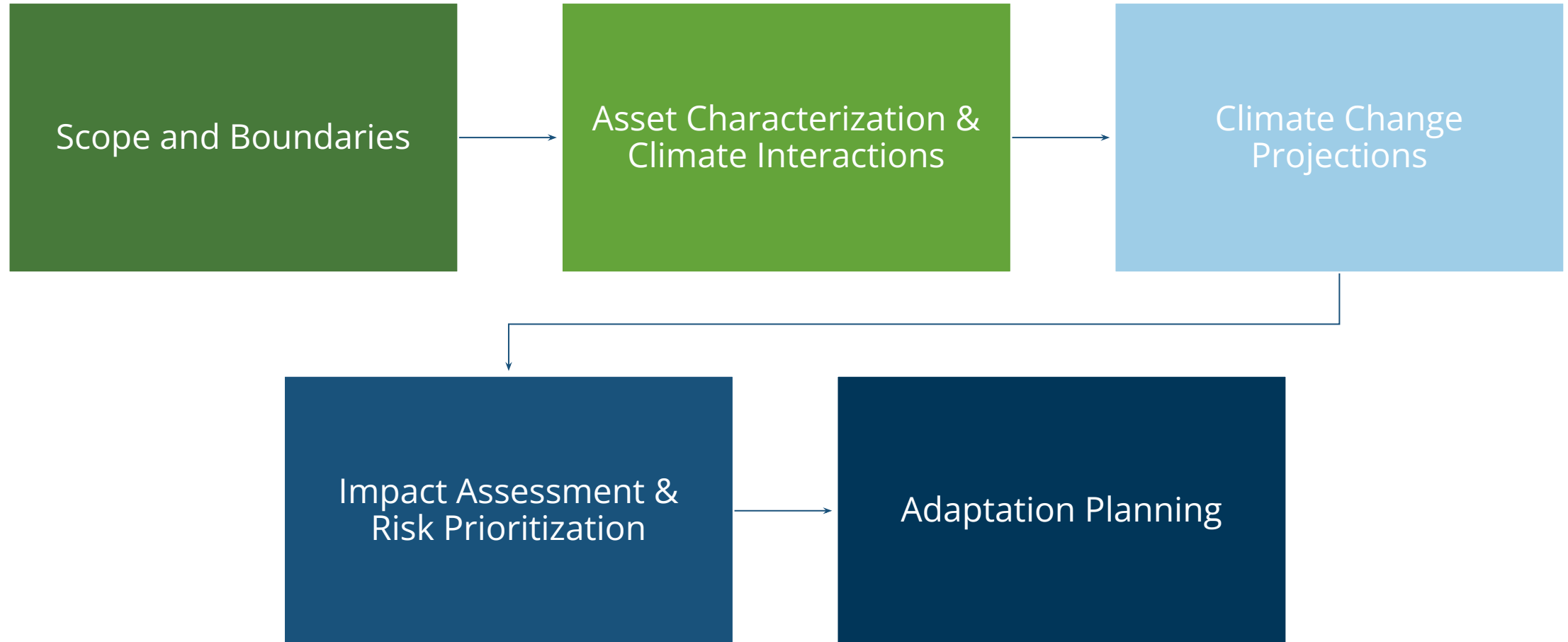




Climate Change Adaptation Plan Pointe-du-Chêne, New Brunswick

Summary Presentation






CCAP Development Process



Assets





Asset Group	Asset
Coastal Environment	<ul style="list-style-type: none">• Parlee and Belliveau Beach Environment and Dunes• Tidal Creek• Coastal Wetlands
Residential and Private Community Infrastructure	<ul style="list-style-type: none">• Residences• Coastal Protection Features (Armour Stone)• Potable Water Wells• Pointe-du-Chêne Wharf
Transportation	<ul style="list-style-type: none">• Road Network• Critical Community Access Pointes (Pointe du Chêne Road Bridge, Parlee Beach)
Sanitary and Stormwater Systems	<ul style="list-style-type: none">• Municipal Sanitary Collection System• Stormwater Collection System
Emergency Services and Public Safety	<ul style="list-style-type: none">• Emergency Preparedness and Management• Electrical Infrastructure
Land Use and Policies	<ul style="list-style-type: none">• Development Practices

Climate Projections

Parameters	Climate Indices	Climate Trends (Present Day – 2100)	
Coastal	Extreme Water Levels* 1 in 5-year event		<ul style="list-style-type: none"> • Water level approximately 1.3m • Baseline: 5-year event • 2100: 1-year event
	Extreme Water Levels 1 in 25-year event		<ul style="list-style-type: none"> • Water level approximately 1.7m • Baseline: 25-year event • 2100: 5-year event
	Extreme Water Levels 1 in 100-year event		<ul style="list-style-type: none"> • Water level approximately 2.0m • Baseline: 100-year event • 2100: 15-year event
	Sea Ice Thickness		<ul style="list-style-type: none"> • Sea ice thickness and duration will decrease
	Hurricanes (Extreme Water Levels + Wind +Waves)		<ul style="list-style-type: none"> • Frequency of hurricanes increasing • Intensity will increase, exacerbated by lack of ice cover in future

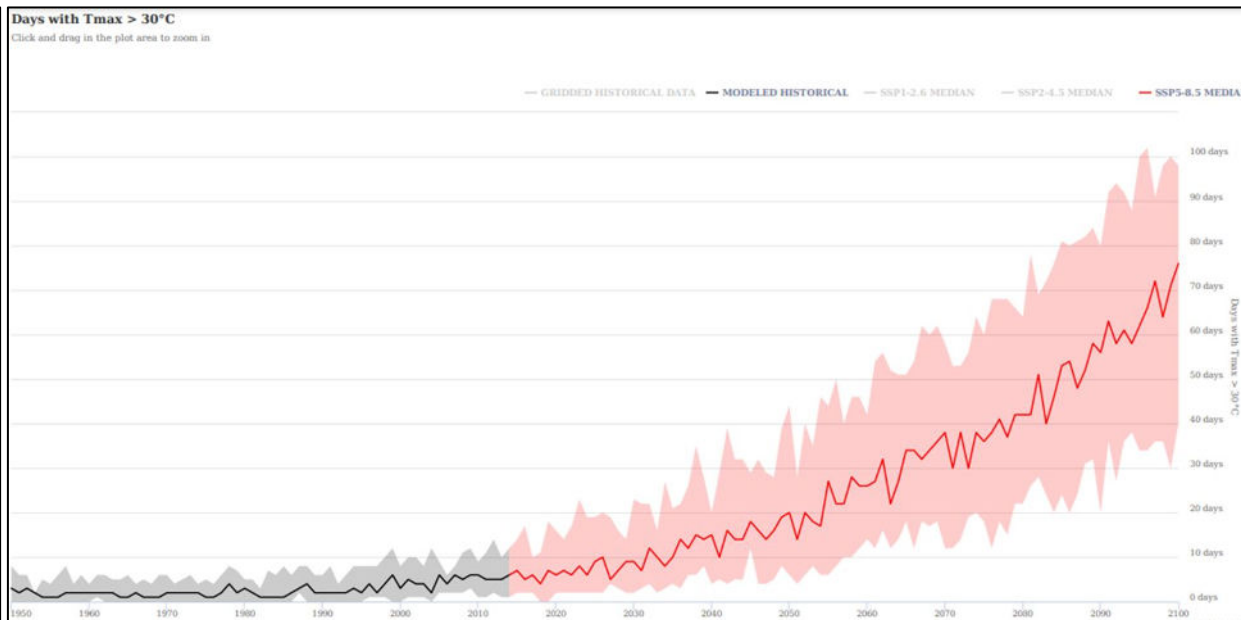
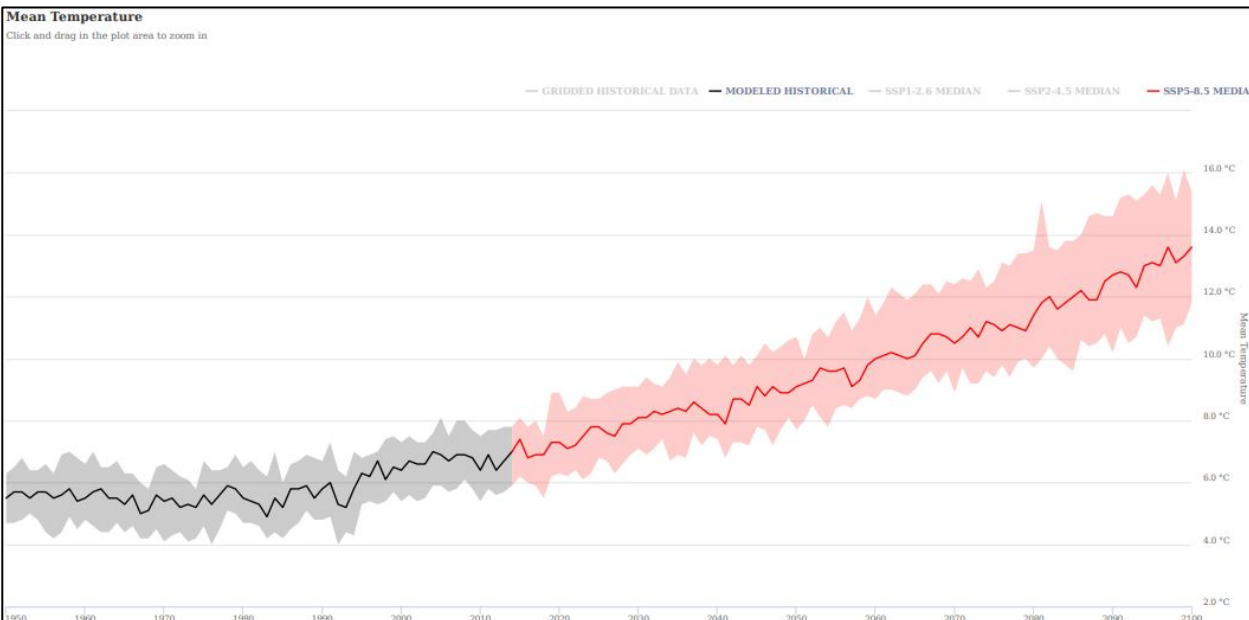
*Extreme Water Levels = Sea Level Rise + Storm Surge + Tides

CCAP Development Process

Parameters	Climate Indices	Climate Trends	
Precipitation	1 in 10 year event (24 hour)		<ul style="list-style-type: none"> • 96.9 mm • Increasing to approx. 1 /2 yr – 1/5 yr event
	1 in 100 year event (24 hour)		<ul style="list-style-type: none"> • 141 mm • Increasing to approx. 1/10 yr – 1/25 yr event
	Snowfall (days with snow > 10cm)		<ul style="list-style-type: none"> • Approx. 9-10 days/winter season (10% of days) • Trend remains relatively consistent • Decreases expected by 2100
	Ice Accretion (1 in 20 year freezing rain event)		<ul style="list-style-type: none"> • Decreasing by up to 50% by 2100

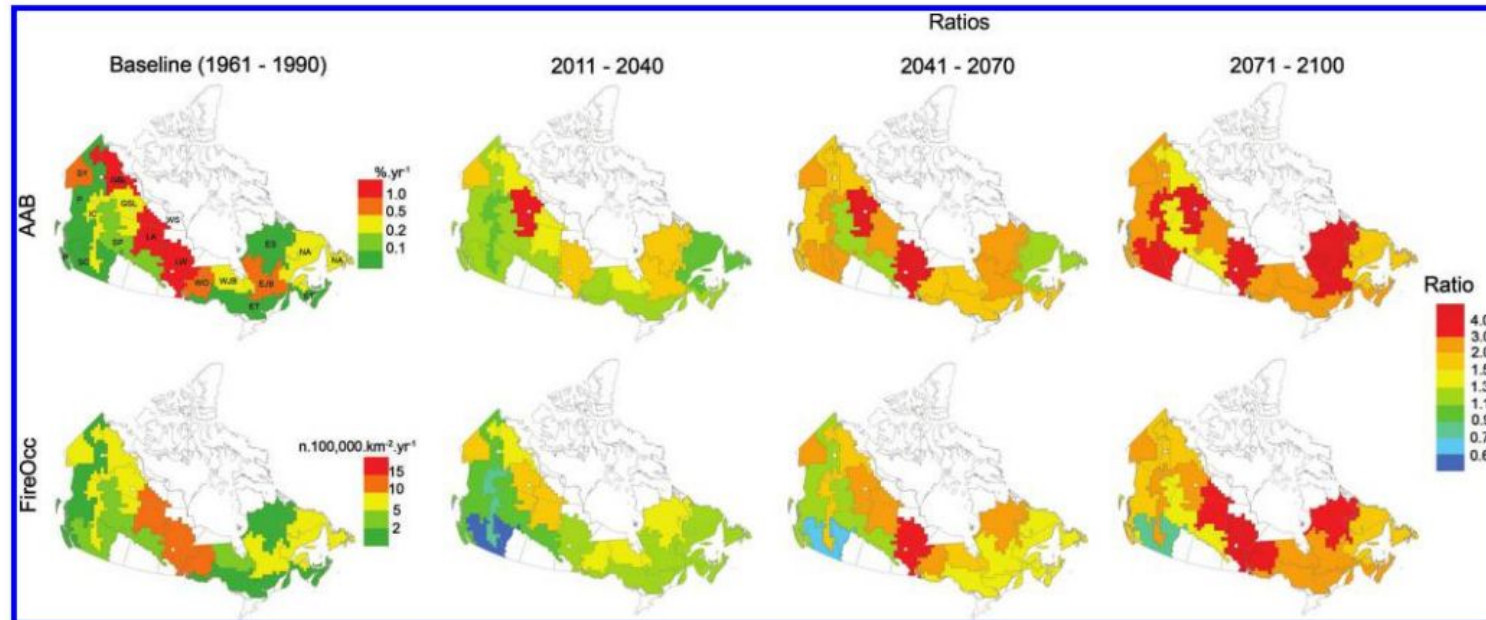
Climate Projections

Parameters	Climate Indices	Climate Trends	
Temperature	Extreme Heat (Days 30 deg Celsius)	↑	<ul style="list-style-type: none"> • Baseline: 4 days per summer • 2100: 48 days per summer
	Annual Freeze-Thaw Cycles	■	<ul style="list-style-type: none"> • Baseline: 21% of days (76 days/yr) • 2100: Minor decreases, 16% of days (60 days/yr) • More freeze thaw in winter due to shifting seasons, less annually



Climate Projections

Parameters	Climate Indices	Trend	
Extreme Events	Wildfire	↑	<ul style="list-style-type: none"> Likely to see increased frequency of wildfires (drier conditions, high temps)
	Lightning	▬	<ul style="list-style-type: none"> Baseline: 4.8% of days (annually) strikes within 25km Projections indicate minimal change High degree of uncertainty
	Drought	↑	<ul style="list-style-type: none"> Baseline: Likely to occur once between 51-100 years 2100: Likely to occur once between 11 and 30 years



Recommended Adaptation Actions

Emergency Management

Overview of Risks

- Hurricanes, winter storms, freezing rain leading to property damage, power outages, forced evacuation
- Incorporated areas in NB required to have an emergency preparedness plan and exercise the plan annually

Adaptation Action	Description	Lead/Support
Development and Testing of an Official Emergency Preparedness Plan for Pointe-du-Chêne	<ul style="list-style-type: none"> • Maintenance/monitoring of Critical Community Access Points during Emergency Events • Designation of PDC Community Centre as an Official Emergency Warming Centre • Security Measures to Minimize Public Safety Incidents 	Town of Shediac
Public Awareness and Communication	<ul style="list-style-type: none"> • Public meetings or information packages, etc., to update residents on key points of emergency preparedness plan 	Town of Shediac
Expansion of Senior Resident Registration Program	<ul style="list-style-type: none"> • Expansions of program to Pointe-du-Chêne • Program objectives be communicated to the public to ensure eligible residents are aware of its existence and purpose 	Shediac Fire Department

Coastal Flooding

Overview of Risks

- Widespread flooding from extreme water levels
- Damage to residences, roads, coastal infrastructure, natural environment
- Health and safety of residents

Adaptation Action	Description	Lead/Support
Community-Wide Coastal Assessment to Investigate Options for Flood Mitigation	<ul style="list-style-type: none">• Evaluate effectiveness of numerous engineered options to mitigate flooding from sea level rise and extreme events<ul style="list-style-type: none">• Strengths and weaknesses analysis of engineered solutions such as retreat, raise, and protect• Comparison of social, economic, environmental, and cost implications (socio-economic analysis).• Identify regulatory requirements, possible funding sources• Stakeholder Engagement and Public Consultation• Result: Comprehensive plan outlining flood mitigation solution(s), resources required, clear steps and responsibilities, timeline for conducting each step, anticipated outcomes once the project is executed.	Town of Shediac Supported by: <ul style="list-style-type: none">• NB Provincial Government Departments• Community organizations, e.g., Red Dot Association of Shediac Bay

Coastal Flooding

Overview of Risks

- Widespread flooding from extreme water levels
- Damage to residences, roads, coastal infrastructure, natural environment
- Health and safety of residents

Adaptation Action	Description	Lead/Support
Maintaining Parlee Beach and Dune System	<ul style="list-style-type: none"> • Beach nourishment assessment that considers projections for climate change • Strategies for dune improvement to improve the resilience of the existing dunes 	NB Department of Tourism and Environment
Preserving Belliveau Beach and Dune System	<ul style="list-style-type: none"> • In lieu of formal beach nourishment program (private property), community organizations should promote beach and dune restoration projects at Belliveau Beach 	Community organizations/volunteer groups
Improve Public Awareness and Preparedness to Minimize Impacts to Private Property	<ul style="list-style-type: none"> • Residents should be aware of possible flood scenarios facing their properties • Strategies for reducing impacts to individuals and properties 	Town of Shediac Community organizations
Enforcement of Development Restrictions and Long-Term Land Use Planning	<ul style="list-style-type: none"> • Existing development restrictions should be revisited (in long-term) to ensure appropriate development boundaries are maintained 	Town of Shediac

Transportation Asset Maintenance

Overview of Risks

- Flooding, deteriorating roads, community aesthetics
- Health and safety concern (accidents, limited access for emergency vehicles)

Adaptation Action	Description	Lead/Support
Establish Clear Road Maintenance Responsibilities	<ul style="list-style-type: none"> • Town Council recently adopted a motion to review the topic of private roads maintenance in Pointe-du-Chêne • Residents must be made aware of their individual responsibilities with respect to road maintenance 	Town of Shediac
Develop a Minimum Maintenance Standard for Private Road Owners	<ul style="list-style-type: none"> • If residents/other organizations are responsible for maintaining private roads • Best practices for regular road maintenance such as regularly repairing cracks and potholes and ensuring proper drainage 	Town of Shediac
Proactive Infrastructure Upgrades to Incorporate Climate Change Projections	<ul style="list-style-type: none"> • Evaluate critical access points to determine if elevation is suitable for providing access during extreme weather events • Raise infrastructure to maintain critical access points where necessary 	Infrastructure owners (NB DTI, Town of Shediac, property owners)

Extreme Rainfall and Stormwater Management

Overview of Risks

- Challenges both during and following extreme rainfall events
- Localized flooding, poor drainage, property damage, deteriorating transportation infrastructure (muddy roads)

Adaptation Action	Description	Lead/Support
Develop a Community-Wide Stormwater Management Plan	<ul style="list-style-type: none">• Survey/analyze current drainage system,• Develop stormwater model to evaluate capacity/recommend upgrades (including climate change)• Consideration for nature-based solutions or low impact development techniques• Opinions of probable cost for recommended upgrades	Town of Shediac SBWA SERSC
Maintenance of Existing Stormwater Management Infrastructure	<ul style="list-style-type: none">• Provide private infrastructure owners with info on importance of maintaining infrastructure• Enforce and/or promote a minimum standard of maintenance for existing infrastructure	Town of Shediac
Property Owner Education and Awareness	<ul style="list-style-type: none">• Where new programs or by-laws are introduced, host information sessions to inform the public of the programs or standards	Community Organizations, e.g., Red Dot Association

Tidal Creek Drainage

Overview of Risks

- Sediment buildup has led to ineffective drainage during tidal cycles/following extreme rainfall
- Water quality issues

Adaptation Action	Description	Lead/Support
Dredging and Future Maintenance of the Tidal Creek to Improve Surface Water Drainage	<ul style="list-style-type: none">• Dredging project is currently proposed to further improve surface water quality, improve drainage, reduce flooding• EIA detailing the project specifications is currently under review, with an anticipated approval date in 2024• Recommended that the dredging program move forward and be closely monitored in the coming years to evaluate its effectiveness in reducing flooding and improving water quality• Community monitor whether dredging of the creek impacts coastal flood dynamics, including size of the flooded area surrounding the creek during extreme water level events and storm conditions	NB Department of Tourism, Heritage, and Culture

Municipal Wastewater Management

Overview of Risks

- I&I can enter a sanitary system through holes, cracks, joint failures, and faulty pipe connections throughout the system
- Possible flooding of low-lying lift stations, resulting overflows
- Recent adaptation projects include lining infrastructure, sealing manholes, raising elevation of lift station equipment

Adaptation Action	Description	Lead/Support
Continued Improvement Projects to Reduce Inflow and Infiltration and Improve System Capacity	<ul style="list-style-type: none"> • Currently planned assessments into raising lift station equipment should consider extreme water level projections over the design life of the infrastructure • GSSC five-year plan should proactively prioritize infrastructure that is particularly susceptible to the impacts of climate change 	GSSC
Identification of Illegal System Connections	<ul style="list-style-type: none"> • Prioritize identifying and removing illegal connections • Appropriate stormwater management infrastructure needed for alternative connections 	GSSC
Public Education and Awareness	<ul style="list-style-type: none"> • Disseminate the message surrounding stormwater connections and the negative impacts on sanitary systems 	GSSC

Pointe-du-Chêne Wharf Upgrades

Overview of Risks

- Susceptible to damage from hurricanes and extreme water levels
- Flooding, deterioration/displacement of infrastructure, reduced accessibility

Adaptation Action	Description	Lead/Support
Incorporate Climate Change Projections into Future Upgrades	<ul style="list-style-type: none">• Wharf has been undergoing a significant upgrade project that has included installation of a new seawall and armour stone, replacement of dislodged gas and diesel tanks, and enhancements to the footings and decks of buildings• Understood that projections for climate change and extreme events are being incorporated into the infrastructure planning and design	Pointe-du-Chêne Wharf Management



Thank You!