructure (Rating: 4 – Major)

Post-tropical storms can cause significant and widespread disruption to infrastructure services. Repairs or improved resilience measures (e.g., installing back-up generators) can also be costly for operators and could take weeks following severe events.[523] Rating considerations include:

- Post-tropical storms can damage the structural integrity of fixed-roof accommodations and cause damage to roofs, windows, and other key infrastructure.
    - Hotels in Charlottetown experienced substantial structural damage to their roofs following Fiona.[524]
    - Smaller structures, such as cottages near the coastline are particularly vulnerable to erosion, storm surge, and wind.[525]
- Power outages across the Island can also affect accommodations infrastructure if there is not a back-up generator on site.[526]
    - Many accommodations were without power during Fiona and those that did have power served as emergency shelters and operation centers.[527]
- Access routes may be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to accommodations.[528,529]

Environment (Rating: 1 – Insignificant)

The environmental impacts of post-tropical storms are unlikely to impact fixed-roof accommodations.

Health & Safety (Rating: 4 – Major)

Many tourists and workers may be at risk to potential health or safety concerns during and after post-tropical storms. Rating considerations include:

- If visitors and workers are not evacuated before a post-tropical storm, they may face physical hazards such as fast-moving floodwaters, debris, and falling trees that create injury potential.[530] Injuries are possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[531]

[523] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[524] David Israelson. "Repairing and rebuilding PEI's unprecedented commercial damage post-tropical storm Fiona." *The Globe and Mail*, 2022. https://www.theglobeandmail.com/business/industry-news/property-report/article-repairing-and-rebuilding-peis-unprecedented-commercial-damage-post/.
[525] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[526] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[527] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[528] Government of PEI. *PEI Climate Change Risk Assessment*.
[529] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[530] Government of PEI. "Extreme Weather Safety." March 30, 2016. https://www.princeedwardisland.ca/en/information/justice-and-public-safety/extreme-weather-safety.
[531] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[532]

Economy & Livelihoods (Rating: 3 – Moderate)

Post-tropical storms typically cause moderate disruptions to fixed-roof accommodations for the remainder of the peak season. Fortunately, Fiona occurred in late September only a couple weeks before many smaller operators would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[533] Rating considerations include:

- Businesses may lose revenue and workers may lose income if hotels are forced to close temporarily due to post-tropical storms.
    - Come from Away B&B and Cottages on PEI paused operations due to power outages following Fiona.[534]
- Tourism operators can face significant repair and investment costs during recovery. For example, in addition to necessary repairs, operators may decide to invest in backup power generators to be more resilient to the next storm.
- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[535]
    - Many accommodations experienced reservation cancellations in the weeks and months following Fiona. For example, the Harbour House in Charlottetown experienced $30,000 in lost revenue due to reservation cancellations in the 11 days following Fiona.[536]

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for fixed-roof accommodations can vary. Following Fiona, most activities were back to normal operations by the next summer season. Rating considerations include:

- Larger hotels may remain open but experience a shift in operations immediately following post-tropical storms.
    - For example, the Delta Hotel in Charlottetown reached about 80% capacity following Fiona from Islanders who needed a place to stay during recovery as well as from emergency response and repair teams who needed full service facilities to operate. [537,538]

[532] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[533] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[534] Charlotte MacAulay. "Tourism businesses optimistic in the aftermath of Fiona," The Eastern Graphic. 2022. https://www.peicanada.com/eastern_graphic/tourism-businesses-optimistic-in-the-aftermath-of-fiona/article_eae65246-547a-11ed-8e96-031fb07ee463.html.
[535] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[536] CBC News. "Island businesses lament lost revenue from post-Fiona power outages."
[537] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[538] Pete Evans, "Fiona's insurance bill could hit $700M — but most damage won't be covered." CBC News, 2022. https://www.cbc.ca/news/business/hurricane-fiona-insurance-1.6597612.

- Smaller fixed-roof accommodations may not have the capacity or backup power supply to reopen quickly.
- Given the potential extent of damage across the Island, employees' ability to access hotels may be hindered, affecting operations and the ability of accommodations to remain open.[539]

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's fixed-roof accommodations. This risk is **high** in mid-century (Table 36).

Table 36. Fixed-roof accommodations risk summary for heat waves

Heat Wave – Focus Area 7: Fixed-roof accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	3	1	3	2	2	2.2	**6.6**	**11.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Moderate impacts to infrastructure and health and safety are possible. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Heat waves can moderately affect fixed-roof accommodations. Rating considerations include:

- Heat waves can lead to power outages due to the additional strain on the grid to support cooling systems.[540]
    - If PEI faces a summer blackout, hotels without back-up generators may experience disruptions to operations, with electronic payment systems, internet, refrigerators, air conditioning, stoves, and other systems unable to function.

Environment (Rating: 1 – Insignificant)

Environmental impacts will not impact fixed-roof accommodations.

Health & Safety (Rating: 3 – Moderate)

Some visitors and staff may be at risk to potential heat-related health concerns, particularly if fixed-roof accommodations lack air conditioning. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[541]

[539] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[540] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[541] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.

  - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
- Outdoor workers, such as those who work at on the grounds of accommodations, are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[542]
- PEI's limited cooling infrastructure means there are not many spaces for visitors and workers to cool down.[543, 544]
  - Visitors staying in hotels, inns, or other indoor accommodations without air conditioning may experience heat stress.
  - Some tourism operators have heard visitors complain about the lack of air conditioning in cottages on the Island.
  - Seasonal tourism staff have also struggled to finding housing with adequate cooling infrastructure.

Economy & Livelihoods (Rating: 2 – Minor)

Extreme heat may drive more visitors to fixed-roof accommodations with air conditioning or other cooling systems, potentially affecting revenue. Rating considerations include:

- Operators may face higher energy costs from fans or air conditioning units or may choose to invest in infrastructure upgrades for cooling.
- Heat waves may alter when visitors choose to visit the Island, especially for populations that are more vulnerable to heat-related health risks. Currently, an older demographic visits the Island in the fall and heat waves would be a concern for these populations and potentially alter their visitation.[545]

Operations (Rating: 2 – Minor)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and outdoor workers and potential power outage impacts.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **low** risk to PEI's fixed-roof accommodations. This risk is **medium** in mid-century (Table 37).

Table 37. Fixed-roof accommodations risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 7: Fixed-roof accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	2	1	1	2	2	1.6	**4.8**	**6.4**

[542] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[543] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[544] Kenny, Glen P., Emily J. Tetzlaff, W. Shane Journeay, Sarah B. Henderson, and Fergus K. O'Connor. "Indoor Overheating: A Review of Vulnerabilities, Causes, and Strategies to Prevent Adverse Human Health Outcomes during Extreme Heat Events." *Temperature: Multidisciplinary Biomedical Journal* 11, no. 3 (n.d.): 203–46. https://doi.org/10.1080/23328940.2024.2361223.
[545] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant. See below for rating details.

Infrastructure (Rating: 2 – Minor)

Fixed-roof accommodations may experience minor infrastructure damage from heavy precipitation and flooding. Rating considerations include:

- If an accommodation is located in a low-lying or flood-prone area, floodwaters may cause physical damage to the foundation and underground systems from water seepage, damage to the first floor, and damage or outages to any critical infrastructure that is not elevated (e.g., electrical system).[546, 547]
    - The Delta Hotel, at the bottom of Queen Street in Charlottetown, sees regular flooding, particularly into its parking garage, and the hotel has implemented flood barriers for the garage.[548,549]
- Road closures due to high water or washouts may limit access to accommodations but disruptions are expected to be minimal and short-term.[550,551]
- Stormwater drainage infrastructure can reach capacity during heavy rain, especially when heavy rain coincides with high tide. High tide covers the drainage outlets in Charlottetown, causing delayed drainage and combined sewer overflows.[552,553]

Environment (Rating: 1 – Insignificant)

Environmental impacts are not expected to affect fixed-roof accommodations.

Health & Safety (Rating: 1 – Insignificant)

Heavy precipitation and flooding are not expected to threaten health or safety. Access to emergency and medical services may be temporarily compromised by flooded roads.[554]

Economy & Livelihoods (Rating: 2 – Minor)

Heavy precipitation and flooding are not expected to largely impact revenue at fixed roof accommodations. Rating considerations include:

- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[555]

[546] Government of PEI. "Erosion and Flooding." November 3, 2021. https://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/erosion-and-flooding.
[547] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[548] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[549] Lewis, J. Heavy rain floods parts of Charlottetown 2 days in a row. https://www.cbc.ca/news/canada/prince-edward-island/pei-charlottetown-heavy-rain-flooding-water-1.4781688
[550] Government of PEI. *PEI Climate Change Risk Assessment*.
[551] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[552] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[553] PEI Tourism Site Visits – Charlottetown Area Development Corporation. 2025.
[554] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report*.
[555] Fenech. "PEI Tourism Is Down? Blame the Weather."

- Visitors staying at campgrounds or other facilities that are more exposed to the elements, may choose to change their reservations to fixed-roof accommodations. [556]
- For any accommodations that do experience flood-related damage, repairs may be costly further straining seasonal revenues.

Operations (Rating: 2 – Minor)

Operators can generally bounce back quickly from a heavy precipitation event, generally within hours. In extreme cases, accommodations may need to temporarily close if unable to provide basic services like heating or air conditioning, running water, internet, or meals.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's fixed-roof accommodations. This risk is **medium** in mid-century (Table 38) and presents opportunities for the industry.

Table 38. Fixed-roof accommodations risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 7: Fixed-roof accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	2	1	1	2	2	1.6	**3.2**	**6.4**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.6 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 2 – Minor)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure.[557]

Environment (Rating: 1 – Insignificant)

Environmental impacts of a longer warm season and a shorter cold season are generally not expected to affect fixed-roof accommodations.

- For fixed roof accommodations that are near the coastline (e.g., Dalvay by the Sea), winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later,

[556] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[557] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[558] However, erosion risk can be planned for and managed.

Health & Safety (Rating: 1 – Insignificant)

Shifting seasons are not expected to have health or safety impacts.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for fixed-roof accommodations. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand accommodations numbers, allowing tourism businesses to generate revenue beyond the traditional summer window. [559] A longer warm season can also translate into a higher return on total investment in tourism assets.[560]
    - Although accommodations occupancy largely reaches capacity during the peak summer months, there is occupancy availability in the shoulder seasons.[561,562]
    - Some locations have already extended their season, such as Rodd Brudenell Resort which is aiming to open for 42 weeks a year and has just offered its first New Year's Eve event in 2025.[563]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[564]
- However, staffing is an anticipated challenge to a longer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[565]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[566]

[558] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[559] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[560] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[561] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[562] Craig, Christopher A., and Siyao Ma. "Weather and Recreational Vehicle Camping Businesses." *Annals of Tourism Research Empirical Insights* 3, no. 2 (2022): 100063. https://doi.org/10.1016/j.annale.2022.100063.
[563] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[564] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[565] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[566] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Focus Area 8: Campground accommodations

Overnight non-fixed-roof accommodations on PEI include stays at campgrounds and RV parks, many of which are along the coast. In 2022, campground occupancy rates reached 52.1%, beating the previous record of 47.9% in 2019.[567] In 2023, 11% of total visitors stayed in campgrounds or RV parks.[568] In July 2025, there were 117,580 overnight stays in campgrounds on the Island.[569]



Figure 30. Cavendish campground (Source: Tourism PEI).

Post-Tropical Storm

Scenario: Multi-day post-tropical storm with heavy rain, storm surge, and wind

Post-tropical storms currently represent a **high** risk to PEI's campground accommodations. This risk remains **high** in mid-century (Table 39).

Table 39. Campground accommodations risk summary for post-tropical storm

Post-Tropical Storm – Focus Area 8: Campground accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
4	4	4	4	3	4	4	3.8	**15.2**	**15.2**

Likelihood

See Appendix A: Post-Tropical Storm for details.

Consequences

The overall **consequence rating is 3.8 out of 5.** Impacts to infrastructure could be catastrophic. See below for rating details.

Infrastructure (Rating: 4 – Major)

Post-tropical storms can cause significant and widespread disruption to infrastructure services at campgrounds. Repairs or improved resilience measures (e.g., installing back-up generators) can also be costly for operators and could take weeks to months following severe events.[570] Rating considerations include:

- High winds, heavy precipitation, erosion, and storm surge can damage campground infrastructure:
  - Cavendish Campground at PEI National Park was closed for the 2020 season after Post-Tropical Storm Dorian due to damage to access stairs and

[567] Government of PEI. *State of the Island*. 2024. https://www.princeedwardisland.ca/sites/default/files/misc/20240409_PEI_SOTI_Web36MB.pdf.
[568] PEI Department of Fisheries, Tourism, Sport, and Culture. "A Profile of Pleasure Camper Parties by PEI Region Stayed."
[569] Government of PEI. "Accommodations Occupancy Dashboards."
[570] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

boardwalks.[571,572] Fiona in 2022 also caused extensive damage to the campgrounds.[573]
    - Crystal Beach Campground sustained damage to its buildings, equipment, and electrical and septic systems due to storm surge during both Dorian and Fiona.[574,575]
    - A 2016 case study indicated that campgrounds at Jacques Cartier Provincial Park are vulnerable to coastal erosion and flooding. It was estimated that the provincial park would be expected to lose 38% of its campgrounds by 2040 if no adaptation options are implemented.[576]
- Power outages across the Island can also affect campground facilities (e.g., washrooms) if there is not a backup generator on-site.[577]
    - Many PEI campgrounds, like Red Point Provincial Park, offer electricity hookups for RVs.[578] Power outages would impede these amenities.
- Access routes may be impeded by road washouts, debris, and downed trees, as well as travel restrictions that limit access to campgrounds.[579,580]
    - Fiona damaged and temporarily closed many of the access routes in PEI National Park.[581]

Environment (Rating: 4 – Major)

Post-tropical storms can cause major damage to beaches, dunes, and trees near campgrounds. Rating considerations include:

- Coastal erosion can narrow campgrounds, reducing space available for both tourism and ecological habitat.[582]
- Dunes are critical to supporting important coastal species and habitats and protecting PEI's coastline from erosion and storm surge. Post-tropical storms can cause significant damage to dunes that can take years to recover. Fiona eroded up to ten metres of dunes in the Brackley Beach and Cavendish areas.[583]
- Fiona also took down trees at Sunset Campground in Cavendish and across all of PEI National Park that provide scenery for campers as well as some protection from wind and rain.[584]

[571] Parks Canada. "Government of Canada Invests $1.76 Million in Restoration at PEI National Park and Green Gables Heritage Place Following Post-Tropical Storm Dorian."
[572] Parnham et al. *Prince Edward Island State of the Coast Report*.
[573] PEI Tourism Site Visits – Cavendish Beach. 2025
[574] Shane Ross. "'Failure is not an option': Dorian damage won't discourage campground owner from reopening" *CBC News*, September 25, 2019. https://www.cbc.ca/news/canada/prince-edward-island/pei-crystal-beach-campground-dorian-clenup-1.5296102.
[575] Bruce, Steve. "P.E.I. Campground Closing for Good after Damage from Fiona." *CBC News*, November 13, 2023. https://www.cbc.ca/news/canada/prince-edward-island/pei-campground-fiona-damage-closure-1.7025460.
[576] Parnham, H., S. Arnold, and A. Fenech. *Using Cost-Benefit Analysis to Evaluate Climate Change Options in Atlantic Canada – Land Use Planning and Engineering and Natural Approaches*. Atlantic Climate Adaptation Solutions Association, January 1, 2016. https://ostrnrcan-dostrncan.canada.ca/handle/1845/275403.
[577] Sandy Lavigne. *Post-Tropical Storm Fiona: After-Action Report*. Calian Group, 2023. https://www.princeedwardisland.ca/sites/default/files/publications/post-tropical_storm_fiona_after_action_report_2023.pdf.
[578] PEI Parks. "Red Point Provincial Park, PE." Accessed October 15, 2025. https://www.peiprovincialparks.ca/camping/red-point-provincial-park/r/campsiteDetails.do?contractCode=PE&parkId=320028&siteId=1207.
[579] Government of PEI. *PEI Climate Change Risk Assessment*.
[580] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[581] PEI Tourism Site Visits – Cavendish Beach. 2025
[582] Government of Canada. "Cavendish Campground Post-Fiona Recovery and Reinstatement." *Canadian Impact Assessment Registry*, March 27, 2023. https://iaac-aeic.gc.ca/050/evaluations/proj/84119?culture=en-CAhttps://www.cbc.ca/news/canada/prince-edward-island/pei-coastline-loss-2022-post-fiona-report-1.7010862.
[583] MacLeod. "P.E.I. Is Gearing up for Its First Post-Fiona Tourism Season. A Lot Has Changed."
[584] CBC News. "Island businesses lament lost revenue from post-Fiona power outages."

- Storm surge deposited sand on the campground at Cedar Dunes Park during Fiona.[585]

Health & Safety (Rating: 3 – Moderate)

Although campgrounds are assumed to be closed and evacuated during a post-tropical storm, some visitors and staff may be at risk to potential health and safety concerns during and after post-tropical storms. Rating considerations include:

- Before Fiona, Parks Canada staff had to convince some visitors to evacuate the grounds to either move indoors or leave the Island entirely. Just hours before the post-tropical storm hit, there were still visitors reluctant to leave, putting themselves and staff at risk.[586]
- Physical hazards such as fast-moving floodwaters, debris, and falling trees create injury potential for both tourists and workers.[587] For example:
    - Post-storm conditions may include dangerous surf conditions and unstable cliff areas that create ongoing safety hazards for beach-goers.
    - Injuries are also possible during post-storm cleanup, such as from clearing debris with heavy equipment, using back-up generators, or encountering downed powerlines.[588]
- Access to emergency services may be compromised. Flooded or obstructed roads can delay or prevent emergency response for tourists and staff, while damage to telecommunications infrastructure can further hinder communication and coordination during critical moments.[589]

Economy & Livelihoods (Rating: 4 – Major)

Post-tropical storms typically cause severe disruptions to campgrounds for the remainder of the season. Fortunately, Fiona occurred in late September only a couple weeks before many campgrounds would have closed for the season. Economic impacts could be even more significant if a post-tropical storm hits earlier in the season and forces operators to close.[590] Rating considerations include:

- Visitors may choose to postpone or cancel their plans to visit PEI that season or the following season, assuming their experience may be impacted as the Island recovers from the damage.[591] They may also choose to relocate to fixed-roof accommodations.
- Operators may face significant repair costs. Fiona cleanup costs totalled approximately $5.3 million for Provincial parks, golf courses and other Province-owned properties.[592]
    - Crystal Beach Campground sustained $500,000 in damages following Fiona, forcing it to close permanently.[593]

[585] Jardine. *Post Tropical Storm Fiona Highwater Mark and Shoreline Erosion Field Notes with Photos*.
[586] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[587] Government of PEI. "Extreme Weather Safety." March 30, 2016. https://www.princeedwardisland.ca/en/information/justice-and-public-safety/extreme-weather-safety.
[588] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[589] Warren, F, N Lulham, and D.S. Lemmen, eds. *Canada in a Changing Climate: Regional Perspectives Report*. Government of Canada, 2021. https://changingclimate.ca/regional-perspectives/.
[590] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[591] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[592] PEI Department of Finance, *2022: Fiscal and Economic Update*.
[593] Bruce. "P.E.I. Campground Closing for Good after Damage from Fiona."

Operations (Rating: 4 – Major)

Recovery from the impacts described above and the return to normal operations for campgrounds can take weeks. Rating considerations include:

- Post-Topical Storm Dorian caused multi-day and, in some cases, multi-week closures to Stanhope Campground due to flooding, downed trees, damage to campground facilities, and loss of power.[594]
- Following Fiona, most activities were back to normal operations by the next summer season. However, one campground was never reopened.[595]
- Beach access points may also need to change depending on the impacts of coastal erosion and sedimentation following an event.
- Employees' ability to access campgrounds may be hindered in the aftermath of a storm, potentially extending the length of closure.[596]

Heat Wave

Scenario: Three consecutive days with temperatures above 29°C

Heat waves currently represent a **medium** risk to PEI's campground accommodations. This risk is **high** in mid-century (Table 40).

Table 40. Accommodations risk summary for heat waves

Heat Wave – Focus Area 8: Campground accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	5	3	2	4	1	2	2.4	**7.2**	**12.0**

Likelihood

See Appendix A: Heat Wave for details.

Consequences

The overall **consequence rating is 2.2 out of 5.** Major impacts to health and safety are possible. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Heat waves may moderately affect infrastructure services at campgrounds. Rating considerations include:

- Heat waves can lead to power outages due to the additional strain on the grid to support cooling systems.[597] If PEI faces a summer blackout, campgrounds without back-up generators may experience disruptions to operations.

[594] McCarthy. "P.E.I. Provincial Parks Impacted by Dorian Storm Surge, Wind."
[595] Bruce. "P.E.I. Campground Closing for Good after Damage from Fiona."
[596] Government of PEI staff, Workshop - PEI Climate Change Risk Assessment Draft Results and Adaptive Capacity. 2021.
[597] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

- Some PEI campgrounds, like Red Point Provincial Park, offer electricity hookups for RVs.[598] These amenities would no longer be available in the event of a power outage.
- Increasingly, RVs with air conditioning infrastructure have put strain on electrical infrastructure at campgrounds.[599]

Environment (Rating: 2 – Minor)

Environmental impacts from a multi-day heat wave are limited. However, if the heat wave coincides with drought or prolonged summer heat, impacts could include:

- Prolonged summer heat could amplify the potential for algae blooms, impacting water quality and water-based activities at campgrounds.
- From August to September 2025, PEI instituted a ban on campfires and bonfires following a period of especially dry and hot weather, as a measure to prevent against human-caused wildfires.[600] For more details on wildfire risk and impacts, see the Wildfires and Smoke section in Appendix A.
- Following Fiona and other extreme weather, many campgrounds have far less trees, which further compound heat exposure at these sites.[601]

Health & Safety (Rating: 4 – Major)

Many tourists and staff may be at risk to potential heat-related health concerns. Rating considerations include:

- Extreme heat exposure can lead to heat exhaustion and heat stroke for visitors.[602]
  - The elderly, young children, individuals with chronic illnesses, and outdoor workers are most vulnerable to extreme heat.
  - Campground operators and Parks Canada staff have seen an increase in heat exhaustion and other impacts.[603] Staff have also noticed that visitors are not always adequately prepared for extreme heat (e.g., sufficient water, breathable clothing).[604]
- Outdoor workers are more likely to develop a heat-related illness during a heat wave and the risk for accidents or injuries is increased due to heightened physical and mental strain.[605]
- Heat events can also decrease air quality, affecting outdoor recreation experience and, in extreme scenarios, increasing cardiovascular and respiratory illness risks.[606]

[598] PEI Parks. "Red Point Provincial Park, PE."
[599] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[600] Nguyen, Thinh. "Campfires to Be Allowed Again on P.E.I. as Fire Ban Lifts Monday Night." *CBC News*, September 22, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-fire-ban-being-lifted-1.7639989.
[601] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[602] Government of PEI. "Be Prepared for the Heat This Summer." August 19, 2025. https://www.princeedwardisland.ca/en/news/be-prepared-for-the-heat-this-summer.
[603] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[604] PEI Tourism Site Visits – Cavendish Beach. 2025.
[605] Health Canada. "Extreme Heat Events Guidelines: Technical Guide for Health Care Workers." November 22, 2017. https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/climate-change-health/extreme-heat-events-guidelines-technical-guide-health-care-workers.html.
[606] Environment and Climate Change Canada. "Extreme Heat Events." February 27, 2025. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/extreme-heat-events.html.

Economy & Livelihoods (Rating: 1 – Insignificant)

If fewer visitors make overnight trips to PEI to avoid extreme heat or change their accommodations to a fixed-roof option with air conditioning, campgrounds may face reduced revenue. Rating considerations include:

- Extreme heat could lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[607]

Operations (Rating: 2 – Minor)

Heat waves can cause days-long disruptions to operations, primarily to manage heat-related health risks for tourists and outdoor workers and potential power outage impacts.

Heavy Precipitation and Flooding

Scenario: 100 mm of rain in 24 hours

Heavy precipitation and flooding currently represent a **medium** risk to PEI's campground accommodations. This risk remains **medium** in mid-century (Table 41).

Table 41. Campground accommodations risk summary for heavy precipitation and flooding

Heavy Precipitation and Flooding – Focus Area 8: Campground accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
3	4	3	2	2	2	3	2.4	**7.2**	**9.6**

Likelihood

See Appendix A: Heavy Precipitation and Flooding for details.

Consequences

The overall **consequence rating is 2.4 out of 5.** Moderate impacts to infrastructure and operations are possible. See below for rating details.

Infrastructure (Rating: 3 – Moderate)

Heavy precipitation and flooding can cause moderate damage to campground infrastructure. Rating considerations include:

- In extreme cases, RVs and camping gear like tents can be washed away or physically damaged by flooding.[608]
- Road or trail closures due to high water or washouts may limit access to campgrounds, but disruptions are expected to be minimal and short-term.[609,610]

[607] Fenech. "PEI Tourism Is Down? Blame the Weather."
[608] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[609] Government of PEI. *PEI Climate Change Risk Assessment*.
[610] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Environment (Rating: 2 – Minor)

PEI's natural environment is generally resilient to heavy precipitation and flooding. Rating considerations include:

- Heavy precipitation can lead to flooding and muddy conditions at campground sites, especially campgrounds in low-lying areas.
- Heavy precipitation can down trees and cause debris to fall on campgrounds.
- Freshwater quality for swimming, fishing, and other water-based activities at campgrounds may be compromised by runoff or combined sewer overflows, causing temporary closures.[611]

Health & Safety (Rating: 2 – Minor)

Few visitors and staff may be at risk to potential health and safety impacts, which are expected to be temporary. Rating considerations include:

- Parks Canada advises visitors to PEI's National Park to avoid wooded areas during extreme rain events to minimize safety hazards from falling debris or trees.[612] Muddy, slippery conditions and flash flooding can increase injury risks for campers.
- Contaminated runoff or combined sewer overflows may create health risks for freshwater swimming and other water-based activities at campgrounds.[613,614]
- Standing water increases mosquito populations, affecting outdoor comfort and increasing the likelihood of disease transmission.
- Access to emergency and medical services may be compromised by flooded roads.[615]

Economy & Livelihoods (Rating: 2 – Minor)

Rainy weather—especially during the peak summer months—can cause revenue losses for campgrounds. Rating considerations include:

- Heavy rainfall may lead to campground cancellations.
    - Back-to-back natural disasters in 2023, including flooding in July, contributed to a noticeable decline in PEI's summer tourism revenue.[616]
    - Tent campers may choose to relocate indoors to fixed-roof accommodations.[617]
- Forecasted rainfall can lead to last-minute cancellations and changes in travel plans, especially for tourists travelling by car or ferry from nearby provinces that have more flexibility with their travel plans. Approximately 60% of PEI's tourists typically arrive from Nova Scotia and New Brunswick.[618]
- Flood-related damage may lead to costly repairs for tourism operators, further straining seasonal revenues.

[611] Fisheries and Oceans Canada. Survey of Recreational Fishing in Canada. 2015.
[612] Parks Canada. "Safety on Land." January 22, 2025. https://parks.canada.ca/pn-np/pe/pei-ipe/securite-safety/terrestre-land.
[613] Health Canada. "Guidelines for Canadian Recreational Water Quality: Summary Document." March 1, 2024. https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-recreational-water-quality-summary-document.html.
[614] Kelly, Delaney. "Signs Urge Beachgoers to Avoid Streams in P.E.I. National Park Due to High Bacteria Levels." *CBC News*, July 16, 2025. https://www.cbc.ca/news/canada/prince-edward-island/pei-coliform-levels-streams-beaches-1.7586476.
[615] Warren et al. *Canada in a Changing Climate: Regional Perspectives Report*.
[616] Adam Fenech. "PEI Tourism Is Down? Blame the Weather." *UPEI Climate Lab*, August 16, 2023. https://projects.upei.ca/climate/2023/08/16/pei-tourism-is-down-blame-the-weather/.
[617] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[618] Fenech. "PEI Tourism Is Down? Blame the Weather."

Operations (Rating: 3 – Moderate)

Recovery from the impacts described above and the return to normal operations could take several days. Flooding could force campgrounds to temporarily close due to infrastructural damages and muddy or unsafe conditions.

Longer Warm Season and Shorter Cold Season

Scenario: Earlier onset of warm spring temperatures by two weeks and delayed onset of cold fall temperatures by two weeks

Longer warm seasons and shorter cold seasons currently represent a **low** risk to PEI's campground accommodations. This risk is **medium** in mid-century (Table 42) and presents opportunities for the industry.

Table 42. Campground accommodations risk summary for a longer warm season and shorter cold season

Longer Warm Season and Shorter Cold Season – Focus Area 8: Campground accommodations									
Likelihood		Consequences						Risk	
Current	2050	Infrastructure	Environment	Health/ Safety	Economy/ Livelihoods	Operations	Overall	Current	2050
2	4	2	2	1	2	2	1.8	**3.6**	**7.2**

Likelihood

See Appendix A: Longer Warm Season and Shorter Cold Season for details.

Consequences

The overall **consequence rating is 1.8 out of 5.** All impacts are expected to be minor or insignificant with opportunities for season extension and increased economic returns. However, individual operators would need to balance the opportunities and risks of extending their seasons as the fall season also coincides with hurricane season. See below for rating details.

Infrastructure (Rating: 2 – Minor)

If operators choose to extend their season to coincide with the longer warm season, there may be more maintenance and wear and tear on infrastructure. For example, an extended warm season would require campground facilities (e.g., washrooms) to be opened and maintained for longer periods.

Environment (Rating: 2 – Minor)

Seasonal changes may have long-term, minor environmental impacts on other vegetation around campgrounds. Rating considerations include:

- Extended warm periods may increase forest fire risk, particularly if it coincides with drought, threatening PEI's woodlands.
- Warmer temperatures may also lead to an increase in mosquitoes and other pests.[619]
- Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later,

[619] PEI Tourism Site Visits – PEIMF. 2025.

breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.[620]

Health & Safety (Rating: 1 – Insignificant)

A longer warm season and shorter cold season is not expected to have health or safety impacts. However, more variability in temperature and weather conditions during the spring and fall shoulder seasons could present challenges for visitors that are unprepared for the elements.

Economy & Livelihoods (Rating: 2 – Minor)

An extended warm season presents an economic opportunity for campground accommodations. Rating considerations include:

- Warmer temperatures during the spring and fall shoulder seasons could expand campground usage in the shoulder seasons, allowing tourism businesses to generate revenue beyond the traditional summer window. [621] A longer warm season can also translate into a higher return on total investment in tourism assets.[622]
    - Parks Canada has seen full occupancy of campgrounds extend from early September to mid-September in recent years.[623]
    - However, expanding operations into the fall shoulder season when post-tropical storms typically occur, does present potential risks (see post-tropical storm section).[624]
- Staffing is also an anticipated challenge to a longer tourism season as students and seasonal staff may be unable or unwilling to work longer seasons.[625]

Operations (Rating: 2 – Minor)

A longer warm season is ultimately an opportunity for expanded operations into spring and fall months. Operators would need to make adjustments to successfully extend their season such as staffing considerations and increased maintenance and operational costs over the longer season.[626]

[620] PEI Department of Land and Environment. 2025. PEI Major Tourism Assets – Coastal Hazard Assessment.
[621] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[622] TIAPEI, *Growing Tourism Together, a Five-Year Strategy for PEI's Tourism Industry*.
[623] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[624] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[625] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.
[626] PEI Tourism Workshop – PEI Climate Change Risk and Opportunity Assessment for the Tourism Industry Draft Results. 2025.

Appendix E: Coastal Hazard Assessment for Major Tourism Assets

Executive Summary

This assessment evaluates coastal flood and erosion hazards for 24 major tourism assets across Prince Edward Island, providing technical input for the province's tourism industry risk assessment and climate adaptation plan. The analysis focuses on current conditions (2020 baseline) and 2050 projections, examining how sea level rise, increased storm intensity, and changing coastal processes will affect key tourism infrastructure and experiences.

Assessment Scope

Twenty-four tourism assets were assessed across four categories: Core Cultural & Urban Hubs (6 assets), Major Coastal & Natural Attractions (9 assets), Signature Experience Venues (5 assets), and Key Tourism Infrastructure (4 assets). Of these, 17 assets are located directly on or adjacent to the shoreline, while 7 are inland or have limited coastal exposure.

Key Findings

Flood Hazard Exposure (2050)

- 4 assets face High flood hazard, including both major waterfronts (Charlottetown, Summerside), West Point Lighthouse, and Wood Islands Ferry Terminal
- 5 assets face Moderate-High flood hazard, predominantly beach and park complexes where wetlands, access roads, and parking areas are vulnerable
- 6 assets face Moderate flood hazard, with surrounding areas or property subject to flooding but buildings typically protected
- 4 assets face Moderate-Low or Low flood hazard
- 5 assets are inland with no coastal flood exposure

Erosion Hazard Exposure

- 5 assets face High erosion hazard, all featuring natural beach/dune systems or unprotected shorelines with infrastructure exposure
- 1 asset faces Moderate-High erosion hazard (Greenwich Interpretation Centre)
- 9 assets face Moderate erosion hazard, including both armoured shorelines requiring maintenance and natural systems with limited infrastructure
- 4 assets face Moderate-Low or Low erosion hazard
- 5 assets have no erosion exposure (inland)

Critical Context: Natural Coastal Dynamics

A key finding is the concentration of high-hazard assets within natural beach and dune systems—PEI's signature coastal attractions. For these assets, erosion and flooding are not "damage" but natural coastal processes essential to the experiences they provide. High erosion ratings for beaches indicate active coastal dynamics requiring adaptive management of visitor

facilities (parking, boardwalks, access roads), not loss of the beaches themselves. These systems naturally erode during winter storms and rebuild during calmer periods.

Findings by Asset Category

Core Cultural & Urban Hubs: This category shows a clear split between protected inland heritage sites (Confederation Centre, Province House, Green Gables Heritage Place) and vulnerable waterfront developments. Both Charlottetown and Summerside waterfronts face high flood hazard despite extensive armouring, which provides erosion protection but requires ongoing maintenance.

Major Coastal & Natural Attractions: This category faces the highest overall hazard exposure, with five of nine assets experiencing high flood or high erosion hazards. However, these natural coastal systems depend on dynamic processes for their ecological function and visitor appeal. The primary vulnerabilities are visitor infrastructure (parking, facilities, boardwalks) and access roads rather than the natural features themselves.

Signature Experience Venues: Exposure varies widely in this category. Coastal golf courses demonstrate adaptation potential through flexible course design, while waterside dining and event venues face moderate flooding of property and access routes. Two venues (Music Festival site, Charlottetown Event Grounds) have minimal coastal exposure.

Key Tourism Infrastructure: These critical access points show concerning vulnerabilities. Wood Islands Ferry Terminal faces high flood hazard, while portions of Confederation Trail experience moderate flooding near river crossings. Confederation Bridge infrastructure shows resilience, though surrounding areas face moderate-low hazards. The airport is inland with no coastal exposure.

Purpose & Use of This Assessment

This document provides coastal hazard information as one input to broader tourism industry planning. It is not prescriptive and does not recommend specific actions or prioritize investments. The assessment identifies hazard exposure to inform decision-making that must also consider economic factors, visitor experience values, adaptation costs and benefits, community priorities, and regulatory frameworks.

The detailed asset profiles that follow provide technical data to support provincial-level risk assessment while serving as a resource for site managers and operators interested in site-specific conditions.

Introduction

This coastal hazard assessment evaluates flood and erosion exposure for 24 major tourism assets across Prince Edward Island. The assessment provides technical information as input to the provincial tourism industry risk assessment and climate adaptation plan, examining how current and future coastal hazards may affect key tourism infrastructure, experiences, and economic activities.

The analysis focuses on two time horizons: current conditions (2020 baseline) and mid-century projections (2050), corresponding to the planning timeframe for major infrastructure investments and adaptation decisions. For each asset, the assessment characterizes flood and erosion hazards based on provincial coastal data, water level projections, shore type, and site-specific conditions.

This document is not prescriptive. It does not recommend specific actions, prioritize investments, or evaluate adaptation options. Rather, it provides coastal hazard information to inform broader planning and decision-making that must also consider economic factors, visitor experience values, operational requirements, community priorities, and policy frameworks.

Why This Matters: PEI Tourism & Coastal Hazards

Tourism is fundamental to Prince Edward Island's economy and identity. The province's coastal environment—its beaches, harbours, lighthouses, and waterfront communities—forms the foundation of the visitor experience and the backdrop for many signature attractions. This coastal dependence creates both opportunity and vulnerability.

Many of PEI's most iconic tourism assets are located directly on the shoreline or within the coastal zone. Beach complexes, coastal golf courses, heritage lighthouses, waterfront developments, and ferry terminals all face direct exposure to coastal processes. Even inland attractions depend on coastal transportation infrastructure (bridge, ferry, roads) to bring visitors to the Island.

As climate change accelerates coastal hazards through sea level rise, storm intensification, and reduced winter ice protection, understanding current and future exposure becomes essential for informed planning. Tourism infrastructure and experiences developed today will operate for decades, potentially facing significantly different coastal conditions than those that shaped their original design and siting.

Understanding Coastal Hazards

Coastal Flooding

Coastal flooding occurs when seawater temporarily covers land that is normally dry. This happens when multiple factors combine to raise water levels above normal high tide:

- **Storm Surge**: Low atmospheric pressure and strong winds push water toward shore, creating a temporary rise in sea level. Storm surge is particularly damaging when it coincides with high tide, as the effects compound.
- **Tidal Cycle**: Prince Edward Island experiences semidiurnal tides (two high tides and two low tides within approximately 25 hours). When the moon and sun align (full moon or new moon), spring tides produce higher high tides and lower low tides. Storm timing relative to the tidal cycle significantly affects flood severity.
- **Sea Level Rise**: Climate change is causing global sea levels to rise through thermal expansion of warming ocean water and melting of land-based ice. Around PEI, relative sea level rise of approximately 1 metre is projected by 2100 under current emissions

trajectories. This means water reaches higher elevations more frequently, and storm surge events produce greater flooding.

- **Wave Action**: Breaking waves add additional height to water levels at the shoreline, particularly during storms when wave energy is greatest.
- **Flood Probability**: Coastal flood projections are expressed in terms of probability, not certainty. A "1% AEP" (Annual Exceedance Probability) flood, commonly called a "100-year flood," has a 1% chance of occurring in any given year. This does not mean such floods happen once per century, or that they will not occur again for 100 years after one happens. Properties in the 1% AEP floodplain have a 26% chance of experiencing flooding during a 25-year period—the typical mortgage duration.

Coastal Erosion

Coastal erosion is the natural breakdown and removal of coastal materials through wave action, rainfall, freeze-thaw cycles, and wind. On Prince Edward Island, erosion is strongly influenced by the Island's geology—predominantly sandstone bedrock and unconsolidated glacial sediments that are among the most erodible materials found in coastal settings.

Historical analysis (https://chris.peiclimate.ca/) shows PEI's coastline erodes with significant variation across shore types and exposure settings. Some protected areas experience minimal change, while highly exposed locations have lost several meters of land per year. During Post-Tropical Storm Fiona (2022), some areas lost up to 10 meters in a single day.

Critical Context - Natural Coastal Processes: It is essential to understand that erosion is not inherently negative or damaging. Erosion is a natural process that supplies sediment to the coastal system, creating and maintaining beaches, dunes, and salt marshes. These dynamic systems naturally erode during winter storms when wave energy is high, then rebuild during calmer summer conditions.

For natural coastal assets like beaches and dunes, erosion and accretion occur in dynamic equilibrium. The "risk" is not that these systems erode—they are designed by nature to do so—but rather that built infrastructure (parking lots, buildings, roads, boardwalks) may be exposed to these natural processes. A beach classified as "high erosion hazard" indicates active coastal dynamics requiring adaptive management of facilities, not loss or damage to the beach itself.

Shore Types and Erosion Patterns: Different shore types respond differently to erosion processes:

- **Sand dunes and beaches**: Highly dynamic, naturally eroding and accreting with seasonal and storm cycles. Essential sediment sources for the broader coastal system.
- **Cliffs and bluffs:** Erode more slowly than unconsolidated banks but provide significant sediment pulses when failures occur.
- **Salt marshes:** Provide natural protection by absorbing wave energy; capable of migrating inland as sea levels rise if space permits.
- **Artificial/armoured shorelines:** Rock, concrete, or steel structures reduce erosion at the protected location but can redirect energy to adjacent areas and interrupt natural sediment supply.

Sediment Compartments and Coastal Systems

PEI's coastline functions as an interconnected system where sediment moves from source areas (eroding cliffs, dunes, and banks) through transport zones (alongshore drift) to sink areas (accreting beaches, spits, and marshes). Understanding this system helps explain why erosion occurs in some locations while sediment accumulates in others.

Human interventions that interrupt sediment transport—such as armouring an eroding cliff—can starve downdrift areas of sediment supply, potentially accelerating erosion in locations that previously received adequate sediment. This interconnectedness means that coastal management decisions at one location can have consequences elsewhere in the system.

Climate Change Impacts on Coastal Hazards

Climate change is amplifying coastal hazards through three primary mechanisms, all of which will affect PEI's tourism assets over the coming decades:

1. **Sea Level Rise**: Rising sea levels mean that wave energy reaches higher elevations more frequently. Water levels that currently occur during extreme storm events will become more common. Some low-lying areas that flood only during major storms today may experience flooding during ordinary high tides by mid-century. Around PEI, approximately 1 metre of sea level rise is projected by 2100, though the rate and magnitude depend on global greenhouse gas emissions trajectories.
2. **Increased Storm Intensity**: Climate models project that while the total number of storms may not increase significantly, the intensity of the strongest storms is likely to increase. More intense storms generate greater wave energy, higher storm surge, and more coastal damage. Events that historically occurred once per century may happen multiple times per lifetime.
3. **Reduced Sea Ice Coverage**: Winter sea ice has historically provided natural protection to PEI's shoreline by dampening wave energy during winter storms. As the climate warms, sea ice forms later, breaks up earlier, and covers less area. This extends the "erosion season" and exposes shorelines to higher winter wave energy, accelerating erosion rates.

What This Means for Assessments: The historical erosion rates and flood frequencies used in this assessment likely underestimate future conditions. Climate change is not a distant future concern—its effects are already observable in accelerating erosion rates, changing storm patterns, and rising sea levels. Projections presented here represent the best current science but carry inherent uncertainties, particularly regarding the rate of future change and global emissions trajectories.

Planning for coastal assets should consider not just the specific 2050 projections presented here, but the longer trajectory of change extending through the end of this century and beyond. Infrastructure and investments made today will operate in a coastal environment significantly different from current conditions.

Methodology

Asset Selection

Twenty-four major tourism assets were identified for assessment based on their significance to Prince Edward Island's tourism industry, visitor volume, economic contribution, and cultural importance. Assets were selected to represent the full spectrum of tourism experiences—from cultural and heritage sites to natural attractions, from signature venues to critical infrastructure.

The 24 assets are organized into four categories:

- **Core Cultural & Urban Hubs (6 assets)**: Museums, heritage sites, and urban waterfront developments that anchor PEI's cultural tourism offerings. This category includes nationally significant sites like Province House and Green Gables Heritage Place, as well as the working waterfronts of Charlottetown and Summerside that blend tourism with commercial port activities.
- **Key Tourism Infrastructure (4 assets)**: Transportation and access infrastructure essential to the functioning of PEI's tourism industry. This includes the Confederation Bridge and Wood Islands Ferry that bring visitors to the Island, the airport, and trail networks that facilitate movement and recreation.
- **Signature Experience Venues (5 assets)**: Golf courses, resorts, event venues, and unique dining experiences that position PEI as a destination for premium tourism experiences. These assets extend the tourism season, attract specific market segments, and contribute to the province's reputation for quality experiences.
- **Major Coastal & Natural Attractions (9 assets)**: Beach complexes, provincial and federal parks, coastal heritage sites, and natural attractions that showcase PEI's coastal environment. These assets draw visitors specifically for coastal experiences and natural beauty, from the iconic beaches of Cavendish and Basin Head to interpretive centres and coastal communities.

Of the 24 assets assessed, 17 are located directly on or immediately adjacent to the shoreline, while 7 are inland or have limited coastal influence. This distribution reflects the coastal orientation of PEI's tourism industry while acknowledging that some key assets (airports, inland heritage sites, event venues) have minimal direct coastal exposure.

Coastal Hazard Data Sources

This assessment draws on multiple provincial and federal data sources:

Flood Hazard Data:

- Provincial coastal flood modelling (extent, depth, scenarios)
- LiDAR-derived digital elevation models
- Water level projections and tidal data
- Historical storm surge records
- Sea level rise projections

Erosion Hazard Data:

- Historical shoreline change analysis (https://chris.peiclimate.ca/)
- Shore unit classifications
- Coastal geomorphology mapping
- Historical storm damage records

Supporting Spatial Data:

- Watershed boundaries and identification
- Shore unit classifications
- Land use and infrastructure mapping
- Orthoimagery and satellite data

Water Level Reference Data:

- Tidal benchmarks and datums (CGVD2013)
- Mean sea level (MSL) observations and projections
- Mean higher high water (MHHW) calculations
- AEP flood levels for multiple return periods

All elevation and water level data are referenced to the Canadian Geodetic Vertical Datum of 2013 (CGVD2013), which is the standard vertical datum for Canada and provides consistency across datasets.

Assessment Approach

Flood Hazard Classification

Flood hazard classifications are based on the projected extent and impact of coastal flooding under 2050 conditions, considering both the physical flood extent and the exposure of buildings, infrastructure, and operational areas. The classification is qualitative, incorporating flood modelling results with professional judgment about site-specific conditions, asset configuration, and vulnerability context.

> **High Flood Hazard**: Assets where buildings, critical infrastructure, or primary operational areas are located within projected flood zones. Flooding affects core functions and facilities, not just surrounding property or access routes. Substantial areas of the asset experience regular or frequent flooding during storm events. Examples include waterfronts where wharfs, docks, businesses, and facilities are subject to inundation.
>
> **Moderate-High Flood Hazard**: Assets where significant portions of the property, access infrastructure, or secondary facilities are within flood zones, even if primary buildings may be elevated or protected. Natural areas like wetlands and beaches experience flooding. Access roads, parking areas, or portions of operational space (e.g., portions of campgrounds or parks) are subject to flooding. For natural coastal attractions, this often

describes the normal flooding of beach and wetland areas that, while not damaging the natural features, can disrupt access and visitor experience.

Moderate Flood Hazard: Assets where flooding affects property or surrounding areas, but primary buildings and core infrastructure are protected through elevation or setback. Access or egress may be temporarily compromised during flood events. Flooding impacts operations but does not directly threaten main structures. This category includes properties where low-lying land floods while buildings remain dry, and situations where adjacent wetlands or coastal areas flood.

Moderate-Low Flood Hazard: Assets with limited flooding confined to property boundaries, access routes, or immediately adjacent areas. Buildings and primary infrastructure are well outside flood zones. Some operational disruption may occur during extreme events, but exposure is minimal.

Low Flood Hazard: Assets located well outside projected flood zones where coastal flooding is highly unlikely even under 2050 conditions and extreme storm scenarios.

N/A: Inland assets with no coastal flood exposure.

Erosion Hazard Classification

Erosion hazard classifications are based on shore type, coastal processes, historical erosion rates where available, and the exposure of built infrastructure to erosion processes. The classification recognizes that erosion hazard depends on both the rate and nature of coastal change and the proximity of infrastructure or assets that could be affected.

High Erosion Hazard: Natural, unprotected shorelines (beaches, dunes, unarmoured bluffs) experiencing active erosion with built infrastructure (parking, buildings, boardwalks, access roads) in proximity to the eroding shoreline. This includes beach and dune systems where visitor facilities are exposed to ongoing coastal dynamics. Historical erosion rates typically exceed 30-50 cm/year where measured, but classification is primarily based on process understanding and infrastructure exposure rather than specific rate thresholds.

Moderate-High Erosion Hazard: Active natural shorelines with ongoing erosion processes but limited built infrastructure in the immediate erosion zone, OR natural shorelines with moderate erosion rates (approximately 20-50 cm/year) and some infrastructure exposure. Adaptive management of facilities may be required over planning timeframes.

Moderate Erosion Hazard: Armoured or protected shorelines where erosion is reduced but ongoing maintenance of protection structures is required, OR natural shorelines with slow to moderate erosion (approximately 10-30 cm/year) where infrastructure is set back sufficiently to provide medium-term resilience. Wave action during storms may undermine protection infrastructure over time, requiring periodic maintenance or reinforcement.

Moderate-Low Erosion Hazard: Well-armoured shorelines with established protection requiring minimal maintenance, OR natural shorelines with low erosion rates (less than 10-20 cm/year) and/or significant buffering from the immediate coast. Infrastructure is sufficiently distant to allow erosion to occur without threatening assets over typical planning horizons.

Low Erosion Hazard: Sites significantly buffered from the coast by intervening properties, natural features, or substantial setbacks where erosion processes pose minimal concern for the asset. Erosion may occur but does not threaten infrastructure.

N/A: Inland assets or assets with no direct shoreline exposure.

Critical Note on Natural Coastal Systems: For beach and dune systems, high erosion hazard reflects active coastal dynamics requiring adaptive management of visitor facilities (parking, boardwalks, access points), NOT the loss or degradation of the beach itself. Natural erosion and accretion cycles are essential functions of these systems. The hazard assessment addresses infrastructure exposure, not natural processes.

Armoured Shorelines: Armouring (rock, concrete, steel structures) reduces direct erosion but represents an ongoing maintenance liability. As climate change intensifies storm energy, maintenance requirements typically increase. Armouring can also redirect wave energy to adjacent unprotected areas, potentially accelerating erosion elsewhere.

Water Level Projections

Water level data provide context for understanding flood hazards and are reported for each asset based on the nearest tidal station and local watershed setting. All water levels are referenced to CGVD2013.

MSL: The average height of the sea surface over a 19-year tidal cycle. MSL 2020 represents the baseline condition, while MSL 2050 incorporates projected sea level rise based on climate modelling.

MHHW: The average of the higher of the two daily high tides. MHHW is calculated by adding the local tidal range to MSL. This represents typical high tide conditions and provides context for understanding when coastal areas are regularly inundated vs. only during storm events.

AEP Flood Levels:

- **1% AEP** (commonly termed "100-year flood"): A water level that has a 1% probability of being exceeded in any given year. This is a standard reference for flood risk assessment and regulatory purposes.
- **0.1% AEP** (commonly termed "1000-year flood"): A water level that has a 0.1% probability of being exceeded in any given year, representing more extreme conditions.

These flood levels combine astronomical tides, storm surge, wave effects, and sea level rise. The 2020 values represent current conditions, while 2050 values incorporate projected sea level rise and updated statistical analysis.

Important Context: Probability does not equal timing. A 1% AEP flood can occur multiple times in a decade, or not at all for centuries—the percentage describes likelihood in any single year. A property in the 1% AEP floodplain has a 26% chance of experiencing such a flood during a typical 25-year mortgage period.

Limitations & Uncertainties

This assessment is subject to several important limitations and uncertainties that users should understand when interpreting results:

- **Remote Assessment**: No site visits were conducted. The assessment relies on remotely-sensed data, coastal modelling, mapping, and available documentation. Site-specific conditions, recent changes, or localized features may not be fully captured.
- **Model-Based Projections**: Flood extents and erosion projections are based on modelling that incorporates assumptions about coastal processes, storm frequency, and future conditions. Models are validated against historical observations but cannot perfectly predict future events or their precise timing and location.
- **Climate Scenario Dependence**: Projections assume current emissions trajectories continue ("business as usual" scenarios). Actual future conditions depend on global greenhouse gas emissions, which remain uncertain. If emissions are reduced significantly, sea level rise and storm intensification may be less severe than projected. Conversely, accelerated ice melt or other factors could produce more rapid change than currently projected.
- **Temporal Uncertainty**: While the assessment focuses on 2050 conditions, change does not occur linearly or smoothly. Some years may experience multiple severe events while others remain calm. The timing of significant impacts to specific assets cannot be predicted with precision.
- **Infrastructure Detail**: This assessment evaluates coastal hazard exposure at the asset scale, not individual buildings or infrastructure elements. Specific vulnerabilities of individual structures, their elevations, engineering resilience, and maintenance status are not assessed. Actual flood or erosion impacts depend on these site-specific factors.
- **Erosion Data Limitations**: Historical erosion rates reflect past conditions (1968-2020) and likely underestimate future rates as climate change accelerates. Erosion is episodic—significant change often occurs during individual storm events rather than gradually over time. Rates presented represent long-term averages that may not capture this variability.
- **Sediment System Complexity**: Changes to one location (e.g., adding shoreline armouring) can affect sediment supply and erosion patterns elsewhere. These cascading effects are difficult to predict and are not explicitly addressed in individual asset assessments.
- **Adaptation Not Considered**: The assessment characterizes hazard exposure under current conditions and anticipated future coastal processes. It does not account for potential adaptation measures (new protection structures, building relocations, infrastructure modifications) that may be implemented over the coming decades.

- **Beyond Coastal Hazards**: This assessment addresses only coastal flooding and erosion. Other climate-related hazards (inland flooding from heavy precipitation, extreme heat, drought, winter storms, etc.) are not considered. Additionally, non-hazard factors critical to tourism (changing visitor preferences, economic conditions, competition, etc.) are beyond scope.

Despite these limitations, this assessment provides the best available characterization of coastal flood and erosion hazards based on current science, provincial data, and professional expertise in coastal processes. It offers a foundation for informed planning while acknowledging the inherent uncertainties in projecting complex coastal and climatic futures.

Core Cultural & Urban Hubs

Core Cultural & Urban Hubs represent PEI's most significant heritage sites, cultural institutions, and urban waterfront districts. These assets serve as anchors for the province's tourism economy and cultural identity. Within this category, waterfront locations face distinct coastal hazards including flooding from storm surge and rising sea levels, while inland heritage sites experience minimal coastal exposure. The presence of hardened shorelines (armour rock, sea walls, port infrastructure) along urban waterfronts reduces erosion rates but does not eliminate flood risk and creates ongoing maintenance requirements.

Summary Assessment

Asset Name	Shore Type	Flood Hazard	Erosion Hazard	Key Context
Charlottetown Waterfront	Artificial	HIGH	MOD-LOW	Estuarine waterfront with buildings in flood zones; extensive armouring
Green Gables Heritage Place	N/A	N/A	N/A	Inland heritage site with no coastal exposure
Confederation Centre of the Arts	N/A	LOW	N/A	Downtown location well outside flood zones
Province House National Historic Site	N/A	LOW	N/A	Downtown location well outside flood zones
Summerside Waterfront	Artificial	HIGH	MODERATE	Estuarine waterfront with port infrastructure in flood zones
Beaconsfield Historic House	Artificial	MOD-LOW	MODERATE	Elevated site above flood zones; armoured shoreline

1. Charlottetown Waterfront

Civic Address:	11 Great George St, Charlottetown, PE C1A 4J7
Shoreline Type:	Artificial - armour rock, breakwaters, steel sea walls, port infrastructure
Coastal Location:	Directly on shoreline
Watershed:	Charlottetown (WS_52)
Shore Unit:	Hillsborough

COASTAL FLOOD RISK	COASTAL EROSION RISK
HIGH	**MODERATE-LOW**
Buildings in flood zone **Core functions affected**	**Armoured shoreline** **Requires maintenance**

WATER LEVELS (CGVD2013)		
Parameter	**2020**	**2050**
MSL	-0.194 m	0.016 m
MHHW	0.633 m	0.843 m
1% AEP	2.237 m	2.468 m
0.1% AEP	2.708 m	2.939 m

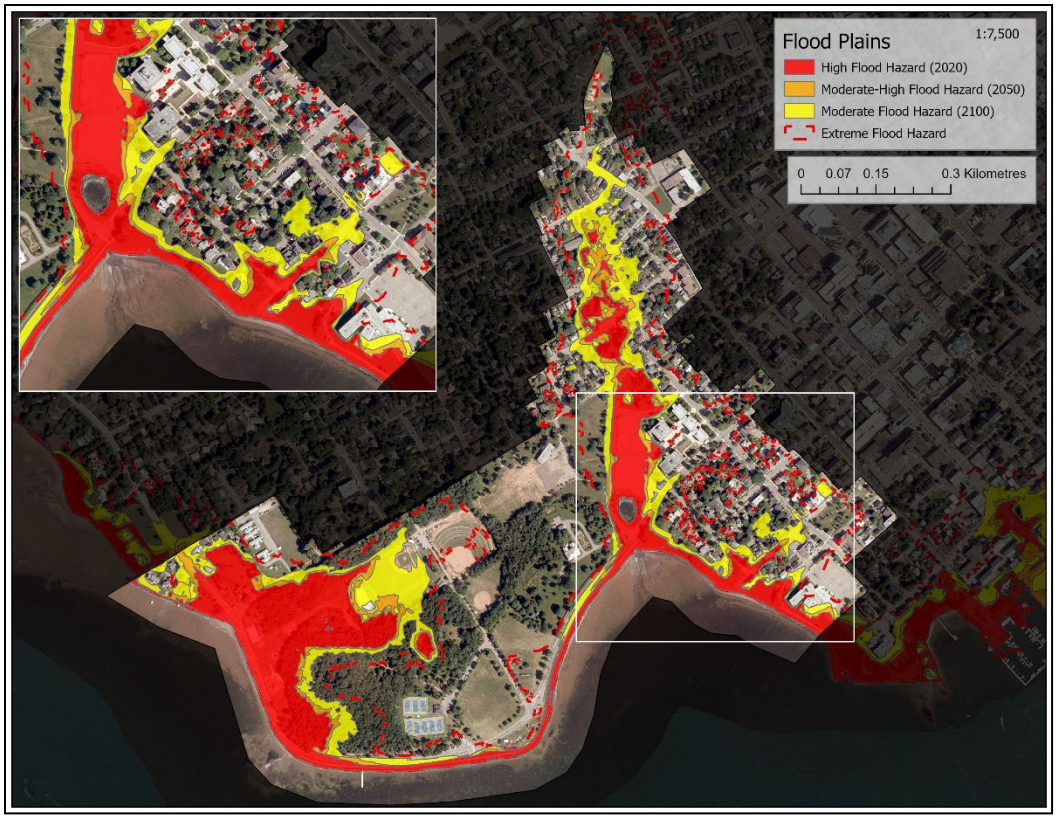


Figure 31. Flood Hazard Overview for the eastern portion of Charlottetown Waterfront from Victoria Park to Haviland St.

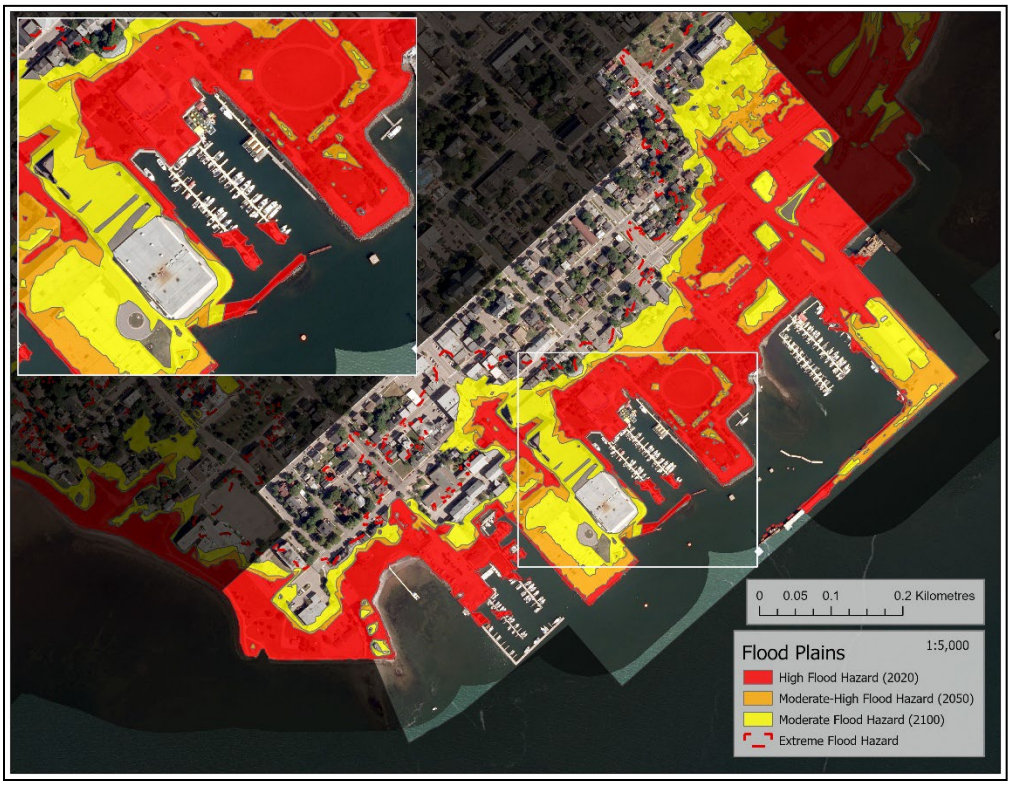


Figure 32. Flood Hazard Overview for Charlottetown Waterfront, Haviland St. to Weymouth St.

Assessment Details

Flood Hazard Assessment

The Charlottetown Waterfront faces HIGH flood hazard due to its low elevation and position along the Hillsborough River estuary. Much of the waterfront infrastructure, including boardwalks, buildings, parking areas, and port facilities, lies within the present day and projected 2050 coastal floodplain. During storm surge events coinciding with high tides, water levels can reach or exceed the 1% annual exceedance probability elevation of 2.468 metres, directly impacting waterfront operations and access.

The estuarine setting amplifies flood risk through the funnelling effect of the narrowing harbour. Sea level rise projections of approximately 0.21 metres between 2020 and 2050 will progressively increase flood frequency and duration. Critical tourism infrastructure including Peake's Wharf, the boardwalk system, Confederation Landing Park, and harbour-front commercial buildings all face direct exposure. Access roads and parking facilities also lie within flood zones, creating compound accessibility challenges.

Erosion Hazard Assessment

The waterfront is classified as MODERATE-LOW erosion hazard due to extensive armouring. Armour rock revetments, steel sea walls, and breakwaters line approximately 7,000 metres from Victoria Park to the Hillsborough Bridge, effectively preventing natural erosion. However, armouring requires ongoing maintenance as wave action, ice scour, and weathering degrade structures. The estuarine environment's tidal fluctuations, river flows, and boat wake create complex loading conditions.

Vulnerability Summary

Vulnerability derives primarily from flood exposure. The concentration of high-value tourism, commercial, and cultural infrastructure in flood-prone areas presents adaptation challenges. Flooding impacts individual assets, transportation access, utilities, and the interconnected waterfront tourism experience defining downtown Charlottetown's appeal.

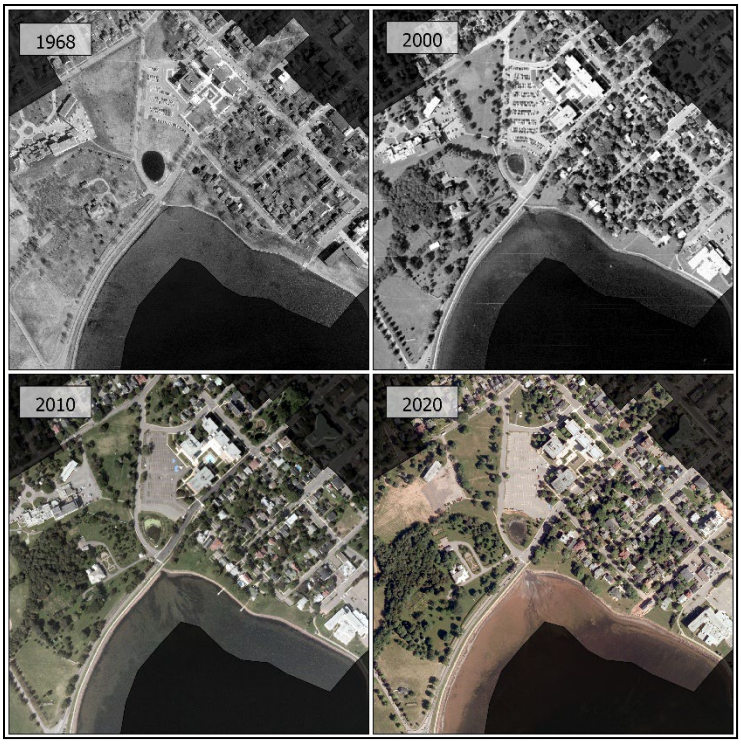


Figure 33. Historical Imagery for coastline fronting Government House.

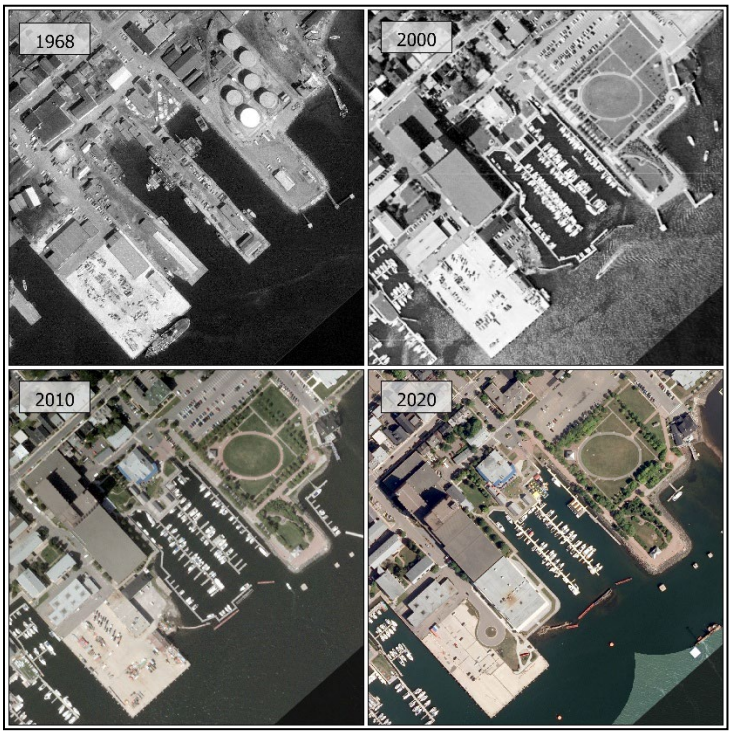


Figure 34. Historical Imagery for coastline fronting Confederation Landing.

2. Green Gables Heritage Place

Civic Address:	8619 Route 6, Cavendish, PE C0A 1N0
Shoreline Type:	N/A - Inland location
Coastal Location:	Inland - Not coastal
Watershed:	Lake of Shining Waters (WS_161)
Shore Unit:	Cavendish

COASTAL FLOOD RISK	COASTAL EROSION RISK
N/A (INLAND)	**N/A (INLAND)**
No coastal exposure	**No coastal exposure**



Figure 35. Flood Hazard Overview for Green Gables Heritage Site.

Assessment Details

Green Gables Heritage Place occupies an inland location in Cavendish with no direct coastal exposure. The site sits well outside coastal flood zones and experiences no erosion hazard. As one of PEI's most visited heritage attractions, the property's tourism value is substantial, but coastal hazards do not affect operations or infrastructure.

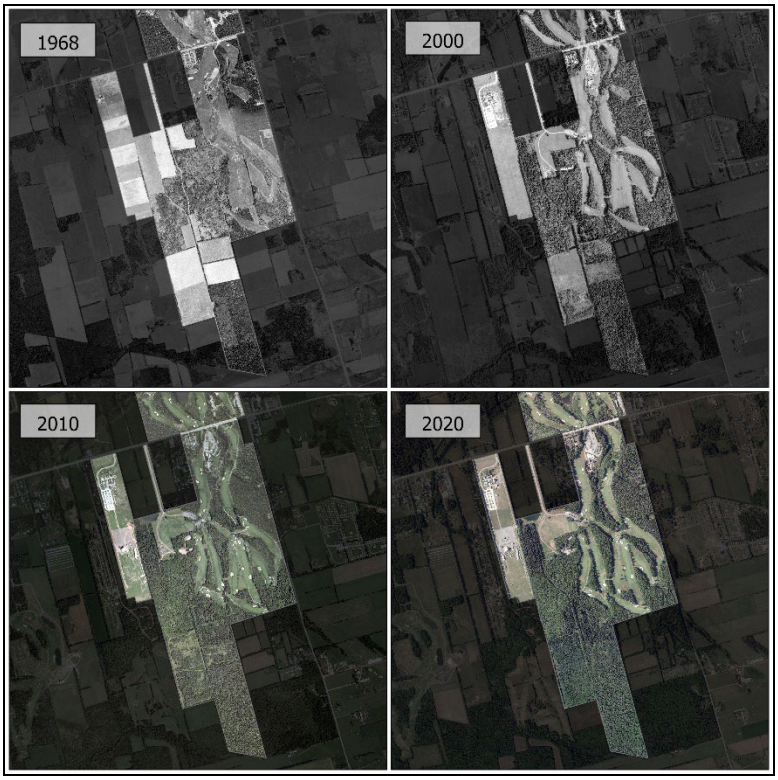


Figure 36. Historical Imagery for Green Gables Heritage Site.

3. Confederation Centre of the Arts

Civic Address:	145 Richmond Street, Charlottetown, PE C1A 1J1
Shoreline Type:	N/A - Urban downtown
Coastal Location:	Downtown Charlottetown
Watershed:	Charlottetown (WS_52)
Shore Unit:	Hillsborough

COASTAL FLOOD RISK	COASTAL EROSION RISK
LOW **Well outside flood zones** **Elevated downtown**	**N/A** **Not on coast**



Figure 37. Flood Hazard Overview for the Confederation Arts Centre.

Assessment Details

The Confederation Centre is classified as LOW flood hazard due to its elevated downtown location well outside projected coastal flood zones. While in the same watershed as the Charlottetown Waterfront, the Centre sits at sufficient elevation that even extreme flood scenarios do not reach the facility. As the province's premier performing arts venue and a National Historic Site, the elevated position provides substantial protection from coastal hazards affecting lower-lying waterfront areas.



Figure 38. Historical Imagery for the Confederation Arts Centre.

4. Province House National Historic Site

Civic Address:	165 Richmond Street, Charlottetown, PE C1A 1J1
Shoreline Type:	N/A - Urban downtown
Coastal Location:	Downtown Charlottetown
Watershed:	Charlottetown (WS_52)
Shore Unit:	Hillsborough

COASTAL FLOOD RISK	COASTAL EROSION RISK
LOW **Well outside flood zones** **Elevated downtown**	**N/A** **Not on coast**



Figure 39. Flood Hazard Overview for the Province House.

Assessment Details

Province House is classified as LOW flood hazard based on its elevated downtown location well removed from coastal flood zones. As the birthplace of Canadian Confederation and a building of exceptional national significance, Province House occupies a protected position. The site sits at elevations substantially above projected storm surge scenarios. While downtown Charlottetown's waterfront experiences significant flood exposure, Province House's elevation and inland position provide effective natural protection.



Figure 40. Historical Imagery for the Province House.

5. Summerside Waterfront

Civic Address:	150 Heather Moyse Dr, Summerside, PE
Shoreline Type:	Artificial - armour rock, harbour, port, breakwaters; some wetland
Coastal Location:	Directly on shoreline
Watershed:	Sunbury Cove (WS_125)
Shore Unit:	Bedeque

COASTAL FLOOD RISK	COASTAL EROSION RISK
HIGH	**MODERATE**
Infrastructure in flood zones **Port and businesses affected**	**Mixed armoured/natural** **Requires maintenance**

WATER LEVELS (CGVD2013)		
Parameter	**2020**	**2050**
MSL	-0.252 m	-0.058 m
MHHW	0.274 m	0.468 m
1% AEP	2.324 m	2.550 m
0.1% AEP	2.894 m	3.120 m

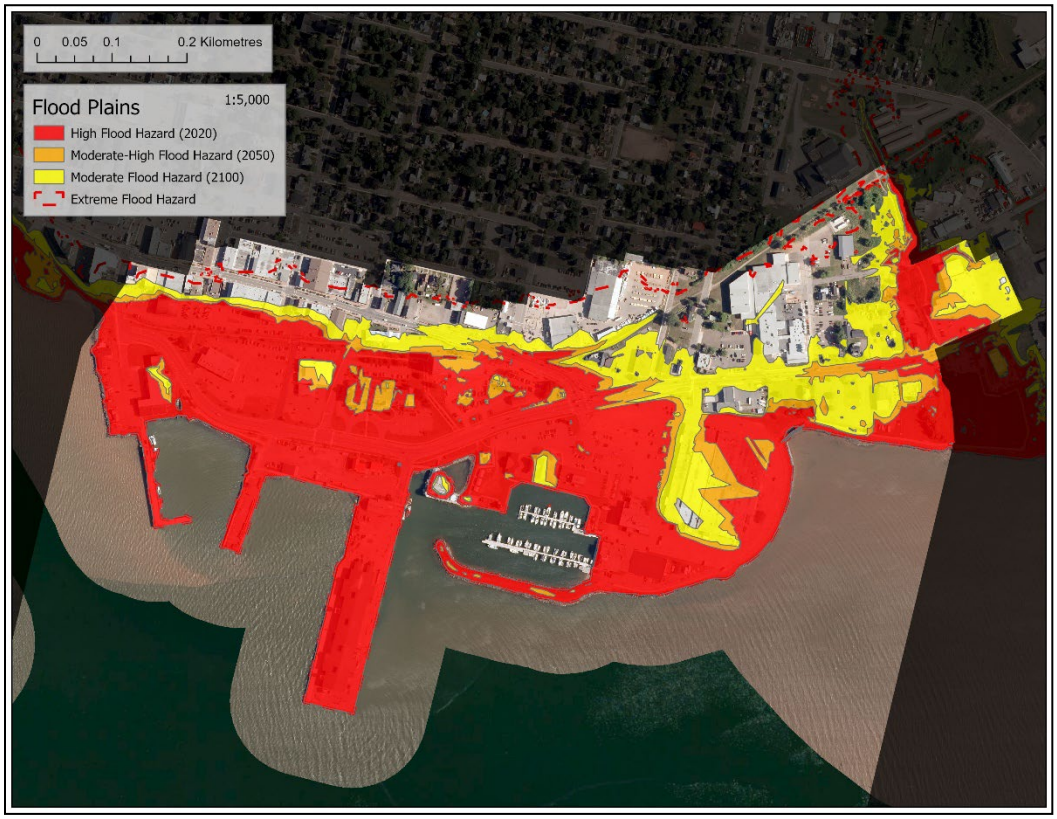


Figure 41. Flood Hazard Overview for the Summerside Waterfront.

Assessment Details

Flood Hazard Assessment (2050)

The Summerside Waterfront faces HIGH flood hazard due to extensive low-lying infrastructure within current and projected flood zones along Bedeque Bay. The approximately 6,500-meter waterfront includes harbour facilities, Spinnakers Landing development, commercial buildings, parks, and residential areas at elevations vulnerable to storm surge flooding. The 2050 1% annual exceedance probability flood level of 2.550 meters affects wharfs, docks, businesses, and port infrastructure.

Summerside's estuarine position in Bedeque Bay creates flood dynamics similar to Charlottetown, where the narrowing water body can amplify storm surge. Sea level rise of

approximately 0.19 meters between 2020 and 2050 progressively expands flood-prone areas. Access routes may be compromised during events. Nearby wetlands to the east provide some natural buffering, though these areas will themselves experience increased flooding.

Erosion Hazard Assessment

The waterfront is classified as MODERATE erosion hazard reflecting its mixed shoreline character. Much of the harbour features heavy armouring including rock revetments, breakwaters, and sea walls protecting port infrastructure. These hardened sections effectively prevent natural erosion but require ongoing maintenance as structures degrade. However, portions include unarmoured sections with wetland margins and low-lying plains, particularly toward the eastern extent. These natural shorelines experience active erosion processes. The mixed system requires adaptive management addressing both protection infrastructure upkeep and natural shoreline dynamics.

Vulnerability Summary

Summerside Waterfront's vulnerability stems primarily from flood exposure to low-elevation tourism and port infrastructure, with secondary concerns around shoreline protection maintenance. As PEI's second-largest urban centre, the waterfront serves critical economic functions beyond tourism. Flood disruption affects waterfront businesses and the integrated tourism economy dependent on reliable harbour access.

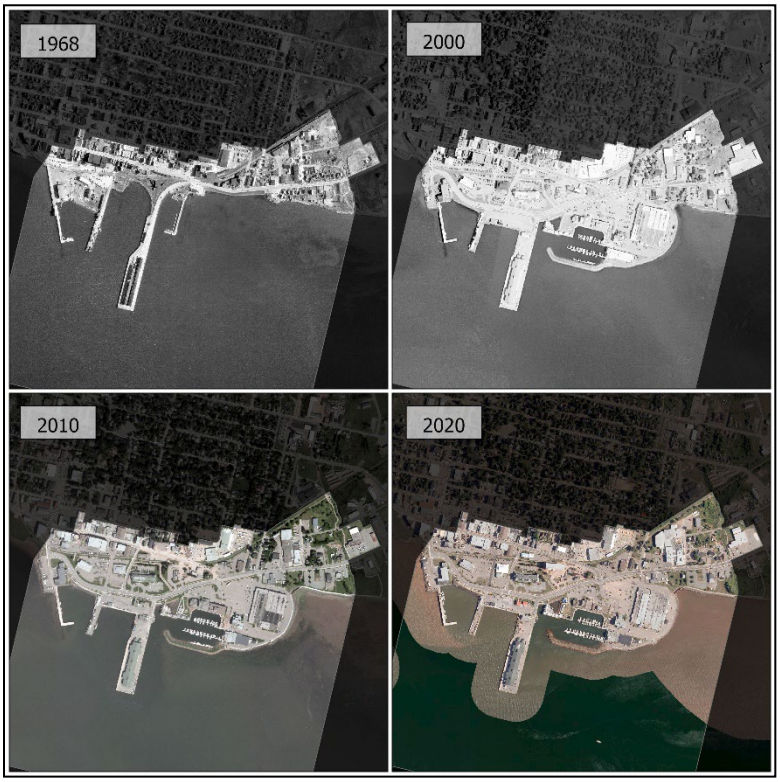


Figure 42. Historical Imagery for the Summerside Waterfront.

6. Beaconsfield Historic House

Civic Address:	2 Kent St, Charlottetown, PE C1A 1M6
Shoreline Type:	Artificial - armour rock
Coastal Location:	Coastal - elevated site
Watershed:	Charlottetown (WS_52)
Shore Unit:	Hillsborough

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-LOW	**MODERATE**
Limited property flooding **Buildings outside zones**	**Armoured shoreline** **Requires maintenance**

WATER LEVELS (CGVD2013)		
Parameter	**2020**	**2050**
MSL	-0.194 m	0.016 m
MHHW	0.633 m	0.843 m
1% AEP	2.237 m	2.468 m
0.1% AEP	2.708 m	2.939 m



Figure 43. Flood Hazard Overview for Beaconsfield Historic House.

Assessment Details

Flood Hazard Assessment (2050)

Beaconsfield Historic House is classified as MODERATE-LOW flood hazard based on its elevated site overlooking the Charlottetown harbour. While the property has approximately 70 meters of shoreline frontage, the historic house and carriage house sit at sufficient elevation that projected 2050 flood scenarios do not reach the buildings. Limited portions of the waterfront property boundary may experience flooding during extreme events, but core heritage structures and visitor facilities remain protected.

Erosion Hazard Assessment

The property is classified as MODERATE erosion hazard due to its armoured waterfront. Rock revetment protects the shoreline from natural erosion processes typical of estuarine banks. This armouring effectively stabilizes the shoreline but requires ongoing maintenance. The relatively short shoreline frontage (70 metres) makes maintenance manageable. The elevated position of buildings provides buffer space should shoreline protection require replacement.

Vulnerability Summary

Beaconsfield demonstrates how site elevation can provide effective flood protection even in areas with high water level projections. Vulnerability is limited primarily to shoreline protection maintenance rather than direct hazard exposure to heritage structures. The combination of

elevated building sites and manageable shoreline armour extent creates relatively low overall coastal vulnerability.



Figure 44. Historical Imagery for Beaconsfield Historic House.

Key Tourism Infrastructure

Key Tourism Infrastructure represents the critical access points and transportation networks that enable PEI's tourism economy to function. The Confederation Bridge and Wood Islands Ferry Terminal serve as the province's primary gateways, bringing the vast majority of visitors to the Island. These facilities are irreplaceable within meaningful planning timeframes—their disruption or damage would have immediate, severe consequences for tourism access and the broader provincial economy. The Charlottetown Airport provides essential air connectivity, while the Confederation Trail network offers recreational infrastructure across the province. Within this category, the bridge and ferry terminal face distinct but significant coastal vulnerabilities that warrant particular attention given their critical nature.

Summary Assessment

Asset Name	Shore Type	Flood Hazard	Erosion Hazard	Key Context
Confederation Bridge	Artificial - harbour, breakwater, bluff, wetland	MOD-LOW	MOD-LOW	Bridge structure protected; nearby wetlands and wharf areas flood

Asset Name	Shore Type	Flood Hazard	Erosion Hazard	Key Context
Wood Islands Ferry Terminal	Artificial - port, cliff, wetland	HIGH	MODERATE	Ferry terminal and access roads in flood zones
Charlottetown Airport (YYG)	N/A - Inland	N/A	N/A	Inland location with no coastal exposure
Confederation Trail (St. Peters-Morell)	Artificial - low plain, cliff, wetland	MODERATE	MOD-LOW	River crossings flood; some coastal sections armoured

7. Wood Islands Ferry Terminal

Civic Address:	23 Service Rd, Wood Islands, PE C0A 1R0
Shoreline Type:	Artificial - port infrastructure, cliff, wetland
Coastal Location:	Directly on shoreline
Watershed:	Little Sands Shore (WS_272)
Shore Unit:	SouthEast

COASTAL FLOOD RISK	COASTAL EROSION RISK
HIGH	**MODERATE**
Terminal in flood zone	**Hardened infrastructure**
Operations affected	**Adjacent areas eroding**

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.173 m	0.067 m
MHHW	0.428 m	0.668 m
1% AEP	2.353 m	2.612 m
0.1% AEP	2.825 m	3.084 m

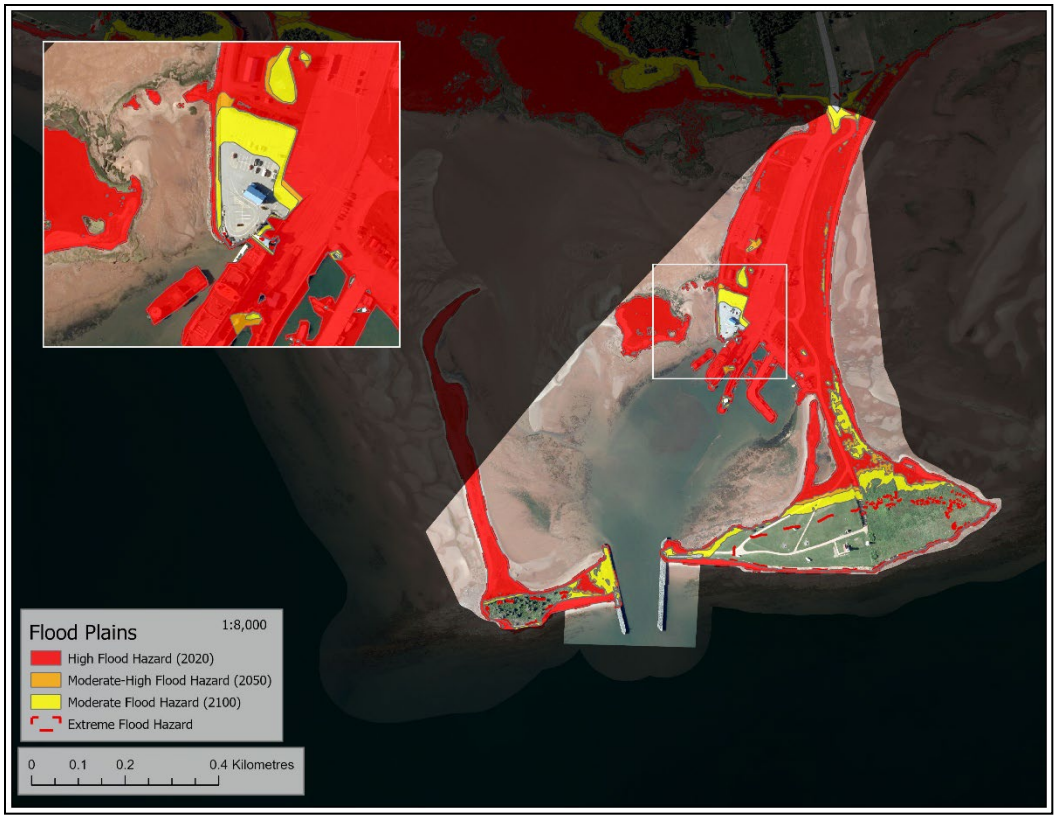


Figure 45. Flood Hazard Overview for the Wood Islands Ferry Terminal.

Assessment Details

Flood Hazard Assessment

Wood Islands Ferry Terminal faces HIGH flood hazard due to the low elevation of terminal infrastructure and access roads along Northumberland Strait. The ferry terminal building, docks, vehicle marshalling areas, and access roads lie within projected 2050 coastal flood zones. During storm surge events, water levels approaching or exceeding the 1% annual exceedance probability elevation of 2.612 metres directly impact terminal operations and vehicle access. Sea level rise projections of 0.24 metres between 2020 and 2050 progressively increase flood frequency, duration, and extent. As one of only two vehicle access points to Prince Edward Island, any disruption to ferry operations has immediate consequences for tourism access and the broader Island economy. The terminal's exposure creates particular concern because alternative access depends entirely on the Confederation Bridge - the province has no back-up ferry service. Flooding affects not just the terminal structure but the entire operational chain including vehicle queuing areas, parking, approach roads, and connections to Route 1. Nearby wetlands provide limited buffering but themselves experience extensive flooding.

Erosion Hazard Assessment

The terminal is classified as MODERATE erosion hazard reflecting its mixed shoreline character. Port infrastructure including docks, breakwaters, and hardened surfaces along approximately 800 metres effectively prevents erosion at the terminal facility itself. However, adjacent undeveloped areas feature natural shorelines with cliffs and low-lying wetlands

experiencing active coastal processes. Provincial park areas show ongoing erosion, though infrastructure is set back sufficiently to avoid immediate threat. The hardened terminal infrastructure requires periodic maintenance as wave action, ice, and weathering degrade structures. The Northumberland Strait's exposure to southeasterly weather systems creates significant wave energy affecting the terminal during storms. While the terminal structure itself has erosion protection, the broader site sits within an actively eroding coastal system.

Vulnerability Summary

Wood Islands Ferry Terminal represents PEI's most significant tourism infrastructure vulnerability due to the combination of high flood exposure and irreplaceable function. The terminal's criticality as one of two access points to the Island means that even temporary disruption during storm events affects tourism access and creates economic impacts. Unlike most other assessed assets where adaptation might involve managed retreat, facility modification, or operational adjustments, the ferry terminal's function is geographically fixed—ferries must dock where the terminal exists. Adaptation options are thus limited to protection, accommodation, and operational resilience measures. Future planning must address both the physical vulnerability of terminal infrastructure and the systemic consequence of this critical access point's exposure to increasing coastal hazards.

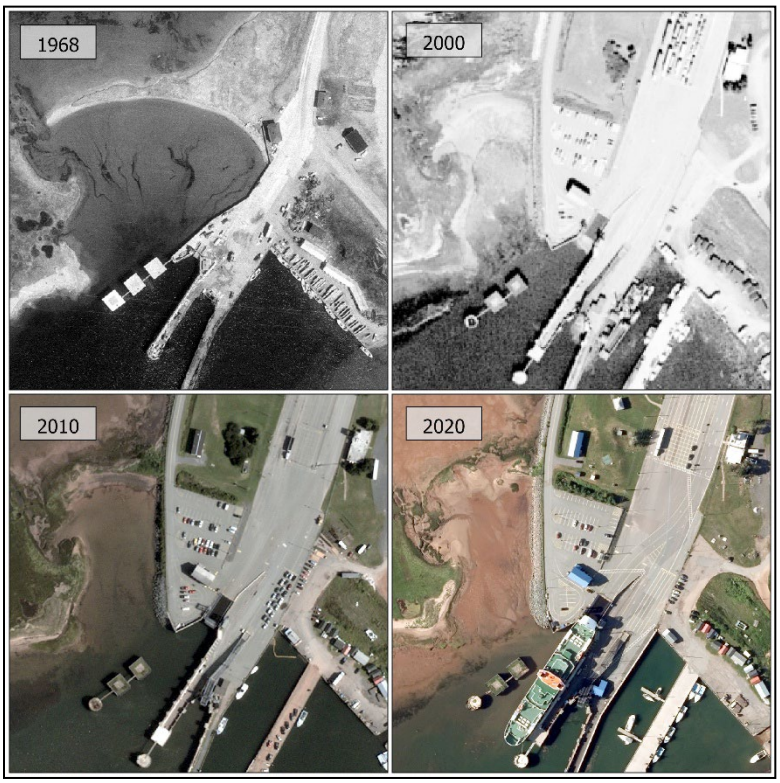


Figure 46. Historical Imagery for the Wood Islands Ferry Terminal.

8. Confederation Bridge

Civic Address:	104 Abegweit Blvd, Borden-Carleton, PE C0B 1X0
Shoreline Type:	Artificial - harbour, breakwater, bluff, wetland
Coastal Location:	Coastal approach - structure offshore
Watershed:	Seven Mile Bay (WS_90)
Shore Unit:	Tryon

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-LOW	**MODERATE-LOW**
Structure protected	**Heavily armoured**
Surrounding areas flood	**Requires maintenance**

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.286 m	-0.086 m
MHHW	0.333 m	0.533 m
1% AEP	2.117 m	2.347 m
0.1% AEP	2.532 m	2.762 m



Figure 47. Flood Hazard Overview for the Confederation Bridge.

Assessment Details

The Confederation Bridge approach and associated infrastructure are classified as MODERATE-LOW for both flood and erosion hazards. The bridge structure itself was engineered to withstand significant environmental loading including storm surge, wave action, ice forces, and projected sea level rise over a 100-year design life. The bridge deck sits approximately 40 metres above the water at mid-span and 11 metres at the navigation spans, well above all projected flood scenarios. However, the approach areas and surrounding infrastructure face some coastal exposure. Nearby wetlands and the sewage lagoon experience flooding during storm events. The commercial wharf area at Gateway Village, while separate from bridge operations, faces flood exposure affecting tourism services and businesses. Some access roads and low-lying areas around the toll plaza experience minor flooding during extreme events, though the main bridge approach remains operational. Extensive armouring protects the bridge approaches, piers, and adjacent shoreline, effectively preventing erosion but requiring ongoing inspection and maintenance. Adjacent unprotected areas experience natural coastal erosion processes. The critical distinction is that bridge operations and access are not compromised by coastal hazards affecting the immediate area - the structure's engineering and elevation provide substantial resilience. The classification reflects conditions in the immediate vicinity rather than the bridge structure itself.

Vulnerability Summary

As PEI's primary access point carrying approximately 75% of visitor traffic, the Confederation Bridge's resilience is fundamental to the tourism economy. The structure itself demonstrates low

vulnerability due to engineering design incorporating climate projections and extreme loading conditions. However, the bridge's criticality means that even minor access disruptions have significant consequences. The surrounding area's moderate-low hazard exposure presents manageable challenges that become more significant given the infrastructure's essential nature. Unlike the ferry terminal's high direct vulnerability, the bridge's primary challenge is maintaining reliable access while managing the coastal environment of approach areas and associated facilities. Future planning must continue to monitor the structure's performance against evolving climate conditions while addressing the more vulnerable ancillary infrastructure supporting bridge operations and visitor services.



Figure 48. Historical Imagery for the Confederation Bridge.

9. Confederation Trail (St. Peters Bay to Morell)

Section:	St. Peters Bay to Morell section
Shoreline Type:	Artificial - low plain, cliff, wetland
Coastal Location:	Coastal section with river crossings
Watershed:	Marie River (WS_107)
Shore Unit:	St. Peter's

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	**MODERATE-LOW**
River crossings flood	**Coastal sections armoured**
Low-lying sections affected	**Setback generally adequate**

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.276 m	-0.036 m
MHHW	0.028 m	0.268 m
1% AEP	2.011 m	2.271 m
0.1% AEP	2.422 m	2.682 m



Figure 49. Flood Hazard Overview for the Confederation Trail – St Peters Bay to Morell.

Assessment Details

The St. Peters Bay to Morell section of the Confederation Trail is classified as MODERATE flood hazard and MODERATE-LOW erosion hazard. This approximately 12-kilometre section crosses varied coastal terrain including river estuaries, low-lying plains, and areas adjacent to coastal cliffs. River crossing points, particularly at Marie River and associated tributaries, experience flooding during storm surge events when elevated water levels back-up into estuary systems. Low-lying sections of the trail within coastal wetland areas also experience temporary

flooding. However, much of the trail route sits on the elevated former railway bed, providing natural elevation above flood zones in many locations. The MODERATE classification reflects the vulnerability of specific sections rather than the entire route. Where the trail approaches the immediate coastline, armouring has been installed to protect the trail surface from erosion and wave action. In most locations, the trail maintains sufficient setback from actively eroding shorelines to allow natural coastal processes without threatening trail infrastructure. The MODERATE-LOW erosion classification recognizes that while portions require ongoing maintenance of protection structures, the linear nature of the trail allows for adaptive management including potential route adjustments if coastal erosion threatens specific sections.

Vulnerability Summary

The Confederation Trail's vulnerability is characterized by localized exposure at river crossings and low-lying coastal sections rather than system-wide risk. The trail's recreational function allows for temporary closures and route adjustments that would be unacceptable for critical access infrastructure like the bridge or ferry. Flooding creates inconvenience and periodic access disruption but does not threaten the trail system's viability. Erosion in specific locations can be managed through localized armouring, trail surface maintenance, or minor route realignments. The distributed nature of exposure across a linear system means that adaptation can occur incrementally, addressing the most vulnerable sections while maintaining overall trail connectivity. However, the trail's tourism value depends on reliable access and trail quality, so ongoing monitoring and maintenance of flood-prone and erosion-exposed sections remains important for sustaining visitor experience.

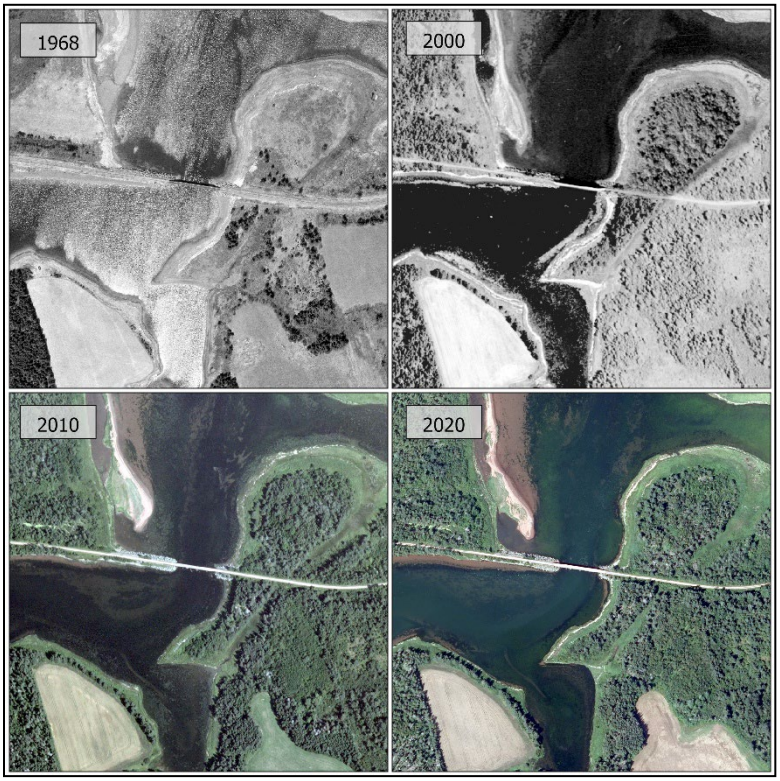


Figure 50. Historical Imagery for Morell River crossing.

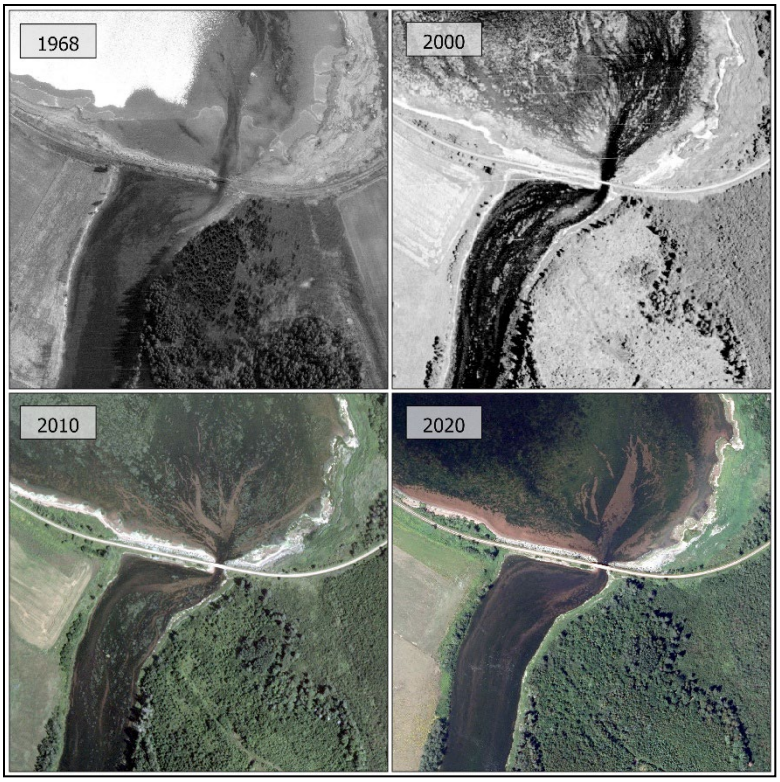


Figure 51. Historical Imagery for Marie/Midgell Bridge crossing.

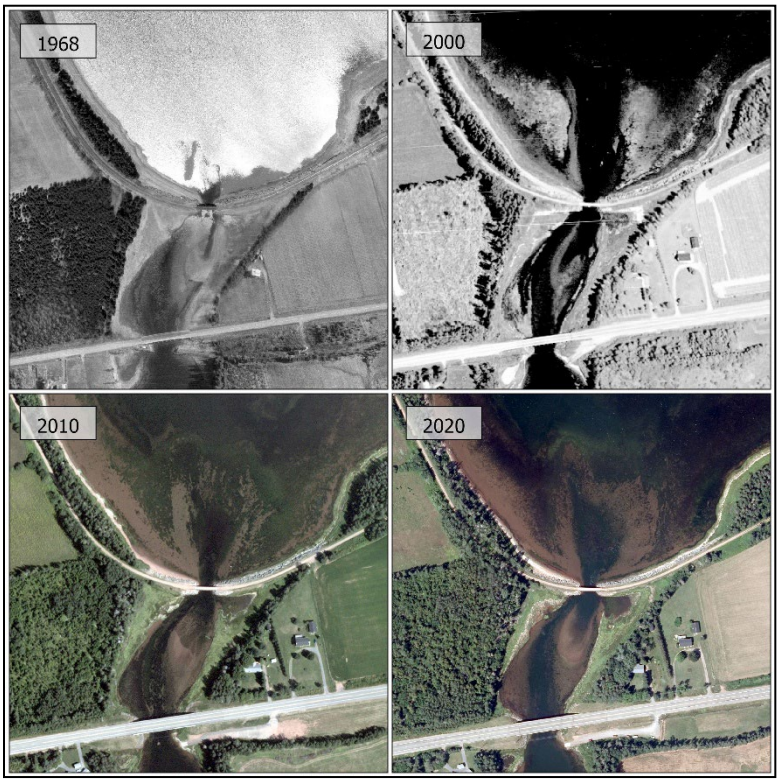


Figure 52. Historical Imagery for Midgell River crossing.



Figure 53. Historical Imagery for St. Peters Rd. section.

10. Charlottetown Airport (YYG)

Civic Address:	250 Maple Hills Avenue, Charlottetown, PE C1C 1N2
Shoreline Type:	N/A - Inland location
Coastal Location:	Inland - Not coastal
Watershed:	Winter River (WS_94)
Shore Unit:	Tracadie

COASTAL FLOOD RISK	COASTAL EROSION RISK
N/A (INLAND)	**N/A (INLAND)**
No coastal exposure	**No coastal exposure**



Figure 54. Flood Hazard Overview for the Charlottetown Airport.

Assessment Details

Charlottetown Airport occupies an inland location in the Winter River watershed with no direct coastal exposure. The facility sits well outside coastal flood zones and experiences no erosion hazard. While the airport provides essential air connectivity for PEI's tourism industry, its operations and infrastructure face no coastal hazards. Climate-related considerations for the airport relate to other factors beyond the scope of this assessment, including inland precipitation, wind, temperature extremes, and potential changes to fog patterns affecting flight operations. From a coastal hazard perspective, the airport demonstrates the value of inland siting for critical infrastructure.

Signature Experience Venues

Signature Experience Venues represent premium tourism offerings that position PEI as a destination for distinctive experiences - championship golf, waterside resorts, major cultural events, and authentic Island dining. These assets extend tourism seasons, attract specific market segments, and contribute significantly to the province's reputation for quality visitor experiences. Coastal hazard exposure varies widely within this category, from golf courses and resorts situated directly on dynamic shorelines to event venues with minimal coastal influence. The adaptive nature of some venues (golf courses can redesign holes, event grounds can modify layouts) provides flexibility unavailable to fixed infrastructure, though this adaptation carries costs and may alter the experiences that define these assets' appeal.

Summary Assessment

Asset Name	Shore Type	Flood Hazard	Erosion Hazard	Key Context
The Links at Crowbush Cove	Sand dune, beach, wetland, artificial	MODERATE	HIGH	Dynamic beach/dune system; course design accommodates change
Brudenell River Resort	Artificial, bluff, wetland, low plain	MODERATE	MOD-LOW	Estuarine setting; buildings elevated; golf course/campground exposed
Cavendish Beach Music Festival Site	N/A - Inland	N/A	N/A	Inland event venue with no coastal exposure
Charlottetown Event Grounds	Artificial	MOD-LOW	MOD-LOW	Elevated downtown location; surrounding areas and access affected
New Glasgow Lobster Suppers	Wetland	MODERATE	MOD-LOW	Building elevated; property and access experience flooding

11. The Links at Crowbush Cove

Civic Address:	710 Lakeside Rd, Route 350, Lakeside, PE
Shoreline Type:	Sand dune, beach, wetland, artificial
Coastal Location:	Directly on shoreline
Watershed:	Bristol Creek (WS_115)
Shore Unit:	St. Peter's

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	HIGH
Course areas flood	Active beach/dune system
Beach/wetland inundation	Course design adapts

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.270 m	-0.030 m
MHHW	0.061 m	0.301 m
1% AEP	1.987 m	2.247 m
0.1% AEP	2.404 m	2.664 m

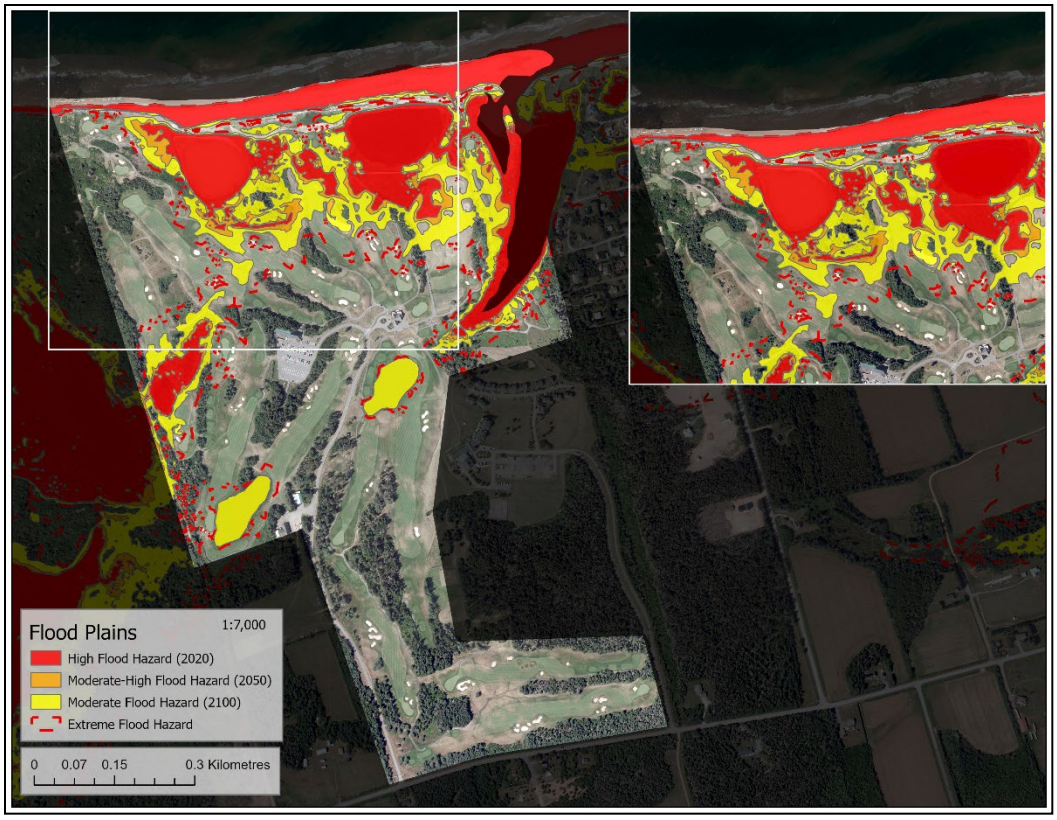


Figure 55. Flood Hazard Overview for The Links at Crowbush Cove.

Assessment Details

Flood Hazard Assessment

The Links at Crowbush Cove is classified as MODERATE flood hazard based on the exposure of golf course areas, wetlands, and beach frontage to coastal flooding. The course is situated on a barrier beach system along St. Peter's Bay with holes routed through dunes, beach grass, and coastal wetlands. During storm surge events, particularly those coinciding with high tides, low-lying portions of the course experience flooding. Beach areas, wetland features incorporated into course design, and several holes located near sea level are within projected 2050 flood zones. However, the clubhouse, maintenance facilities, and most course infrastructure are elevated above flood risk. The course's links-style design intentionally works with natural coastal topography, incorporating wetlands and dune features that naturally flood during storm events. Sea level rise of approximately 0.24 metres between 2020 and 2050 will increase flood frequency in low-lying course areas and expand wetland extents. Unlike fixed infrastructure where flooding represents damage, the course design philosophy accommodates periodic inundation of natural features. The moderate classification reflects that flooding affects course playability and access rather than threatening permanent infrastructure or core facility operations.

Erosion Hazard Assessment

The Links at Crowbush Cove faces HIGH erosion hazard due to its location on an active beach and dune system. The course occupies approximately one kilometre of shoreline where beach

and dune erosion is a natural, ongoing process essential to the barrier system's function. Several holes are routed directly through or adjacent to the primary dune ridge. Historical erosion in this shore unit averages 30-50 cm/year with significant variability - some areas experience rapid change while others remain relatively stable. Post-Tropical Storm Fiona (2022) caused substantial dune scarping and beach profile changes affecting course features. Some existing armouring protects specific infrastructure but may redirect erosion to adjacent unprotected areas. The HIGH classification reflects not impending loss of the golf course, but rather the certainty that course features will continue to change as dunes migrate, beach profiles adjust, and natural erosion occurs. The course has adaptation capacity - holes can be modified, tees relocated, and bunkers rebuilt in response to coastal change. This flexibility is central to the course's long-term viability in a dynamic coastal setting. The vulnerability is not to erosion itself, but to the costs and operational challenges of ongoing adaptation.

Vulnerability Summary

The Links at Crowbush Cove represents a distinctive vulnerability profile where high erosion hazard does not equate to high risk of asset loss. The course's links design philosophy embraces coastal dynamics rather than fighting them, creating both challenge and opportunity. Championship golf courses on dynamic shorelines are rare assets - this environment provides the distinctive playing experience that positions The Links at Crowbush Cove as a signature destination. However, maintaining playability within an actively changing landscape requires ongoing investment in course modifications, potentially including hole redesigns, relocated infrastructure, and adjusted routing. The economic question is not whether the course can persist in this setting, but whether the costs of continuous adaptation remain viable relative to the premium value of a true links experience. Climate change amplification of erosion rates and storm frequency may increase adaptation costs and reduce the operational window between necessary modifications.

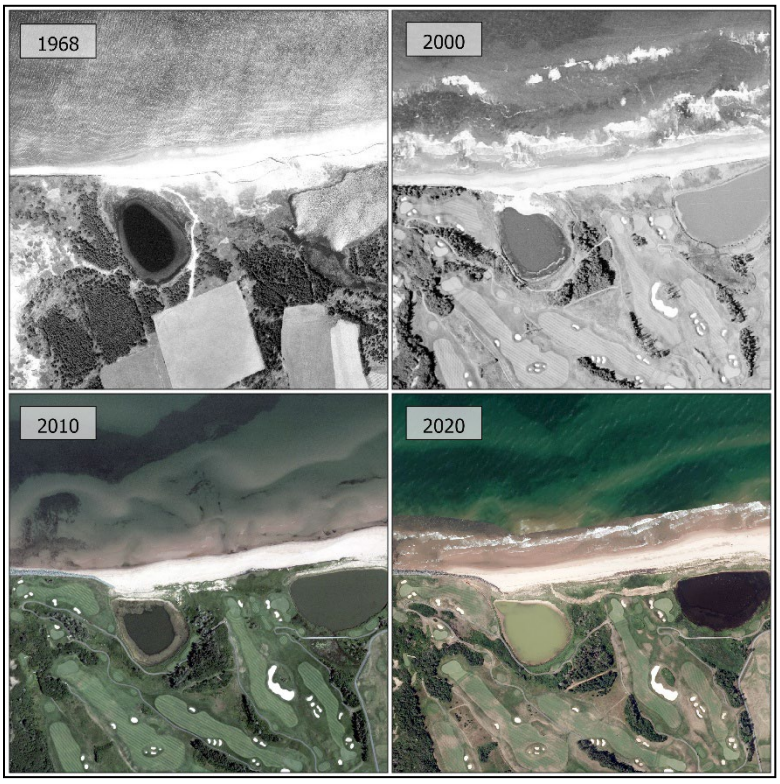


Figure 56. Historical Imagery for a section of The Links at Crowbush Cove's dynamic beachfront.

12. Brudenell River Resort

Civic Address:	86 Dewars Ln, Georgetown Royalty, PE C0A 1L0
Shoreline Type:	Artificial, bluff, wetland, low plain
Coastal Location:	Estuarine waterfront
Watershed:	Brudenell River (WS_40)
Shore Unit:	Cardigan

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	**MODERATE-LOW**
Golf course/campground flood	**Armoured estuarine shore**
Buildings protected	**Limited fetch environment**

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.052 m	0.188 m
MHHW	0.443 m	0.683 m
1% AEP	2.360 m	2.620 m
0.1% AEP	2.839 m	3.099 m

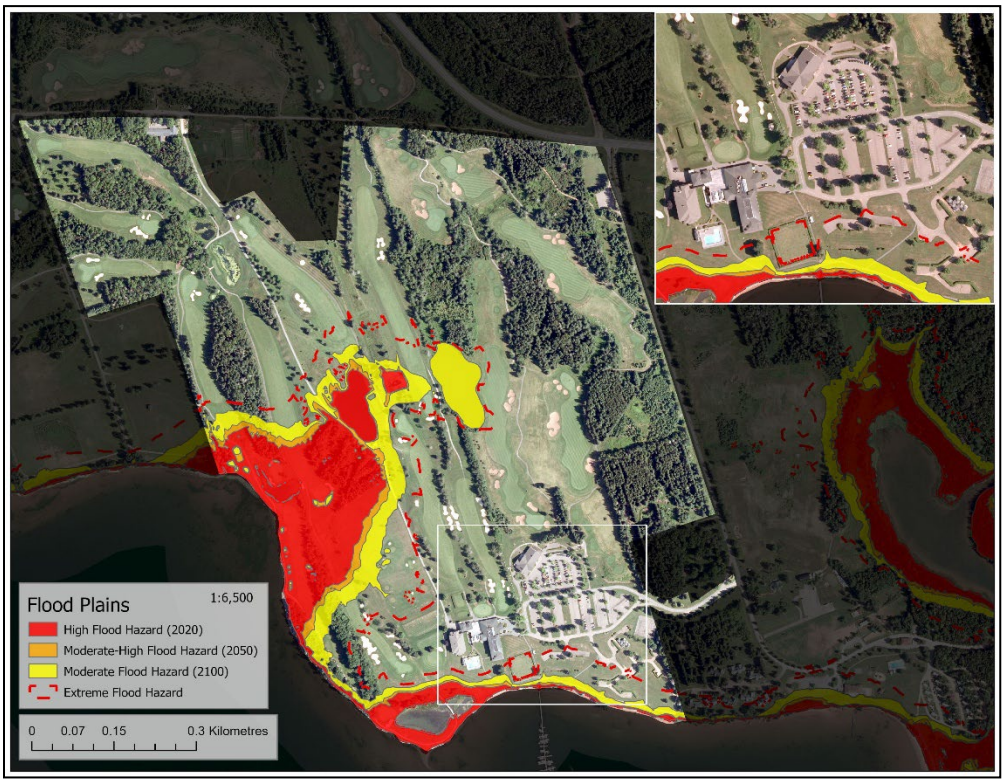


Figure 57. Flood Hazard Overview for the Brudenell River Resort.

Assessment Details

Brudenell River Resort is classified as MODERATE flood hazard and MODERATE-LOW erosion hazard. The resort occupies an estuarine setting along Brudenell River with wetlands, golf course holes, and campground areas at low elevations vulnerable to flooding. During storm surge events, particularly those coinciding with high tides, portions of the golf course and campground experience inundation, and adjacent wetlands flood extensively. However, the lodge, main buildings, and resort infrastructure are elevated and sited outside projected flood zones. Sea level rise of 0.24 metres between 2020 and 2050 will expand flood-prone areas and increase frequency of wetland inundation, but primary resort facilities remain protected. The estuarine position provides some natural buffering from direct ocean wave energy. The MODERATE classification reflects that flooding affects amenities and recreational areas but not core resort operations. The shoreline features a mix of armouring, bluffs, and wetland margins. Existing rock protection stabilizes areas adjacent to infrastructure, and the limited fetch of the

river environment moderates wave energy. The MODERATE-LOW erosion classification recognizes that while protection structures require periodic maintenance and some natural shoreline areas experience gradual change, no hard infrastructure faces immediate erosion threat. The resort's waterfront setting is manageable within typical infrastructure maintenance horizons.

Vulnerability Summary

Brudenell demonstrates how thoughtful siting and elevation can manage coastal exposure for fixed resort infrastructure. Primary vulnerability is to amenities and recreational facilities rather than buildings. Golf course flooding may temporarily affect playability of specific holes, and campground flooding could disrupt operations during storm events, but these impacts are manageable through operational adjustments and do not threaten the resort's fundamental viability. The combination of building elevation, shoreline protection, and the buffered estuarine environment creates moderate resilience. Adaptation priorities focus on maintaining protection structures, managing wetland migration, and potentially modifying golf course features in lowest-lying areas as flood frequency increases.



Figure 58. Historical Imagery for the Brudenell River Resort waterfront.

13. Charlottetown Event Grounds

Civic Address:	360 Grafton St, Charlottetown, PE C1A 1M2
Shoreline Type:	Artificial
Coastal Location:	Elevated downtown location
Watershed:	Charlottetown (WS_52)
Shore Unit:	Hillsborough

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-LOW	**MODERATE-LOW**
Elevated site protected	**Urban waterfront armouring**
Surrounding areas affected	**Requires maintenance**

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.194 m	0.016 m
MHHW	0.633 m	0.843 m
1% AEP	2.237 m	2.468 m
0.1% AEP	2.708 m	2.939 m

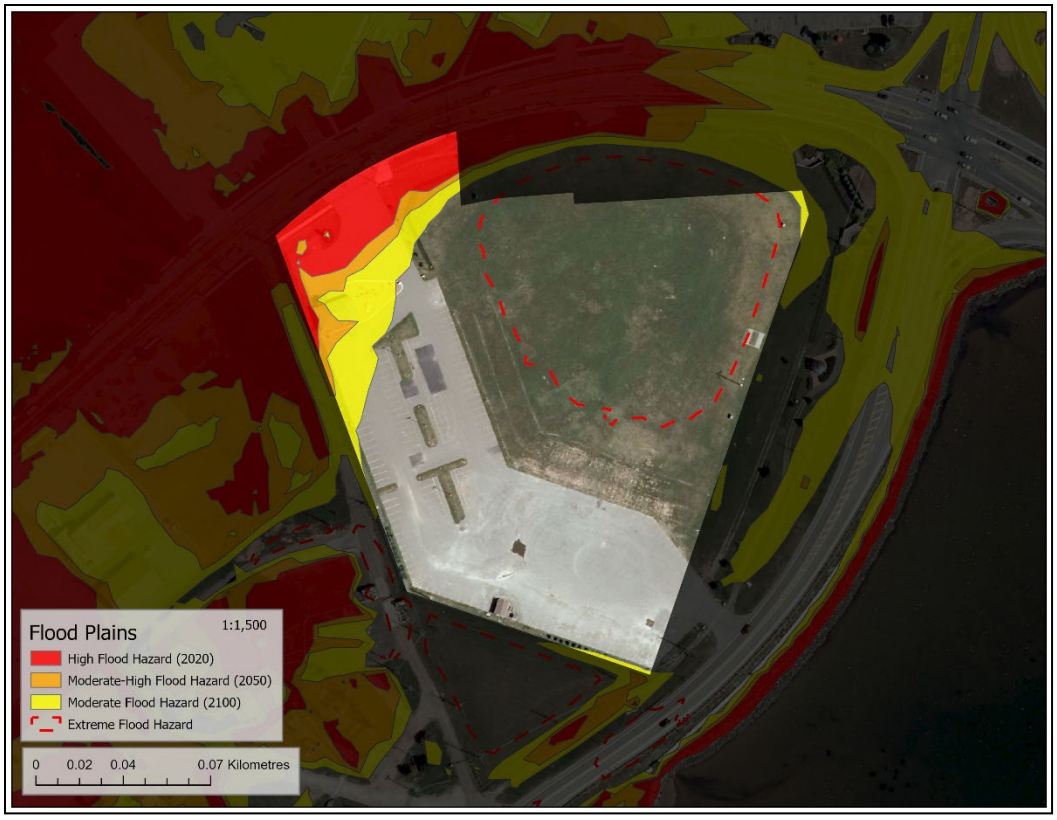


Figure 59. Flood Hazard Overview for the Charlottetown Event Grounds.

Assessment Details

The Charlottetown Event Grounds are classified as MODERATE-LOW for both flood and erosion hazards. The complex occupies an elevated downtown site approximately 800 metres from the Charlottetown Waterfront. The primary event space and parking sit outside projected coastal flood zones. However, surrounding lower-lying areas and some approach roads may experience flooding during extreme storm surge events, and portions of the broader waterfront district that visitors transit through are within flood-prone zones. The facility is within the Hillsborough estuarine watershed where extensive coastal armouring protects the waterfront but requires ongoing maintenance. The MODERATE-LOW classifications reflect that while the Event Grounds itself has minimal direct exposure, its downtown waterfront context means that access, parking, and the broader district supporting event attendance face some coastal influence. The primary concern is not facility flooding but rather the resilience of the waterfront tourism district.

Vulnerability Summary

The Event Grounds demonstrate low direct vulnerability due to elevation, but moderate contextual vulnerability due to location within a flood-prone waterfront district. Major events drawing thousands of visitors depend on reliable access, parking, and the broader downtown infrastructure that supports event attendance. Storm timing could disrupt specific events, and progressive increases in waterfront flooding frequency may affect the district's overall function

even as the Event Grounds facilities themselves remain operational. Adaptation priorities are largely dependent on broader downtown waterfront planning rather than site-specific measures.



Figure 60. Historical Imagery for the Charlottetown Event Grounds.

14. New Glasgow Lobster Suppers

Civic Address:	604 Route 258, New Glasgow, PE C0A 1N0
Shoreline Type:	Wetland
Coastal Location:	Adjacent to coastal wetland
Watershed:	Hunter River (WS_129)
Shore Unit:	Brackley

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	MODERATE-LOW
Property floods	Wetland buffer
Building elevated	Limited fetch

WATER LEVELS (CGVD2013)		
Parameter	2020	2050
MSL	-0.403 m	-0.202 m
MHHW	-0.039 m	0.162 m
1% AEP	1.870 m	2.109 m
0.1% AEP	2.300 m	2.539 m

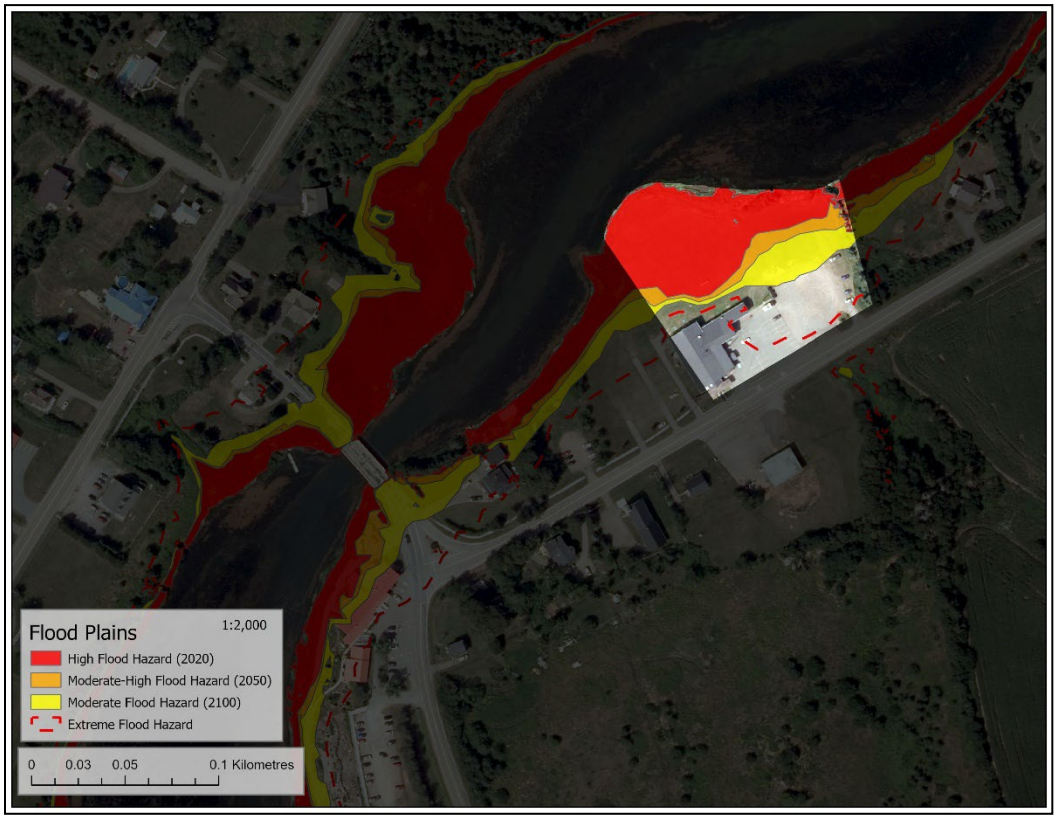


Figure 61. Flood Hazard Overview for the New Glasgow Lobster Suppers property.

Assessment Details

New Glasgow Lobster Suppers is classified as MODERATE flood hazard and MODERATE-LOW erosion hazard. The property is situated adjacent to coastal wetlands along Hunter River in a setting with some tidal influence. The dining hall building itself is elevated and sits outside projected flood zones, protecting the primary operational infrastructure. However, portions of the property including parking areas, access roads, and the immediately adjacent wetland areas experience flooding during storm surge events coinciding with high tides. Sea level rise projections of approximately 0.20 metres between 2020 and 2050 will expand wetland extent and increase flood frequency on low-lying property areas, though the elevated building remains protected. The estuarine location provides natural wave dampening, and the limited fetch environment moderates erosion potential. Coastal wetlands provide a natural buffer between the property and more exposed shorelines. The MODERATE-LOW erosion classification

reflects that while wetland margins experience natural migration processes and some areas may see gradual change, no buildings or critical infrastructure face direct erosion exposure. The combination of building elevation, wetland buffering, and limited fetch creates manageable coastal exposure.

Vulnerability Summary

New Glasgow Lobster Suppers demonstrates effective risk management through building elevation in a coastal setting. Vulnerability is limited to access, parking, and property flooding rather than threats to operational infrastructure. Storm events may temporarily affect accessibility, and progressive wetland expansion may require property adjustments over longer timeframes, but these represent manageable operational challenges rather than fundamental threats to this iconic Island dining experience. The property's resilience derives from thoughtful siting that maintains proximity to the coastal setting supporting its authentic character while protecting critical infrastructure from direct hazard exposure.



Figure 62. Historical Imagery for the New Glasgow Lobster Suppers property.

15. Cavendish Beach Music Festival Site

Civic Address:	8779 Route 6, Cavendish, PE C0A 1M0
Shoreline Type:	N/A - Inland location
Coastal Location:	Inland - Not coastal
Watershed:	Lake of Shining Waters (WS_161)
Shore Unit:	Cavendish

COASTAL FLOOD RISK	COASTAL EROSION RISK
N/A (INLAND)	**N/A (INLAND)**
No coastal exposure	**No coastal exposure**

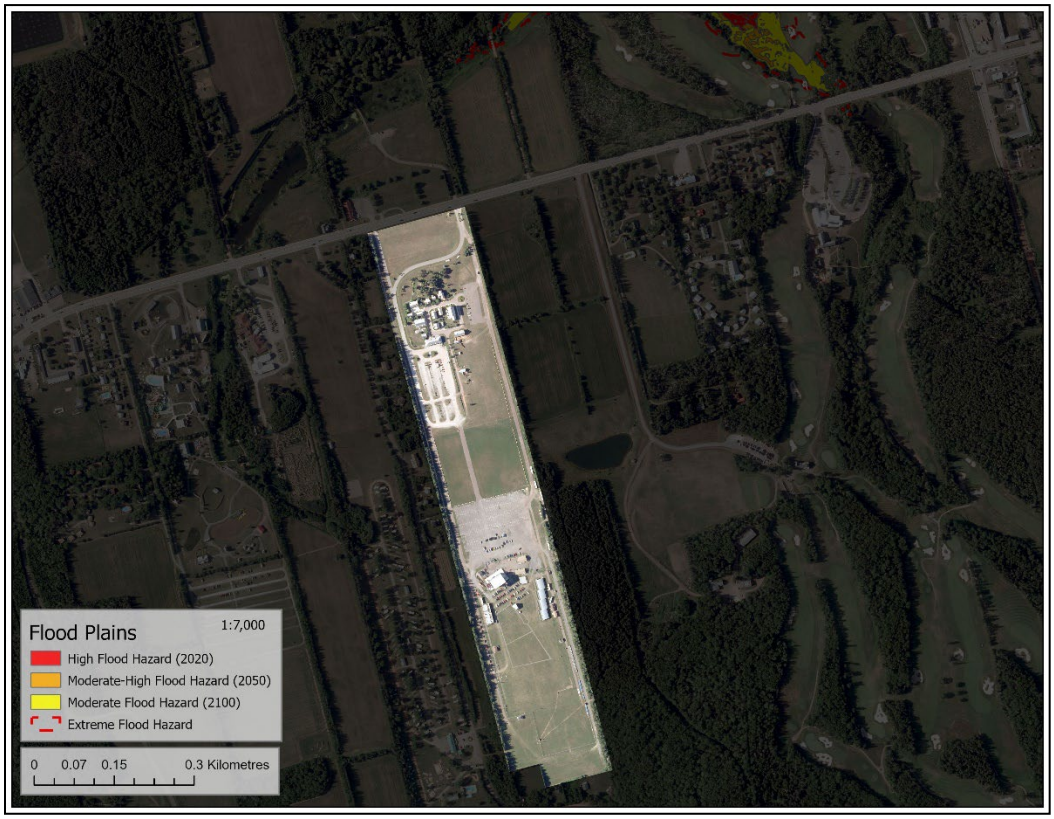


Figure 63. Flood Hazard Overview for the Cavendish Beach Music Festival grounds.

Assessment Details

The Cavendish Beach Music Festival site occupies an inland location in the Lake of Shining Waters watershed with no direct coastal exposure. The venue sits well outside coastal flood zones and experiences no erosion hazard. While the festival's branding references Cavendish Beach and the event draws visitors to the broader Cavendish coastal tourism area, the actual event site faces no coastal hazards. From a coastal hazard perspective, the venue

demonstrates the value of inland siting for temporary event infrastructure. Climate-related considerations for this venue relate to factors beyond coastal hazards, including precipitation during outdoor events and general weather patterns affecting summer festivals.



Figure 64. Historical Imagery for the Cavendish Beach Music Festival grounds.

Major Coastal & Natural Attractions

Major Coastal & Natural Attractions represent the heart of Prince Edward Island's coastal tourism experience. These assets showcase PEI's natural coastal environment, from dynamic beach and dune systems to heritage lighthouses and interpretive centres. This category faces the highest overall coastal hazard exposure, with five of nine assets experiencing high flood or high erosion hazards. However, for natural coastal systems, these 'hazards' reflect essential ecological processes rather than damage or loss.

A critical distinction must be made between natural coastal features and built infrastructure. High erosion ratings for beaches and dunes indicate active coastal dynamics essential to their ecological function and visitor appeal. These systems naturally erode during winter storms and rebuild during calmer periods. The primary vulnerabilities are visitor infrastructure (parking, boardwalks, facilities) and access roads rather than the natural features themselves. Adaptive management of built components is required, not protection of natural processes.

This category includes both dynamic natural systems and heritage structures. While beaches and dunes require space for natural processes, historic lighthouses and interpretation centres face more conventional coastal hazards requiring protection strategies.

Summary Assessment

Asset Name	Shore Type	Flood Hazard	Erosion Hazard	Key Context
Cavendish Main Beach	Beach/Dune	HIGH	HIGH	Dynamic beach system; visitor facilities exposed to natural processes
Basin Head Provincial Park	Beach/Dune	MOD-HIGH	HIGH	Active dune system; infrastructure in dynamic coastal zone
Brackley Beach Complex	Beach/Dune	MOD-HIGH	HIGH	Federal park with extensive visitor facilities in coastal zone
West Point Lighthouse	Beach/Artificial	HIGH	HIGH	Heritage lighthouse on eroding shoreline; mixed protection
Greenwich Interpretation Centre	Marsh/Dune	MODERATE	MOD-HIGH	Protected by wetlands; limited infrastructure exposure
Victoria-by-the-Sea Historic Village	Artificial	MODERATE	MODERATE	Historic waterfront with mixed armouring and natural areas
Lennox Island Mi'kmaq Cultural Centre	Bluff/Natural	MOD-LOW	MODERATE	Elevated site on bluff system; cultural significance
Dalvay by the Sea National Historic Site	Beach/Natural	MOD-LOW	MODERATE	Historic resort buffered from immediate shoreline
North Cape Interpretive Centre	Cliff/Natural	LOW	LOW	Elevated site on resistant cliff system

16. Cavendish Main Beach

Civic Address:	Cavendish Beach area, Route 6, Cavendish, PE
Shoreline Type:	Beach and dune system - highly dynamic natural coast
Coastal Location:	Directly on shoreline
Watershed:	Lake of Shining Waters area
Shore Unit:	Cavendish

COASTAL FLOOD RISK	COASTAL EROSION RISK
HIGH	**HIGH**
Beach and access infrastructure in flood zones Natural flooding of beach areas	Active beach/dune dynamics Natural erosion and accretion cycles

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.406 m	-0.203 m
MHHW	-0.031 m	0.172 m
1% AEP	1.790 m	2.021 m
0.1% AEP	2.212 m	2.443 m

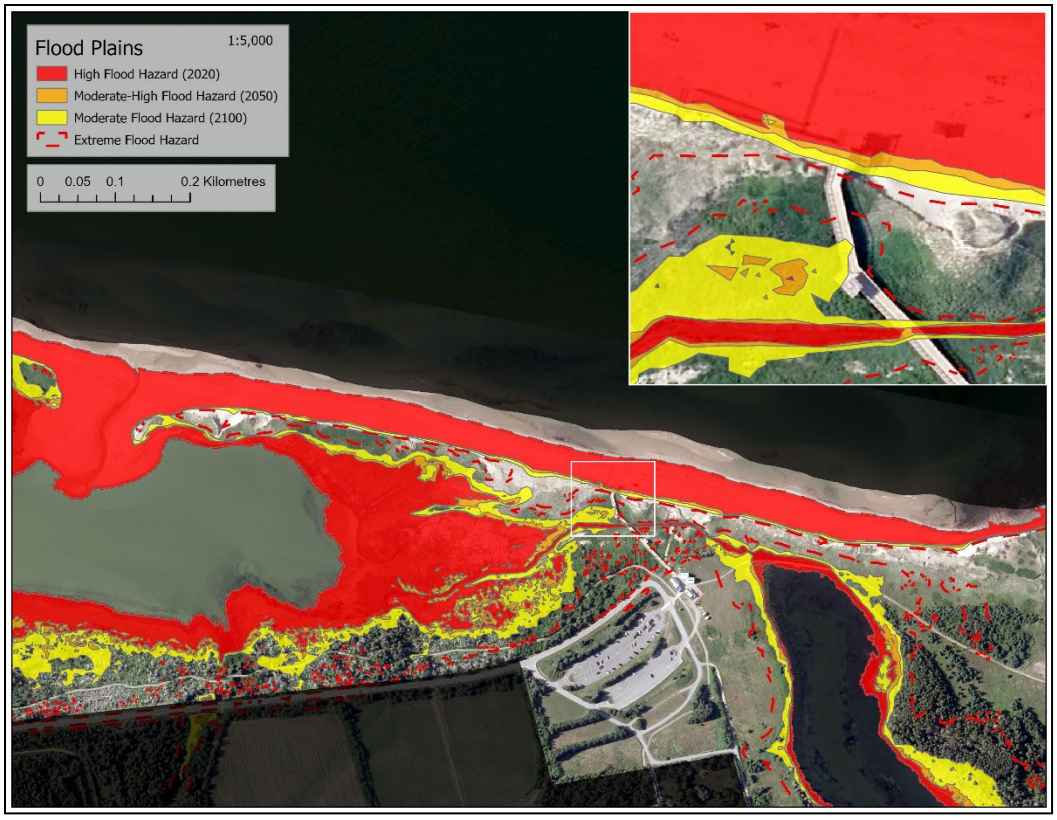


Figure 65. Flood Hazard Overview for the Cavendish Main Beach property.

Assessment Details

Flood Hazard Assessment

Cavendish Main Beach faces HIGH flood hazard due to the natural flooding characteristics of beach and dune systems. During storm events, the entire beach area and portions of the upland area experience regular inundation. This flooding is not damage but a natural process essential to beach function. However, visitor infrastructure including parking areas, boardwalks, changerooms, and access roads are located within projected flood zones.

The 2050 1% annual exceedance probability flood level of 2.021 metres will affect beach access points, parking facilities, and some visitor infrastructure. The low-lying nature of the beach system means that storm surge regularly inundates areas behind the primary dune line. Sea level rise of approximately 0.20 metres between 2020 and 2050 will increase flood frequency and duration, requiring adaptive management of visitor facilities.

Critical Context: Beach flooding is a natural process that moves sediment, maintains dune systems, and creates the dynamic environment that defines the beach experience. The hazard assessment addresses threats to built infrastructure, not to the beach system itself.

Erosion Hazard Assessment

Cavendish Main Beach is classified as HIGH erosion hazard reflecting the highly dynamic nature of this beach and dune system. The Cavendish shoreline experiences active erosion and accretion cycles that are fundamental to its ecological function and scenic character. Historical

rates vary significantly but average approximately 30-50 cm/year, with dramatic changes during individual storm events.

This erosion rating reflects natural coastal processes, not system degradation. The beach and dune complex naturally erodes during winter storms when wave energy is high, then rebuilds during calmer summer conditions. These cycles maintain the beach profile, supply sediment to the coastal system, and create the diverse habitats that support both wildlife and tourism.

The primary vulnerability is to visitor infrastructure located within the active coastal zone. Parking areas, boardwalks, access paths, and facilities require adaptive management as coastal processes shift the position of stable zones. Historical shoreline change indicates that rigid infrastructure placement is unsustainable; flexible, movable facilities aligned with natural processes are essential.

Vulnerability Summary

Vulnerability derives from the location of visitor infrastructure within an active coastal system. Cavendish Main Beach exemplifies the challenge of providing visitor access to dynamic natural systems while allowing essential coastal processes to continue. The beach itself is not vulnerable—it is designed by nature to change. Vulnerability lies in maintaining visitor access and facilities as the system evolves.

Adaptive management strategies must recognize that beaches are not stable platforms for permanent infrastructure but dynamic systems requiring flexible approaches to visitor accommodation.

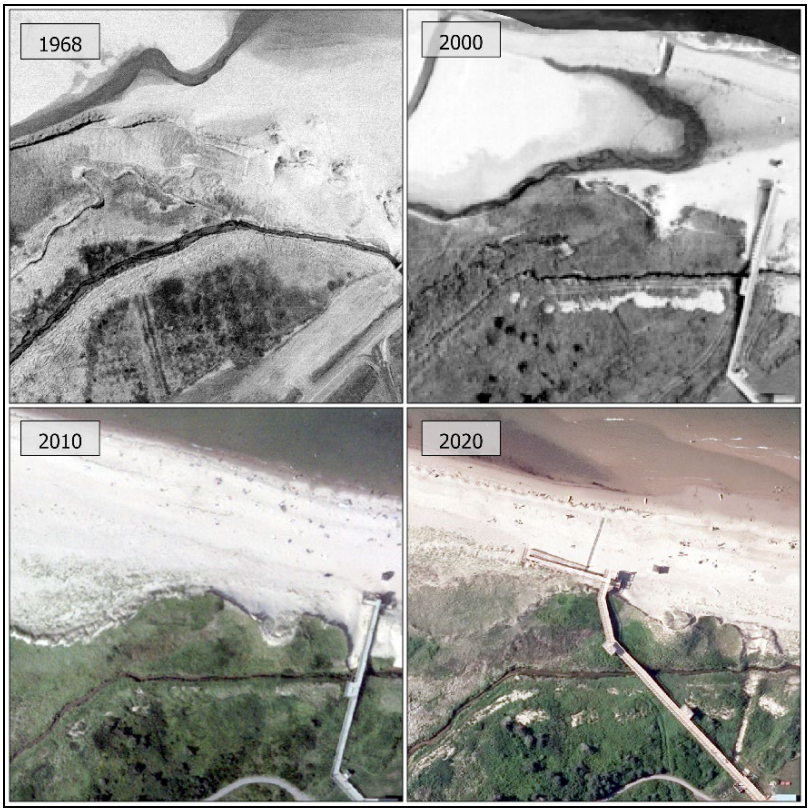


Figure 66. Historical Imagery for the Cavendish Main Beach boardwalk area.

17. Basin Head Provincial Park

Civic Address:	336 Basin Head Rd, Souris, PE C0A 2B0
Shoreline Type:	Beach and dune system - 'singing sands' beach
Coastal Location:	Directly on shoreline
Watershed:	South Lake (WS_279)
Shore Unit:	NorthEast

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-HIGH	HIGH
Beach areas and access routes flood naturally	Highly active beach and dune system
Infrastructure in low-lying areas	Natural sediment transport processes

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.274 m	-0.041 m
MHHW	0.157 m	0.390 m
1% AEP	1.933 m	2.166 m
0.1% AEP	2.383 m	2.616 m

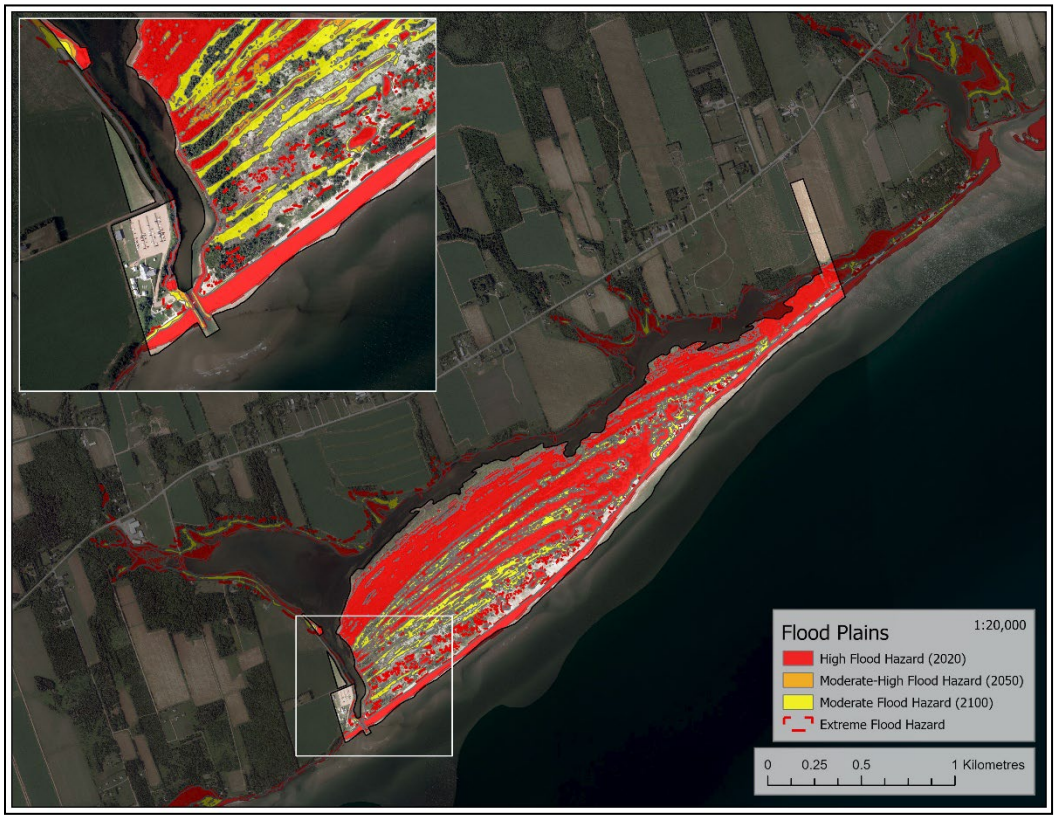


Figure 67. Flood Hazard Overview for Basin Head Provincial Park.

Assessment Details

Basin Head is classified as MODERATE-HIGH flood hazard due to its position as a dynamic beach system with visitor infrastructure in flood-prone areas. The famous 'singing sands' beach naturally experiences regular inundation during storm events and high tides. The museum and interpretive facilities are positioned above the immediate flood zone, but access routes and visitor amenities experience flooding during storm events.

Basin Head experiences HIGH erosion hazard as one of PEI's most dynamic beach systems. This reflects the highly active sediment transport processes that maintain the unique 'singing sands' characteristics. The beach system experiences significant seasonal and storm-driven changes that are essential to maintaining the unique characteristics that attract visitors.

Basin Head's vulnerability lies in balancing visitor access with natural system function. The singing sands phenomenon depends on specific sediment characteristics and beach dynamics that require ongoing coastal processes. Infrastructure must be positioned and designed to adapt to natural system changes while preserving the features that make Basin Head a provincial park.



Figure 68. Historical Imagery for Basin Head Provincial Park parking lot and infrastructure.

18. Brackley Beach Complex

Civic Address:	4020 Brackley Point Rd, Brackley Beach, PE
Shoreline Type:	Beach and dune system within federal park
Coastal Location:	Directly on shoreline
Watershed:	McCallum Creek (WS_117)
Shore Unit:	Brackley

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-HIGH	HIGH
Extensive visitor facilities in flood zones Natural beach and wetland flooding	Active dune migration and beach dynamics Natural coastal processes essential to ecosystem

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.353 m	-0.147 m
MHHW	0.005 m	0.211 m
1% AEP	1.889 m	2.122 m
0.1% AEP	2.311 m	2.544 m

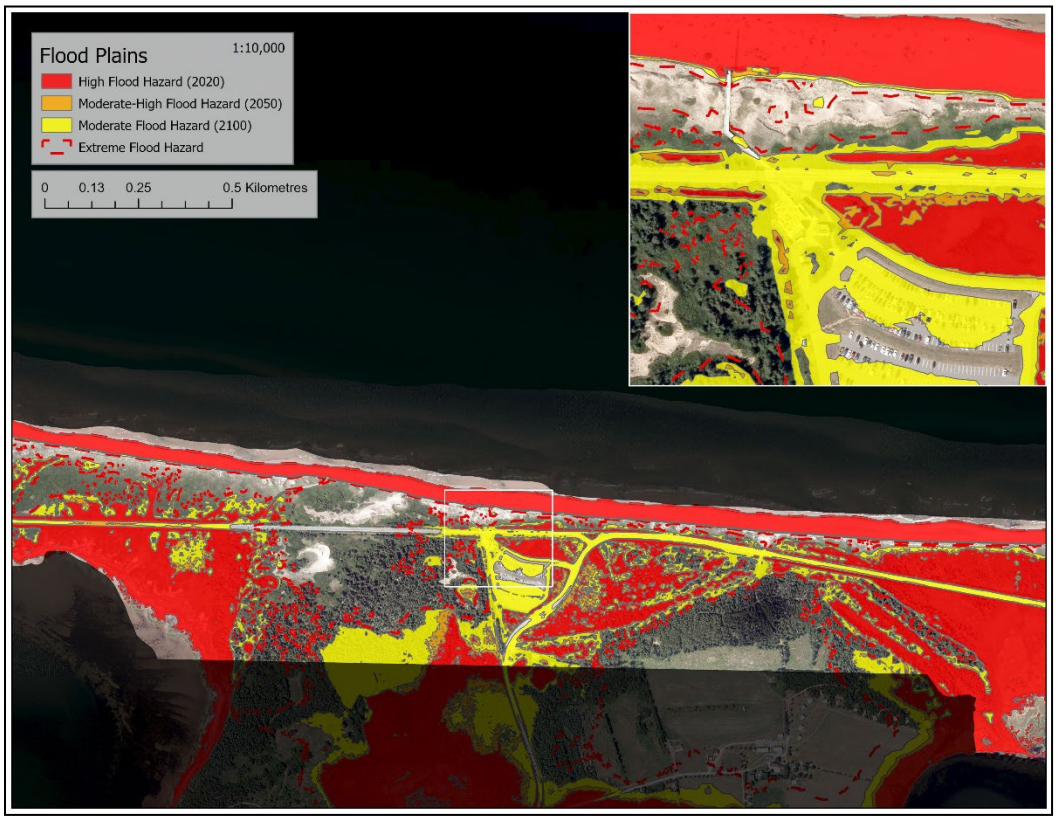


Figure 69. Flood Hazard Overview for Brackley Beach Complex.

Assessment Details

The Brackley Beach Complex faces MODERATE-HIGH flood hazard due to extensive visitor infrastructure located within the natural flood zones of beach and dune systems. As part of Prince Edward Island National Park, the area includes substantial facilities including parking areas, visitor centres, boardwalks, camping areas, and beach access infrastructure.

Brackley Beach experiences HIGH erosion hazard reflecting the complex of active beach, dune, and barrier island processes. The area includes multiple beach systems, migrating dunes, and active sediment transport corridors that create the diverse coastal habitats protected within the national park. The federal protected area context allows for adaptive approaches that prioritize ecosystem function while maintaining visitor access through flexible infrastructure design.

Brackley Beach Complex exemplifies the challenge of managing visitor access within highly dynamic natural systems protected for their ecological values. The national park mandate supports approaches that work with natural processes rather than attempting to control them.

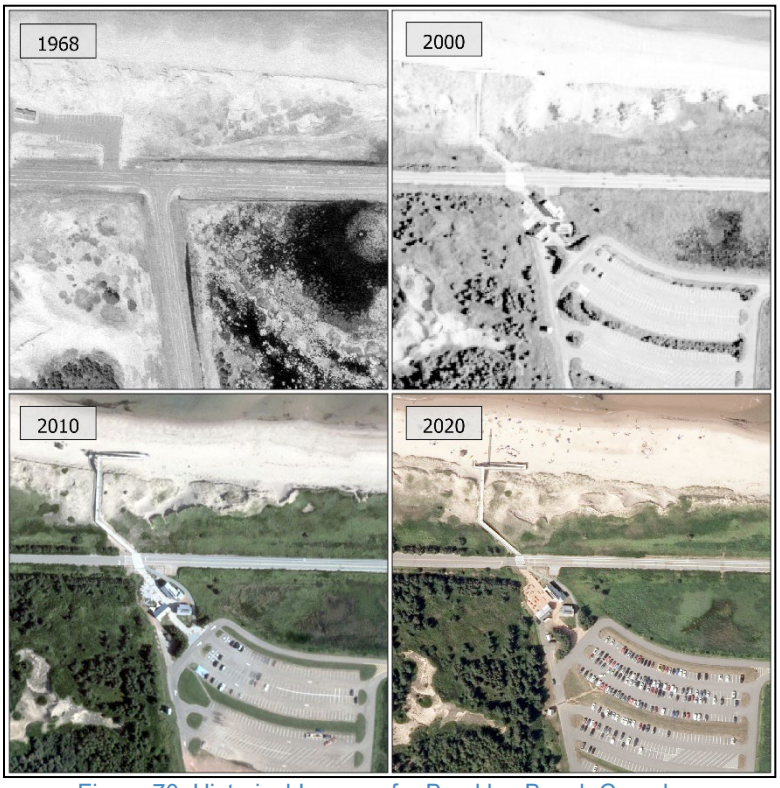


Figure 70. Historical Imagery for Brackley Beach Complex.

19. West Point Lighthouse

Civic Address:	364 Cedar Dunes Park Rd, West Point, PE C0B 1V0
Shoreline Type:	Mixed - artificial protection with adjacent natural beach
Coastal Location:	Directly on shoreline - historic lighthouse
Watershed:	West Cape (WS_264)
Shore Unit:	SouthWest

COASTAL FLOOD RISK	COASTAL EROSION RISK
HIGH	**HIGH**
Historic structures in flood zones	Heritage lighthouse on eroding shoreline
Ground floor facilities vulnerable	Mixed natural and armoured shoreline

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.199 m	-0.002 m
MHHW	0.132 m	0.329 m
1% AEP	2.337 m	2.570 m
0.1% AEP	2.868 m	3.101 m

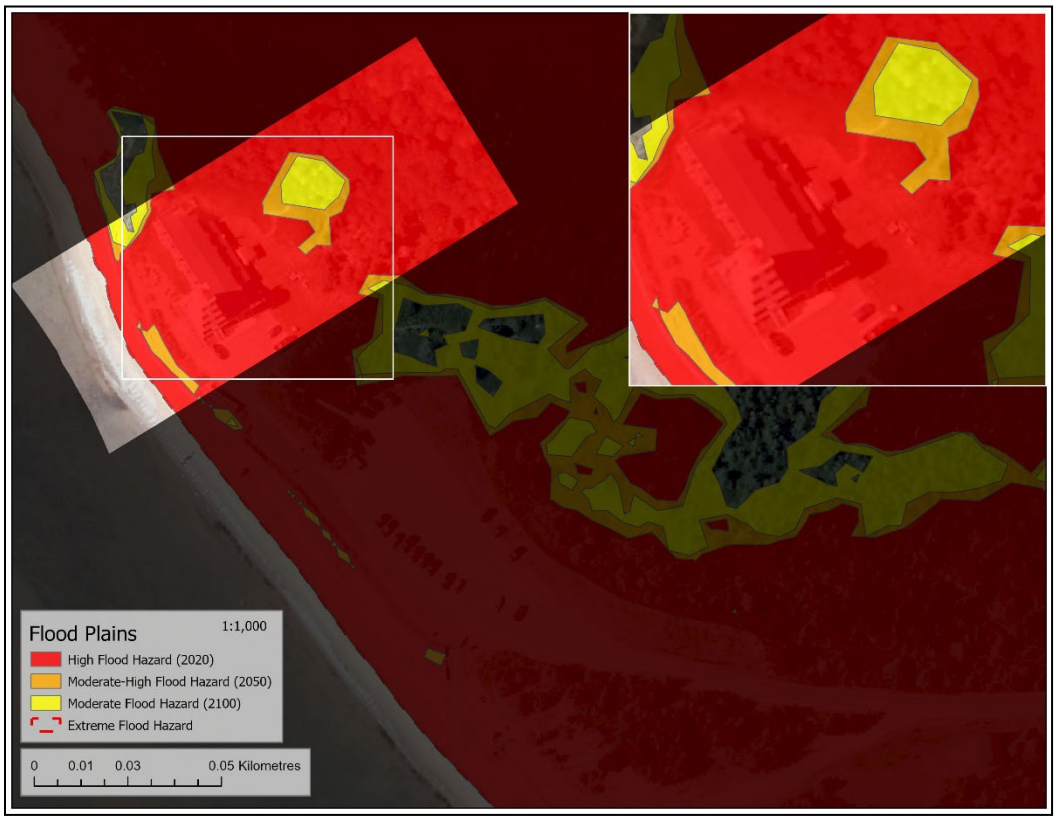


Figure 71. Flood Hazard Overview for West Point Lighthouse.

Assessment Details

West Point Lighthouse faces HIGH flood and erosion hazards due to its historic location directly on the shoreline. The lighthouse, museum, and visitor facilities are positioned to provide ocean access and scenic views, placing them within present day and projected 2050 flood zones. The shoreline features a complex of natural beach areas adjacent to installed protection measures.

The lighthouse represents a heritage structure that cannot be easily relocated, creating a fixed asset on a dynamic shoreline. Unlike natural beach systems where erosion is a beneficial process, erosion threatens the continued viability of this irreplaceable cultural heritage site.

West Point Lighthouse faces the acute vulnerability of a fixed heritage asset on a dynamic shoreline. Adaptive management must balance heritage preservation with coastal realities, potentially requiring enhanced protection measures while maintaining the site's cultural landscape values.



Figure 72. Historical Imagery for West Point Lighthouse.

20. Greenwich Interpretation Centre

Civic Address:	29 Wild Rose Road, Greenwich, PE
Shoreline Type:	Salt marsh with barrier beach and dune systems
Coastal Location:	Coastal zone with salt marsh buffering
Watershed:	St. Peters River (WS_122)
Shore Unit:	St. Peter's

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	MODERATE-HIGH
Salt marsh provides natural buffering	Dynamic barrier island system
Access infrastructure may flood	Dune migration and beach processes

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.277 m	-0.037 m
MHHW	0.027 m	0.267 m
1% AEP	2.009 m	2.249 m
0.1% AEP	2.421 m	2.661 m

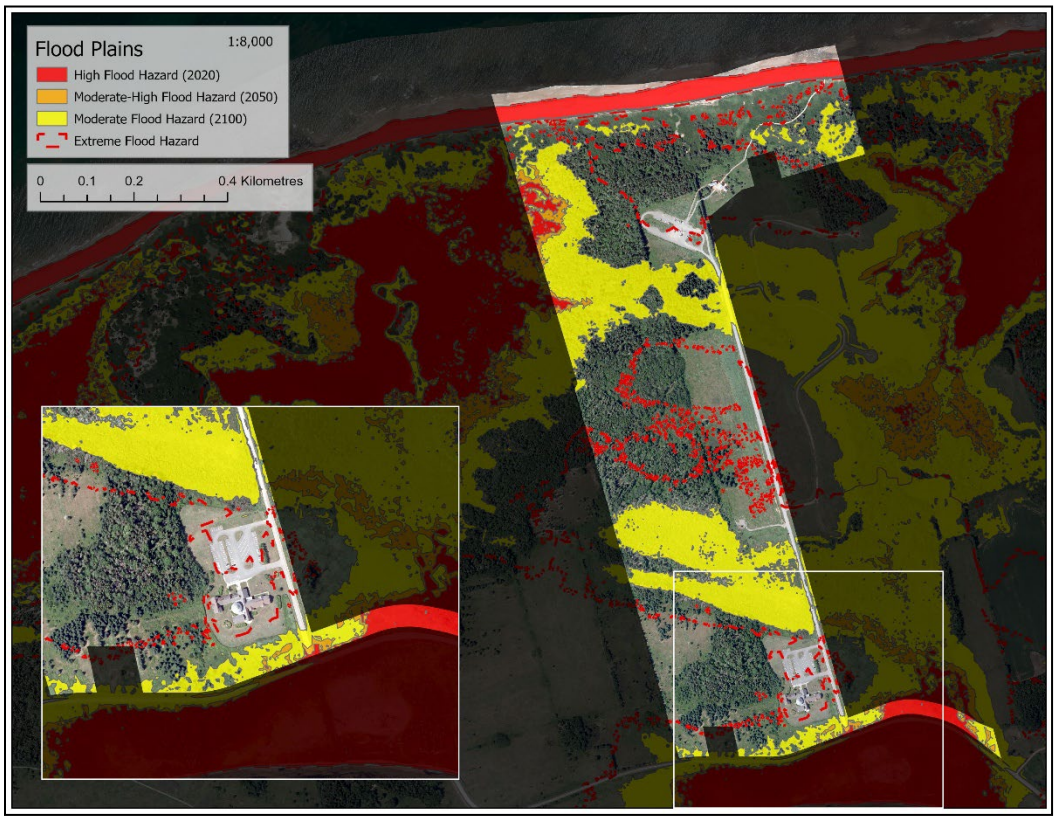


Figure 73. Flood Hazard Overview for the Greenwich Interpretation Centre.

Assessment Details

Greenwich Interpretation Centre faces MODERATE flood hazard due to its position behind extensive salt marsh systems that provide natural buffering against storm surge and high water events. The interpretation centre is elevated above the immediate flood zone, but access infrastructure and trails may experience periodic flooding during extreme events.

The area experiences MODERATE-HIGH erosion hazard reflecting the dynamic dune systems that characterize this section of PEI National Park. Greenwich represents one of the most ecologically significant coastal areas on PEI, with complex interactions between barrier beaches, migrating dunes, salt marshes, and estuarine environments.

Greenwich exemplifies successful integration of visitor infrastructure with highly dynamic coastal systems. The interpretation centre and trail system are designed to showcase the natural processes while maintaining appropriate setbacks from the most active coastal zones.



Figure 74. Historical Imagery for the Greenwich Interpretation Centre.

21. Victoria-by-the-Sea Historic Village

Civic Address:	2 Howard St, Victoria, PE C0A 2G0
Shoreline Type:	Mixed - artificial structures with natural beach areas
Coastal Location:	Historic waterfront village
Watershed:	Victoria (WS_44)
Shore Unit:	Tryon

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE	MODERATE
Elevated heritage buildings	Mixed shoreline protection
Waterfront areas vulnerable	Historic wharf infrastructure

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.266 m	-0.066 m
MHHW	0.506 m	0.706 m
1% AEP	2.242 m	2.442 m
0.1% AEP	2.675 m	2.875 m



Figure 75. Flood Hazard Overview for Victoria-by-the-Sea.

Assessment Details

Victoria-by-the-Sea faces MODERATE flood hazard with most heritage buildings positioned above immediate flood zones but waterfront commercial areas and visitor amenities vulnerable during storm events. The historic village represents one of PEI's most significant cultural landscapes, with heritage buildings dating to the 19th century arranged around a working waterfront.

The village experiences MODERATE erosion hazard reflecting the mixed character of the waterfront. Historic wharf infrastructure and seawalls provide some protection while natural beach areas continue to experience active coastal processes. The combination creates a complex shoreline with varying degrees of protection and exposure.

Victoria-by-the-Sea represents the challenge of maintaining heritage character while adapting to coastal hazards. The village's tourism appeal depends on maintaining the historic waterfront character while ensuring visitor access and heritage building preservation.



Figure 76. Historical Imagery for Victoria-by-the-Sea waterfront.

22. Lennox Island Mi'kmaq Cultural Centre

Civic Address:	102 Eagle Feather Trail, Lennox Island, PE C0B 1P0
Shoreline Type:	Natural bluff and beach - island setting
Coastal Location:	Elevated bluff position on First Nation reserve
Watershed:	Lennox Island (WS_192)
Shore Unit:	Malpeque

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-LOW	MODERATE
Elevated bluff position	Island shoreline processes
Cultural Centre above flood zones	Natural coastal dynamics

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.285 m	-0.085 m
MHHW	0.112 m	0.312 m
1% AEP	2.075 m	2.275 m
0.1% AEP	2.520 m	2.720 m



Figure 77. Flood Hazard Overview for the Lennox Island Mi'kmaq Cultural Centre.

Assessment Details

The Lennox Island Mi'kmaq Cultural Centre faces MODERATE-LOW flood hazard due to its elevated position on natural bluff systems. The Cultural Centre is positioned above the projected flood zones, though access routes and some community infrastructure may experience flooding during extreme storm events.

The site experiences MODERATE erosion hazard reflecting the Island's natural shoreline processes. As an island setting within Malpeque Bay, Lennox Island experiences complex coastal dynamics influenced by both open ocean and estuarine processes. The cultural significance of maintaining connection to traditional coastal lands adds important context to any adaptation planning.

Lennox Island Mi'kmaq Cultural Centre represents the intersection of cultural heritage, First Nation sovereignty, and coastal adaptation. The site's significance extends beyond tourism to include cultural preservation and community identity connected to coastal landscapes.



Figure 78. Historical Imagery for the Lennox Island Mi'kmaq Cultural Centre.

23. Dalvay by the Sea National Historic Site

Civic Address:	16 Cottage Crescent, York, PE C0A 1P0
Shoreline Type:	Natural beach with historic resort
Coastal Location:	Coastal zone with natural setback
Watershed:	Dalvay Lake (WS_282)
Shore Unit:	Tracadie

COASTAL FLOOD RISK	COASTAL EROSION RISK
MODERATE-LOW	MODERATE
Historic resort with natural setback	Natural beach processes
Buildings positioned above flood zones	Historic coastal development design

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.311 m	-0.101 m
MHHW	0.046 m	0.256 m
1% AEP	1.946 m	2.156 m
0.1% AEP	2.365 m	2.575 m

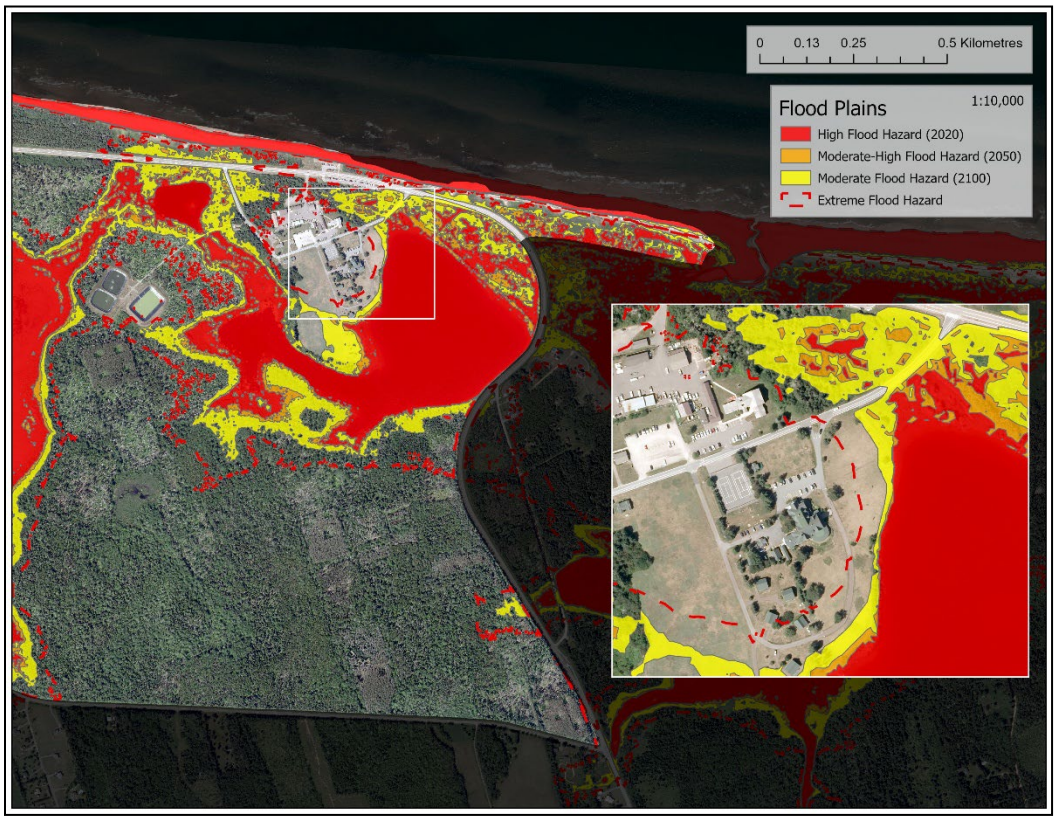


Figure 79. Flood Hazard Overview for Dalvay by the Sea National Historic Site.

Assessment Details

Dalvay by the Sea National Historic Site faces MODERATE-LOW flood hazard due to the historic positioning of the resort buildings above immediate coastal flood zones. The original design of this late-19th-century resort incorporated natural coastal setbacks that provide inherent protection against coastal flooding.

The site experiences MODERATE erosion hazard reflecting the natural beach processes along this section of the national park shoreline. Dalvay exemplifies historic coastal development that worked with natural coastal processes rather than against them, providing a model for heritage preservation within dynamic coastal systems.

Dalvay by the Sea represents successful historic coastal development that incorporated natural setbacks and worked with coastal processes. This National Historic Site demonstrates how heritage preservation can coexist with natural coastal dynamics through thoughtful siting and design.

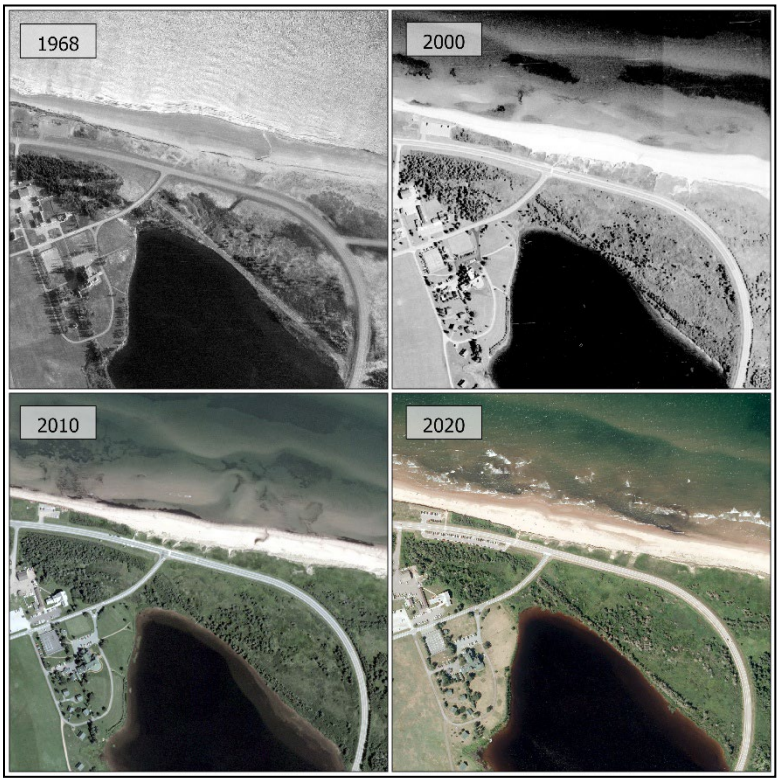


Figure 80. Historical Imagery for Dalvay by the Sea National Historic Site beach area.

24. North Cape Interpretive Centre

Civic Address:	21817 Route 12, North Cape, PE C0B 2B0
Shoreline Type:	Cliff and resistant bedrock systems
Coastal Location:	Elevated cliff position - PEI's northernmost point
Watershed:	Seacow Pond (WS_261)
Shore Unit:	Tignish

COASTAL FLOOD RISK	COASTAL EROSION RISK
LOW	LOW
Elevated cliff position	Resistant bedrock geology
Excellent protection from flooding	Stable cliff systems

WATER LEVELS (CGVD2013)

Parameter	2020	2050
MSL	-0.481 m	-0.273 m
MHHW	-0.051 m	0.157 m
1% AEP	2.026 m	2.234 m
0.1% AEP	2.496 m	2.704 m



Figure 81. Flood Hazard Overview for the North Cape Interpretive Centre.

Assessment Details

North Cape Interpretive Centre faces LOW flood and erosion hazards due to its elevated position on resistant cliff systems at PEI's northernmost point. The interpretive centre is positioned above all projected flood elevations, providing excellent protection from coastal flooding even under extreme sea level rise scenarios.

The site experiences LOW erosion hazard due to the resistant bedrock geology that characterizes the North Cape area and recently installed armour rock. Unlike much of PEI's coastline, which consists of easily eroded sandstone and unconsolidated sediments, North Cape features more resistant cliff systems that provide natural stability.

North Cape Interpretive Centre represents an ideal setting for coastal infrastructure, with its elevated, stable position providing natural protection from coastal hazards while offering dramatic views and access to unique coastal features. This setting provides excellent protection while showcasing PEI's diverse coastal geology and outstanding scenic values.

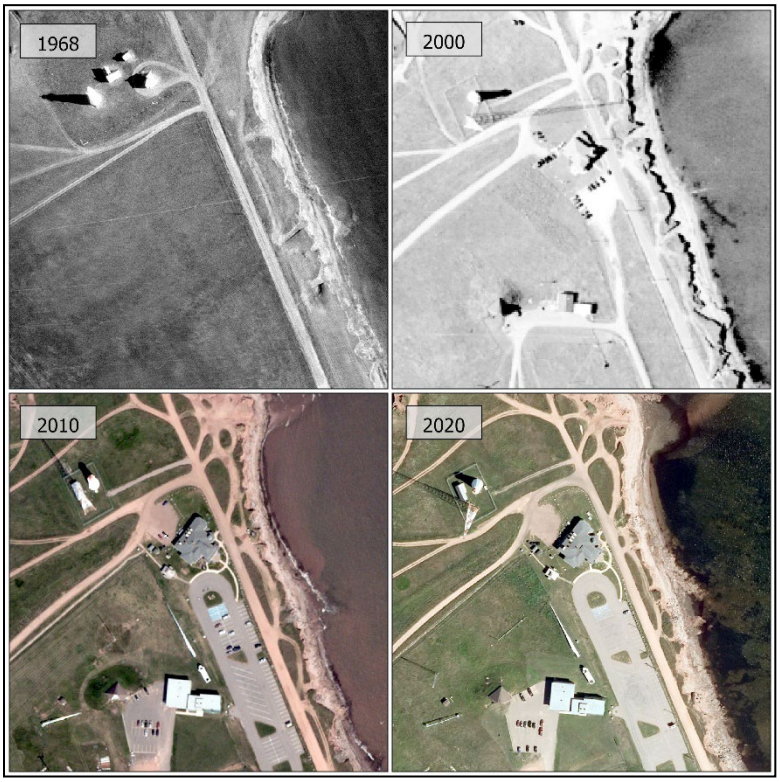


Figure 82. Historical Imagery for the North Cape Interpretive Centre.

Conclusion

This coastal hazard assessment examined flood and erosion exposure for 24 major tourism assets across Prince Edward Island, providing technical information to support provincial tourism industry risk assessment and climate adaptation planning. The analysis reveals a complex pattern of vulnerability that reflects both PEI's coastal geography and the fundamental characteristics of different tourism asset types.

Summary of Findings

The assessment classified coastal hazard exposure across four asset categories, revealing significant variation in both hazard levels and vulnerability characteristics:

- **Core Cultural & Urban Hubs** demonstrate a clear spatial pattern where elevation determines vulnerability. Urban waterfront developments in Charlottetown and Summerside face high flood hazard despite extensive armouring, while inland heritage sites (Province House, Confederation Centre, Green Gables Heritage Place) experience minimal coastal exposure. This category illustrates how site selection and elevation provide fundamental protection that engineering measures alone cannot fully replace.

- **Key Tourism Infrastructure** presents strategic vulnerabilities at critical access points. Wood Islands Ferry Terminal faces high flood hazard, representing a potential tourism access bottleneck. Confederation Trail experiences localized flooding near river crossings. The Confederation Bridge demonstrates infrastructure resilience through engineering design, while Charlottetown Airport benefits from inland positioning. These infrastructure vulnerabilities have system-wide implications beyond individual asset impacts.
- **Signature Experience Venues** show diverse vulnerability profiles reflecting varied coastal relationships. Coastal golf courses demonstrate adaptation potential through flexible course design that accommodates natural dynamics. Waterfront dining and resort venues face moderate flooding of property and access routes while maintaining elevated core facilities. Event venues vary from no coastal exposure to moderate contextual vulnerability based on waterfront district dependencies.
- **Major Coastal & Natural Attractions** exhibit the highest overall hazard exposure, with five of nine assets experiencing high flood or erosion hazards. Critically, these natural systems depend on dynamic coastal processes for their ecological function and visitor appeal. High erosion ratings for beach and dune complexes reflect beneficial natural processes requiring adaptive management of visitor infrastructure rather than indicating system degradation or loss.

Critical Insights

Natural Coastal Processes vs. Infrastructure Vulnerability

A fundamental finding is the concentration of high-hazard classifications within natural beach and dune systems that represent PEI's signature coastal attractions. This assessment emphasizes that erosion and flooding in these settings are not 'damage' but natural processes essential to system function and the experiences they provide. For Cavendish Beach, Basin Head, Brackley Beach Complex, and similar assets, high erosion ratings indicate active coastal dynamics requiring adaptive management of visitor facilities—parking areas, boardwalks, access roads, and interpretation infrastructure—rather than loss of the beaches themselves.

This distinction is critical for tourism planning. These dynamic systems naturally erode during winter storms and rebuild during calmer conditions, creating seasonal variation in beach profiles and dune configurations. The tourism value lies precisely in these natural processes that create diverse coastal habitats, maintain sediment supply, and provide authentic coastal experiences. Adaptive management approaches that work with these processes while maintaining visitor access represent a fundamentally different paradigm than protection-based approaches suitable for fixed infrastructure.

Asset Category Differentiation

The assessment reveals distinct vulnerability profiles across asset categories that suggest different adaptive approaches. Natural coastal attractions require strategies that maintain ecological function while managing visitor infrastructure exposure. Cultural and heritage assets

benefit most from elevation and setback, with armouring providing secondary protection for waterfront properties. Signature experience venues demonstrate varying adaptation potential, with golf courses showing high flexibility while heritage resorts depend more on protection measures. Critical infrastructure vulnerabilities have system-wide implications requiring regional coordination rather than site-specific responses.

Climate Change Amplification

All hazard classifications are based on current understanding of coastal processes and 2050 projections, but climate change will progressively amplify exposure through sea level rise, storm intensification, and reduced winter ice protection. Historical erosion rates and flood frequencies likely underestimate future conditions. Assets classified as moderate hazard today may experience high-hazard conditions by mid-century, while high-hazard assets may require ongoing adaptation to maintain functionality. This trajectory suggests that adaptation planning should consider not just 2050 conditions but the longer-term trajectory of change extending through the century.

Strategic Implications for Tourism Planning

Portfolio Risk Management

PEI's tourism industry depends heavily on coastal assets, creating both competitive advantage and concentrated risk exposure. The assessment identifies 17 of 24 major assets as having direct coastal exposure, with nine experiencing high flood or high erosion hazards. This concentration suggests that tourism industry resilience depends not just on individual asset adaptation but on maintaining the broader coastal tourism experience that emerges from the interaction of multiple assets, access infrastructure, and natural systems.

Diversification strategies that maintain PEI's coastal identity while reducing concentrated exposure might include enhancing inland heritage attractions, developing shoulder season programming that reduces peak summer coastal dependence, and creating redundancy in critical access infrastructure. However, any diversification must recognize that PEI's coastal character forms the foundation of its tourism appeal and cannot be replaced without fundamentally altering the visitor experience.

Adaptation Timing and Investment Priorities

The diversity of hazard exposure and adaptation potential across assets suggests that timing and sequencing of adaptation investments will be critical. High-value fixed assets with limited relocation potential (West Point Lighthouse, urban waterfronts) may require immediate protection measures. Natural coastal attractions may benefit more from adaptive infrastructure design and flexible management approaches that can evolve with changing conditions. Critical access infrastructure (ferry terminals, bridge approaches) requires coordinated regional planning given system-wide dependencies.

Investment priorities should consider not just current hazard levels but adaptation potential, asset replaceability, tourism value, and broader system dependencies. Assets that are both high-hazard and high-value but have limited adaptation options may require immediate attention, while high-hazard assets with greater adaptation flexibility may be addressed through ongoing operational adjustments rather than capital-intensive protection measures.

Ecosystem Services and Natural Infrastructure

Many of PEI's highest-value tourism assets are embedded within natural coastal systems that provide essential ecosystem services including flood protection, erosion buffering, and sediment supply. Salt marshes at Greenwich buffer interpretation centres from storm surge. Dune systems at Cavendish and Basin Head provide natural coastal protection while creating signature visitor experiences. Beach and barrier island complexes supply sediment that maintains downstream shorelines.

Tourism adaptation planning that recognizes and maintains these ecosystem services can achieve multiple benefits: preserving natural processes essential to tourism appeal, maintaining natural coastal protection, and reducing long-term infrastructure costs. This approach requires understanding coastal systems as integrated networks where management decisions at one location can affect conditions elsewhere, rather than treating individual assets in isolation.

Assessment Scope and Limitations

This assessment provides coastal hazard information as one input to tourism industry planning and is subject to important limitations. The analysis is based on provincial coastal data, climate projections, and remote assessment rather than detailed site visits or engineering analysis. Projections carry inherent uncertainties regarding the rate and magnitude of future change, particularly related to global emissions trajectories and local coastal dynamics.

The assessment does not evaluate potential adaptation measures, costs and benefits of different response options, or broader economic factors affecting tourism viability. It addresses only coastal flooding and erosion, not other climate-related hazards (extreme weather, inland flooding, seasonal changes) that may affect tourism operations. The analysis focuses on individual asset exposure rather than system-wide vulnerabilities or cascading failures that could affect tourism industry function.

Most importantly, this assessment is informational and technical, not prescriptive. It does not recommend specific actions, prioritize investments, or evaluate policy options. Such decisions must incorporate economic analysis, stakeholder input, regulatory considerations, and broader planning objectives beyond the scope of coastal hazard identification.

Path Forward

This coastal hazard assessment provides a technical foundation for tourism industry risk assessment and adaptation planning. The detailed asset profiles that follow offer site-specific information to support both provincial-level strategic planning and asset-level operational

decision-making. The assessment identifies where tourism assets intersect with coastal hazards but does not determine how these intersections should be managed.

Next steps in tourism industry adaptation planning must integrate this coastal hazard information with economic analysis, visitor experience considerations, infrastructure engineering assessments, ecosystem service valuation, and community priorities. The distinction between natural coastal processes and infrastructure vulnerability provides a framework for developing adaptation approaches appropriate to different asset types and tourism functions.

Prince Edward Island's tourism industry has developed around and depends upon dynamic coastal environments. Maintaining this relationship while adapting to changing coastal conditions represents both challenge and opportunity. The province's signature coastal assets can continue to provide authentic experiences of natural coastal processes while incorporating adaptive approaches that ensure long-term visitor access and tourism industry sustainability.



This report was developed in collaboration with the Tourism Industry Association of Prince Edward Island, the Government of Prince Edward Island, and ICF. ICF is a non-partisan, non-political company that delivers a broad and diverse range of independent, unbiased, objective analyses and related consulting services to help its clients meet their missions. This report may not be construed as ICF's endorsement of any policy or any regulatory, lobbying, legal, or other advocacy position, organization, or political party. Any conclusions presented herein do not necessarily represent the policy or political views of ICF. ICF's services do not constitute legal or tax advice.