



Kings County, NS

Hurricane Preparedness & Response Plan

(HPRP)

June 2022
(Change 1)



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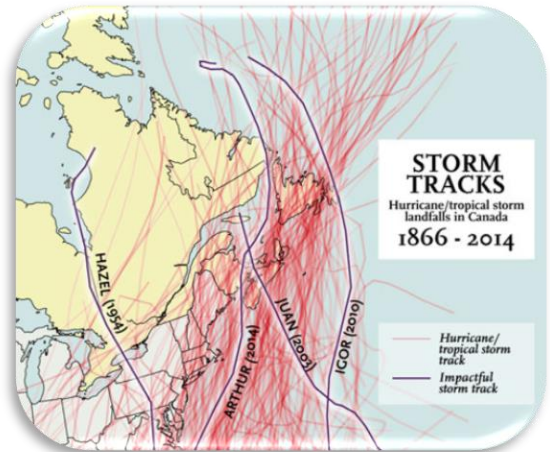
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FOREWORD

The development of a Kings County Regional Hurricane Preparedness and Response Plan (HPRP) is paramount to public safety in the case of natural disaster threats. The Kings County Regional Hurricane Preparedness and Response Plan was prepared in consultation with County and Municipal stakeholders responsible for everyday management throughout Kings County. It serves as Kings County's Emergency Hurricane Plan to coordinate an integrated approach to Hurricane response.



As a Support Plan to the [Kings REMO Regional Emergency Management Plan \(REMP\)](#), the Kings County Regional Hurricane Preparedness and Response Plan is augmented by the [Regional Emergency Evacuation Plan \(REEP\)](#), the [Flood Preparedness and Response Plan \(FPRP\)](#), the Emergency Coordination Centre (ECC) Operational Guidelines and Evacuation Guidelines in order to provide the level of detail required for a comprehensive emergency response to a hurricane event.

Kings REMO strives for strong leadership within the emergency management community and is dedicated to continuous improvements and enhancements to this plan, training and exercising throughout the Kings County region. Therefore, this plan is a living document that will be amended as necessary through a planning process that is managed by the Regional Emergency Management Coordinator (REMC) in consultation with emergency management partners throughout the County.

Cate Savage
Chair

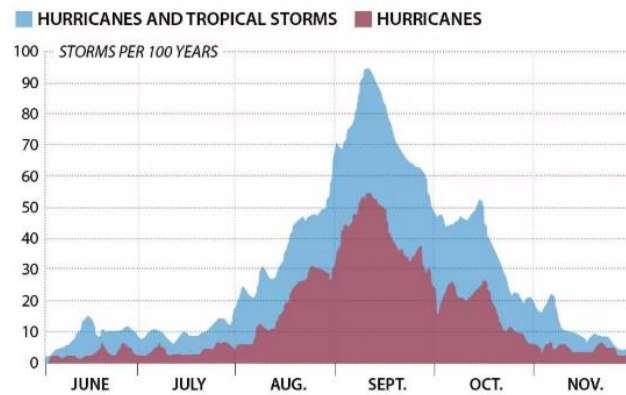
Kings REMO Regional EM Advisory Committee
Deputy Mayor, Town of Wolfville

1.0 INTRODUCTION

1.1 Background

Hurricane season in Nova Scotia runs from June through November, but the risk of hurricanes in Nova Scotia is highest during the months of September and October. While Canadian cities and towns aren't hit as hard as places in the United States, hurricanes and tropical storms can have a significant impact on the country, especially on the east coast.

THE ATLANTIC HURRICANE SEASON



SOURCE: NOAA

THE CANADIAN PRESS

This Regional Hurricane Preparedness and Response Plan is only one part of preparedness efforts that include training, exercises and the debriefing of actual events. As Kings County evolves, so will the Hurricane Plan, which will be regularly reviewed and adapted. Due to the nature of major emergencies, there may be a need to adapt the plan during a Hurricane. Therefore, the following plan should not be seen as a final, rigid solution, but rather the foundation for continuous planning efforts.

1.2 Authorities

The authority for an evacuation as a response to a hurricane is afforded by the [Nova Scotia Municipal Government Act](#) and the [Emergency Management Act](#).

The legal authority for local authorities to order an evacuation rests within the [Nova Scotia Emergency Management Act](#) (1990) Section 14(f) – Protection of property and health or safety

Protection of property and health or safety – Section 14

Upon a state of local emergency being declared in respect to a municipality or an area thereof, the mayor may, during the state of local emergency, in respect of such municipality or an area thereof, do everything necessary for the protection of property and the health and safety of persons therein may:

- a. Cause an emergency management plan or any part thereof to be implemented;
- b. Acquire or utilize or cause the acquisition or utilization of personal property by confiscation or any means considered necessary;
- c. Authorize or require a qualified person to render aid of such type as that person may be qualified to provide;
- d. Control or prohibit travel to or from an area or on a road, street or highway;
- e. Provide for the maintenance and restoration of essential facilities, the distribution of essential supplies and the maintenance and coordination of emergency medical, social and other essential services;

- f. Cause or order the evacuation of persons and the removal of livestock and personal property threatened by an emergency and make arrangements for the adequate care and protection thereof;
- g. Authorize the entry by a person into any building or upon land without warrant;
- h. Cause or order the demolition or removal of any thing where the demolition or removal is necessary or advisable for the purpose of reaching the scene of an emergency, or attempting to forestall its occurrence or of combating its progress;
- i. Order the assistance of persons needed to carry out the provisions mentioned in this Section;
- j. regulate the distribution and availability of essential goods, services and resources;
- k. authorize and make emergency payments;
- l. assess damage to any works, property or undertaking and the costs to repair, replace or restore the same;
- m. assess damage to the environment and the costs and methods to eliminate or alleviate the damage

1.3 References

- [Nova Scotia Emergency Management Act](#)
- [Kings REMO Regional Emergency Management Plan \(REMP\), 2021-03 \(Change 1\)](#)
- [Kings REMO Regional Emergency Evacuation Plan \(REEP\), 2018-12](#)
- [Kings REMO Flood Preparedness and Response Plan \(FPRP\), 2019-03](#)
- Kings REMO Evacuation Operational Guidelines, 2018-05-01
- Kings REMO Emergency Coordination Centre Operational Guidelines, 2018-05-01
- [Kings REMO Policy – Comfort Centres/Emergency Shelters](#)

1.4 Purpose

The purpose of this Emergency Management Support Plan is to provide Kings County municipal employees with information and guidelines that may be required in the event of a tropical storm or hurricane. In order to meet the basic requirements for the warning, evacuation, and sheltering of residents throughout Kings County, it is crucial to have a coordinated effort among provincial, county, and municipal governments for preparation and response.

This Emergency Management support plan outlines the basic responsibilities, resources, and actions necessary for responding to tropical storm events that may impact Kings County.



1.5 Aim and Scope

- The information in this Plan is to be used to prevent loss of life from the hazards of hurricanes and severe tropical storms that may impact Kings County.
- The basic responsibilities, resources, and actions necessary for responding to storm events are outlined in this plan.
- The information in this plan is specific to hurricane and tropical storm response efforts and is not intended as a complete comprehensive all-hazards emergency plan.

If the need to evacuate and relocate residents of the affected area(s) is apparent, the provisions of the Regional Emergency Evacuation Plan (REEP) shall be implemented. In such events, the Municipality shall discuss the need to declare a State of Local Emergency (SOLE), [Annex A](#), if a mandatory evacuation is needed. If there is a fire or the possibility of fire, the Fire Chief has the authority to declare the mandatory evacuation at the current time there is no advantage to declaring a SOLE.



2.0 CONCEPT OF OPERATIONS (CONOPS)

Emergency response efforts during a hurricane will require coordination of all Municipal Governments within Kings County as well as additional support agencies. The prime requirement for effective communication is the Emergency Coordination Centre (ECC) where authorities can coordinate emergency operations, assistance and resources.



Most emergency incidents require the use of a graduated response based on the extent, size, duration and/or complexity of the event. Initially, at the onset of an emergency, a single or dual response from municipal departments (i.e., Police and Fire) may be sufficient to handle the incident. If the emergency escalates beyond the capability of a single or dual response, additional measures will be implemented as needed. The Kings County Emergency Coordination Centre provides resource-coordination across the County and maintains Situational Awareness through a Current Operating Picture (COP).

2.1 Planning Assumptions

The Hurricane Preparedness and Response Plan assumes the following:

- Hurricanes have the potential to cause catastrophic damage, mass casualties, mass fatalities, critical infrastructure disruptions and inundation of communities throughout the province of Nova Scotia.
- Hurricanes have the potential to quickly overwhelm Kings REMO and rapidly deplete and damage provincial resources.
- When provincial resources are depleted, assistance may be sought from the federal government.
- Flooding and loss of power from a hurricane can cause critical public works infrastructure components to be out of service for days or weeks. These include NS Power/Berwick Electric, water, wastewater, storm water drainage, roads and bridges. Disruption of these services impacts the ability of key businesses to reopen and citizens to return.
- There may be widespread and extensive power outages across Kings County due to high winds knocking down power lines. Due to the extent of power outages, some areas may not have electricity for days to weeks.
- Hurricanes have the potential to hinder the delivery of key emergency services such as firefighting, Emergency Health Services and law enforcement.
- Effective prevention and preparedness operations, early warning and evacuation, and well-trained and equipped response forces may reduce the number of casualties caused by a hurricane

2.3 Plan Activation

This plan may be activated in whole or in part, as required, by the Kings REMO Emergency Coordination Centre Management Team (ECCMT), with or without the formal declaration of a state of local emergency.

Upon activation, all participating agencies will respond in accordance with the procedures described within this plan and in accordance with their agency operating procedures.

2.3 Hurricane Information

2.3.1 Hurricane Development

A tropical cyclone is the technical term for what many people refer to as a hurricane. It is described as a rotating, organized system of clouds and thunderstorms characterized by a low-pressure centre, strong winds, and a spiral of thunderstorms that produce heavy rain. Tropical cyclones rotate counterclockwise in the Northern hemisphere. Tropical cyclones are classified as follows:

- **Tropical Depression.** A tropical cyclone with maximum sustained winds of less than 63 km/h
- **Tropical Storm.** A tropical cyclone with maximum sustained winds between 63 and 118 km/h
- **Hurricane.** When sustained winds in a tropical cyclone reach or exceed 119 km/h, it is called a hurricane. Hurricanes are further designated by categories on the Saffir-Simpson scale.
- **Major Hurricane.** A tropical cyclone with maximum sustained winds of 178 km/h or higher, corresponding to a Category 3, 4 or 5 on the [Saffir-Simpson Hurricane Wind Scale](#).

The figure below shows the composition of a hurricane. The hurricane's eyewall, surrounding the relatively calm eye, is composed of dense clouds that contain the highest winds in the cyclone. The storm's outer rain bands are made up of dense thunderstorms. Due to the counter-clockwise motion of the cyclone, the right-front quadrant is usually the most dangerous part of hurricanes and tropical storms with regard to storm surge, and winds.

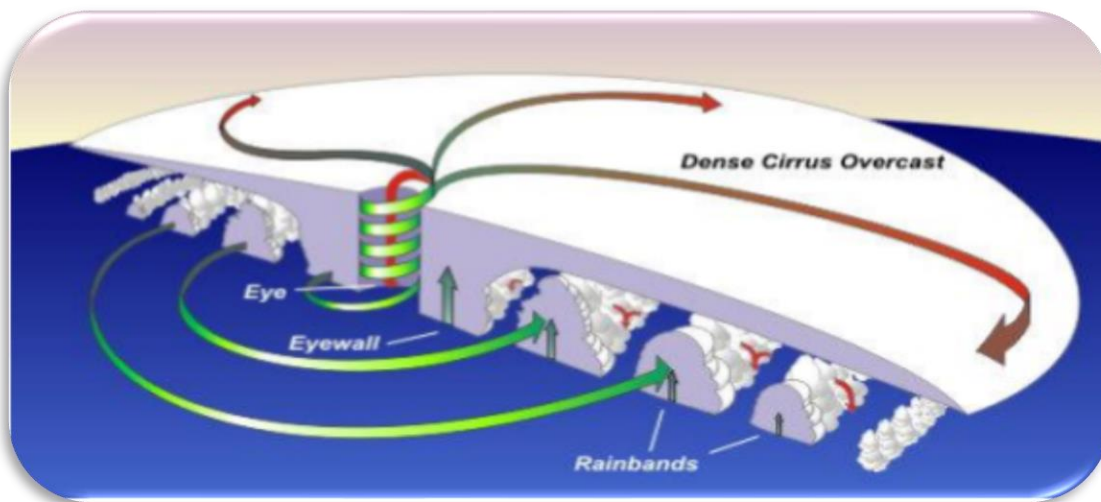


Figure 1: This image shows the composition of a hurricane including the eye, eyewall, rainbands and dense cirrus overcast

2.3.2 Hurricane Types

The evacuation and sheltering of hurricane vulnerable residents and medical facilities in Kings County are planned in response to any of the three major types of hurricanes:

- **Landfalling:** A hurricane characterized by the track of its eye crossing from water to land and continuing inland, as in Hurricane Juan in 2003
- **Paralleling:** A hurricane characterized by the track of its eye approaching but not crossing the coastline, often moving parallel along the shore, yet still producing significant hurricane hazards.
- **Exiting:** A hurricane characterized by its return to open water after traversing a significant land mass.



2.3.3 Hurricane Hazards

- **Storm Surge.** Storm surge has the potential to cause the largest loss of life in hurricanes. Water, not wind may account for the highest number of all tropical cyclone deaths. Storm surge is dangerous because a mere 15cm of fast-moving flood water can knock over an adult. It takes only 60cm of rushing water to carry away most vehicles-including large pickup trucks and SUVs
- **High Winds.** High winds will render segments of the population vulnerable to the passing hurricane. This hazard applies to residents of structures unable to withstand the stress of hurricane-force winds, measured at a sustained velocity exceeding 119 km/h
- **Rainfall.** Since the structure of every hurricane is unique, there is no way to determine the rate and distribution of the expected 15cm to 30cm of rainfall generally accompanying a storm. However, it is known that the rainfall has only minor influence on the storm surge water levels. Rainfall in itself will not normally require the emergency evacuation of large numbers of residents during the passage of a hurricane as does the storm surge, but it may cause the slowing of traffic or the severing of evacuation routes, adding critical hours to overall evacuation time.



2.3.4 Hurricane Categories and Damage Potential

The five categories of hurricanes and the resulting damage potential are:

Category 1 – Sustained winds 119 – 153 km/h

- Some damage to shrubs, trees and foliage
- Some damage is likely to poorly constructed signs.
- Some damage to unanchored mobile homes
- Loose outdoor items will become projectiles, causing additional damage.
- Persons struck by windborne debris risk injury and possible death.
- Many areas will experience power outages with some downed power poles.
- Expected storm surge levels from 4-8 feet above tide level.
- Flooding on low-lying coastal roads and barrier islands

1 Winds of 119 to 153 kph

Dangerous:
Damage to poorly constructed homes, tree branches, power lines



Category 2 – Sustained winds 154 – 177 km/h

- Some damage to shrubs, foliage and trees
- Major damage to exposed mobile homes
- Extensive damage to poorly constructed signs
- Some damage to roofing, windows and doors
- Extensive damage to power lines and poles with widespread power outages
- Considerable damage to piers and unprotected small craft
- Storms surge 8-10 feet above normal
- Flooding on low-lying coastal roads and barrier islands

2 154 - 177 kph

Very dangerous:
Damage to roofs, windows, walls. Shallow-rooted trees blown down. Severe power outages



Category 3 – Sustained winds 178 – 208 km/h

- Many trees will be snapped or uprooted and block numerous roads.
- Some structural damage to houses and buildings.
- Mobile homes and poorly constructed signs are destroyed.
- Persons struck by windborne debris risk injury and possible death.
- Near total power loss is expected with outages for several days to weeks.
- Expected storm surge levels 14-19 feet above normal
- Serious flowing along the coast and barrier islands
- Larger structures damaged by flooding and floating debris

3 178 - 208 kph

Devastating:
Damage to building structures. Many trees uprooted. Flooding near coast. Power and water shortages



Category 4 – Sustained winds 209 – 251 km/h

- Shrubs and trees blown down.
- All signs blown down.
- Extensive damage to roofing materials, windows and doors.
- Complete destruction of mobile homes
- Electricity will be unavailable for weeks after the hurricane passes.
- Storm surge of 19-26 feet above normal
- Major damage to lower floors of structures near the coast



Category 5 – Sustained winds greater than 252 km/h

- Complete roof failure on many buildings
- Small buildings blown over or blown away.
- All signs blown down.
- Complete destruction of mobile homes
- Severe and extensive window and door damage will occur.
- Nearly all trees will be snapped or uprooted, and power poles downed.
- Power outages will last for weeks to possibly months.
- Major damage to lower floors of all structures less than 15 feet above sea level within 500 yards of shore.
- Nearly all trees will be snapped or uprooted, and power poles downed.
- Power outages will last for weeks to possibly months.
- Major damage to lower floors of all structures less than 15 feet above sea level within 500 yards of shore.



2.4 Kings County Critical Infrastructure

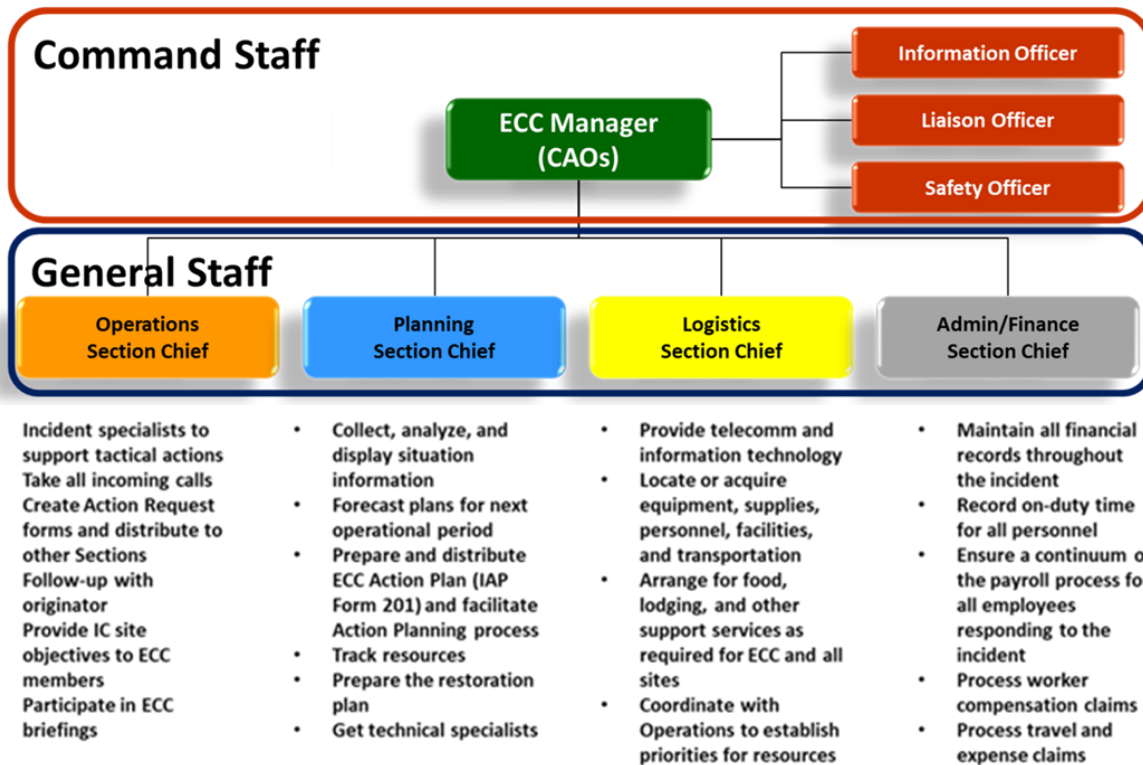
Reference: [NS Report of the Auditor General – Municipal Affairs, November 2016](#)

As outlined in the reference, the following sectors are identified as Critical Infrastructure in Kings County:

- Bridges & roadways
- Communications & Public Safety Systems
- Dykes & Dams
- IT Systems
- Electrical Grids (NS Power & Berwick Electric)
- Health Services – Hospitals & Medical Care
- Water and wastewater Treatment facilities
- Police services (Kentville Police / Kings RCMP)
- Transportation equipment

2.5 Hurricane ECC Organizational Structure

The management of an incident, no matter the type or magnitude, utilizes the principles of the Incident Command System (ICS). Based on this structure, the incident is managed by Incident Command with support provided by staffed areas of Operations, Logistics, Planning, and Administration/Finance if needed. This structure allows incident management to expand or contract along with the incident as the situation demands. As an incident grows, so does the command system.



2.6 Emergency Coordination Centre (ECC)

The ECC is a critical link for supporting emergency management functions before, during, and after an incident such as:

- Monitoring and assessing an emergency or disaster to anticipate needed response and recovery operations.
- Securing resource support for regional operations at the incident scene from other departments, the Province of NS, Federal agencies and adjacent jurisdictions.
- Making policy decisions and planning and prioritizing county-wide emergency response and disaster recovery operations.
- Coordinating, processing, and disseminating information
- Maintaining a common operating picture to ensure that all personnel have the same information.
- Coordinating and communicating with Kings County Emergency Management first responders, as well as liaising with Emergency Coordination Centres of other municipalities.

- Ensuring that appropriate documentation regarding response and recovery operations is maintained by all departments.
- Assigning a liaison, whenever needed or upon request, to emergency response or disaster recovery facilities activated by Kings County, the Province of Nova Scotia or Federal agencies for operations affecting the County.
- Directing or supporting other operations by or within the County for emergency response and recovery.
- Coordinating the County's transition from response to recovery.
- During an evacuation, the Kings County RCMP and Kentville Police Departments will maintain traffic flow within Kings County in coordination with other municipal and county agencies involved in evacuation procedures.
- The Kings County Fire Departments will proceed with Special Needs Evacuation when the evacuation order is issued, and public shelters are opened.

2.7 Notification and Activation Timeframes – Core Emergency Response Functions

This table provides possible notification and activation timeframes for core emergency response functions. There are four timeframes:

	Advisory	Notification of a Potential Threat
	Alert	Personnel prepare for activation
	Activation	Resource begin movement to support response operations
	Onsite / Operational	Resources perform Response Function

Emergency Function	H-120	H-96 to 72	H-72 to 48	H-48 to 0	H-Hr +	R-Hr +
Emergency Management	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Communications	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Warning	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Public Information	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Resource Support	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Food & Water	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Health & Medical	Alert	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Transportation	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Evacuation	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
Shelter / Mass Care	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational	Onsite / Operational
HAZMAT Response	Alert	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational
Animals / Agriculture	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational
Firefighting	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational	Onsite / Operational
Search & Rescue	Advisory	Alert	Alert	Activation	Onsite / Operational	Onsite / Operational
Law Enforcement	Advisory	Alert	Alert	Activation	Onsite / Operational	Onsite / Operational
Energy	Advisory	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational
Public Works / Engineering	Advisory	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational
Volunteer / Donations Management	Advisory	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational
Recovery	Advisory	Advisory	Alert	Activation	Onsite / Operational	Onsite / Operational

Important: The amount of warning time prior to the onset of hurricane hazards can vary greatly depending on the storm. While some hurricanes may afford an H - 120, or five-day, warning, other tropical cyclones may arise with little notice and require immediate activation. Timelines in this plan are meant to provide a frame of reference only. The timing of response decisions varies, depending on storm forecasts and effects.

Key to Hurricane Response Timeframes

H = number of hours before (-) or after (+) the onset of hurricane hazards.

R = number of hours before (-) or after (+) post-landfall operations resume.

- H-120 Monitor
- H-48 to 0 Pre-Incident
- H-96 to 72 Elevated Threat
- H+0 to TBD Post-Incident
- H-72 to 48 Credible Threat
- R+0 to TBD Recovery

2.8 Notification and Warning

Early warning to members of the public, the private sector and other critical partners saves lives and minimizes potential damage from hurricanes.

2.6.1 General

There are three essential ingredients in the mitigation of the potential for large scale loss of life in hurricane events:

- Ensure the official evacuation order is issued in sufficient time to allow for safe evacuation from hurricane-vulnerable areas prior to arrival of tropical storm forces winds (39mph)
- Ensure the evacuation order and other emergency information is disseminated to the appropriate response agencies and the general public
- Residents in mandatory evacuation areas must heed the evacuation order

2.6.2 Warning Systems

The existing warning system is composed of several key entities throughout National, Provincial, and Regional levels. Each entity plays an important role in gathering, interpreting and disseminating hazard data on the approaching hurricane so an adequate warning is issued. A potential evacuation in the Kings County area would involve the following key entities in the warning process:

- Environment and Climate Change Canada
- Nova Scotia Emergency Management Office (NS EMO)
- Kings County Regional Emergency Management Organization (Kings REMO)
- Kings REMO Emergency Email Notification System
- Public Media (TV/Radio)
- Municipal websites ([Municipality of Kings](#), Towns of [Berwick](#), [Kentville](#), [Wolfville](#))
- Social Media (Facebook, Twitter, etc.)
- Kings County RCMP and Kentville Police

2.8.2 Watches and Warnings

Hurricane Watch

- When, within the following 36 hours, a hurricane or a developing hurricane is expected to pose a possible threat, with the risk of hurricane force winds (average sustained winds of 118 km/h or higher) threatening the area.



Action: Plans reviewed, and preparations made for evacuation

Hurricane Warning

- When hurricane-force gales (average sustained winds of 119 km/h or higher) caused by a hurricane, or a strong tropical storm that may strengthen to hurricane force before making landfall, are expected to occur in 24 hours or less. It may also include areas where storm surge or exceptionally high waves are expected, even though winds may be less than hurricane force.

Action: Storm preparations completed, and evacuation conducted of threatened areas

Rainfall Warning

- When 25 mm or more of rain is expected within one hour.



Storm Surge

- Issued for abnormally high-water levels and high waves (storm surge or storm tide) caused by storms, which have the potential to cause coastal flooding. This usually occurs when astronomical tides are at their maximum.

Tropical Storm Watch

- When, within the following 36 hours, a tropical storm or a developing tropical storm is expected to pose a possible threat, with the risk of tropical-storm force winds (average sustained winds of 63-117 km/h) threatening the area. This watch could be issued for:
 - A tropical storm; or
 - A hurricane that might approach an area but be far enough away that it is expected to bring gales that are less than hurricane force (118 km/h or higher).

Tropical Storm Warning

- When coastal and/or coastal winds of 63 to 117 km/h caused by a tropical cyclone are expected to occur.

Wind Warning

- 90 km/h or more sustained wind; and/or Gusts to 110 km/h or more.



2.9 Evacuation

Reference: Kings REMO Regional Emergency Evacuation Plan, 2018-12

The concept of evacuation in Kings County is designed to prevent loss of life from the hazards of “worst probable” hurricanes. This would be accomplished through the mass evacuation of citizens and medical facilities from vulnerable areas into safe areas and shelters, based on the following factors:

- the identification of five levels of evacuation for future probable hurricane threats

- the identification of elderly, disabled and handicapped “special Needs” individuals requiring assistance during any evacuation
- the determination of evacuation time based on the specific hurricane threat
- the designation of evacuation routes
- the establishment of a traffic control system
- the designation of evacuation shelter for the general population, medical facilities (hospitals and nursing homes), and person with “special needs”
- the assignment of public emergency transportation resources for evacuation of the elderly, handicapped and medical facilities.

The implementation of hurricane evacuation procedures will be based on the understanding that there is no necessity for total evacuation of Kings County even in the “worst probable” hurricane situation. Large areas of Kings County will remain above water and sound structures in those areas will provide shelter for residents and evacuees.

2.10 Recovery

The ability to recover from the physical damage, injury, economic impairment and human suffering resulting from a disaster is a critical element of any emergency program. It is essential to recognize that successful recovery planning and activities depend on the rapid start-up of a recovery plan and must begin during the emergency response phase.

Through the implementation of a municipal disaster recovery strategy, Kings County Municipalities will work with their Departments, partner agencies, and volunteer resources to restore critical infrastructure (both public and private), systematically clean up affected areas, and return the community to a state of normalcy.

To some extent, hurricanes can be tracked, planned for, stocked up for and braced for. But unfortunately, no matter how prepared Kings County may be, a relentless storm system can overtake everything in its path. If Kings County has been affected by a hurricane, the aftermath of clean up and transitioning into a 'new normal' can be the hardest part.

The prioritization of restoration and clean up efforts will be determined by the Kings REMO ECC Management Team based on a number of influencing factors, with the primary focus being on the protection of public safety. Recovery activities take place after a hurricane and include actions to return to normal or an even safer situation following an emergency situation. These activities could include:

- **Response to a Power Outage** – During a power outage, several issues may arise. Depending on the time of year, extreme temperatures could impact residents of Kings County and actions outlined in the Kings REMO Heat Advisory and Response System (HARS) may need to be implemented. Food and water safety, as well as safe generator use, will be important to consider in recovery efforts.

- **Returning to Affected Areas** – Children should be the last to return to evacuated area or when disaster clean-up is needed.
- **Prevention of Infectious Diseases** – Flooding can increase the transmission of many communicable diseases. Preventative measures should be taken, including enforcing the importance of hand-hygiene when running water is available.

Be Prepared for Hurricanes

Stay Informed - Register for Kings REMO 'Emergency Email Notifications'

Send a Registration request to
REMO_KingsCounty@countyofkings.ca

- Prepare your 'Emergency Kit'
- Collect & Safeguard critical documents
- Know your 'Evacuation Routes'
- Have a 'Family Communications Plan'

An illustration depicting a scene during a hurricane. In the center is a blue house with a dark roof, with rain falling around it. To the left, there are two dark trees and a white car. To the right, a utility pole is leaning, and there's a sense of destruction. The background is a dark, stormy sky.

3.0 RESPONSIBILITIES

3.1 Federal

The [Canadian Hurricane Centre](#) (CHC) provides Canadians with meteorological information on tropical cyclones that helps them make informed decisions to protect their safety and secure their property.



The primary responsibility of the CHC is to provide forecasts and warnings on tropical cyclones that threaten Canada or Canadian waters within the next 72 hours by doing the following tasks:

- Preparing and issuing Canadian tropical cyclone information statements to provide general information and guidance to all Canadians and technical information for the meteorological community
- Preparing and issuing hurricane and tropical storm watches and warnings for all coastal and inland regions that are threatened within specified lead times
- Preparing and issuing tropical cyclone track maps to provide a graphical overview of all tropical cyclones in the North Atlantic
- Preparing other tropical cyclone-related products, as required, to satisfy the needs of Environment Canada or its clients
- Providing media interviews on meteorological matters relating to tropical cyclones

3.2 Provincial

Several Nova Scotia government departments and agencies are engaged in hurricane related activities, including:

3.2.1 Nova Scotia Department of Agriculture (NSDA)

- The [NSDA](#) Land Protection Section is responsible for the management and maintenance of 240 kilometers of tidal dykes (including 260 aboiteau structures) along the Bay of Fundy for the purpose of protecting 17,400 hectares of agricultural land (marshbodies) from sea water incursions.
- Department of Agriculture will assess impact on food, agriculture, agribusiness, animals and other areas regulated by NSDA.

3.2.2 Nova Scotia Emergency Management Office (NS EMO)(DMA)

- [NS EMO](#) takes an “all-hazards” approach to emergency management that recognizes that mitigation, preparedness, response and recovery can be used to address the impact of disasters.
- [NS EMO](#) regional staff (Emergency Management Planning Officers - EMPO’s) work with municipal emergency management coordinators to ensure there are emergency management plans in place for each municipality in Nova Scotia.
- Municipal planning and local knowledge are represented in the development of emergency management plans.

- The [MCCAP](#) process requires municipal emergency management coordinators to work with EMPOs in the development of their respective climate change action plans.

3.2.3 Nova Scotia Department of Public Works (NS DPW)

- [NS DPW](#) is responsible for delivering quality public infrastructure for Nova Scotia and deal with approximately 23,000 km of roads, 4,100 bridges, 7 ferries, and 2,400 buildings.
- [NS DPW](#) designs, constructs and operates this infrastructure in accordance with nationally and internationally recognized standards.
- [NS DPW](#) consults with communities on infrastructure developments. Often this infrastructure is developed or renewed in partnership with the Federal or municipal governments.

3.2.4 Nova Scotia Environment (NSE)

- [NSE](#) is the lead provincial department partnering with Environment Canada on maintaining and monitoring 28 real-time hydrometric monitoring stations. This information is critical for monitoring rising water in real-time during extreme weather events where flooding is a high-risk.
- [NSE](#)'s Water for Life: Water Resource Management Strategy sets climate change impact studies as a priority action for the department. Flood risk studies will be a key component of studying climate change impacts to the province.
- The Climate Change Unit provides information and guidance on climatic factors relevant to flooding, such as historic data and future projections of sea levels, storms and rainfall amounts and intensity.
- The Climate Change Unit has funded and coordinated several community climate change assessments through the Atlantic Climate Adaptation Solutions program, which include aspects of coastal and inland flood mapping and risk in six pilot areas (13 municipalities) in Nova Scotia.
- [NSE](#) regulates 114 activities in the province by developing, implementing and monitoring standards and conditions of approval. Many of these have some relevance to flood management.

3.3 Regional – Kings REMO

3.3.1 Prevention and Mitigation

Kings REMO is responsible for developing and implementing mitigation strategies to prevent or lessen the occurrences and/or severity of hurricanes.

These strategies include:

- Working to map the flood areas and the impact on [critical infrastructure](#).
- Developing and circulating public education material concerning hurricane awareness and preparedness.

3.3.2 Response / Recovery Responsibilities

All Kings County Emergency Management agencies and organizations that support hurricane response are responsible for the tasks listed below.

3.3.3 Regional Emergency Management Coordinator (REMC)

- Develop and maintain contact lists and notification procedures
- Coordinate hurricane specific education materials for distribution to residents and business owners
- Coordinate activation of the Kings REMO Emergency Coordination Centre (ECC)

3.3.4 Site Operations (Incident Commanders)

The Incident Commanders (ICs) assume responsibility for the overall coordination of all operations at the emergency site and is the point of contact between the ECC Management Team and site operations.

The Incident Commander is responsible for:

- Identifying the risk areas.
- Prioritizing response activities.
- Evaluating and identifying equipment and resources needed

3.3.5 Fire Services

- Rescue / evacuate any persons in danger with minimum delay and provide first aid as necessary.
- Assist Police Services with evacuations in the affected areas as required.
- Control fires, released chemicals and other hazards.

3.3.6 Kings RCMP/Kentville Police

- Evacuate the affected areas as required.
- Perform traffic and crowd control operations.
- Disperse people not directly connected with the operations who, by their presence, are considered to be in danger, or whose presence hinders in any way the efficient functioning of operations.
- Secure the affected areas (based on need and availability of staff).
- Provide community security to prevent against looting and other unruly activities.
- Identify and establish detour routes due to high water and maintain proper traffic flow patterns as deemed appropriate.

3.3.7 Canadian Red Cross

- Provide staffing support to the Kings County Emergency Coordination Centre (ECC).
- Provide relief operations management.
- Conduct shelter and mass care operations.
- Assist in locating a source to procure, transport, store, prepare and distribute emergency food, water and ice supplies.
- Position resources to distribute mass care supplies.
- Provide volunteer support for mass care.
- Provide blood services.
- Provide first aid at feeding sites and shelters.

3.3.8 Infrastructure Services – Water / Wastewater

- Implement actions to protect water and sewer systems and identify threats to drinking water.
- Work with ECC Information Officer to advise the public of protective actions that may be required in the event of damage or concerns related to the sewer systems and/or drinking water sources.
- Request the disconnection or discontinuance of any service that may constitute a public hazard.
- In the event a flood emergency results in the release of untreated or partially treated sewage into lakes and rivers, implement internal procedures and notify the Ministry of the Environment, and the Department of Fisheries and Oceans Canada.

3.3.9 NS DPW & Engineering Departments

- Clear roadways and highways of debris.
- Install hurricane evacuation route signage along highways that are designated as hurricane evacuation routes.
- Perform emergency highway repairs to allow evacuation routes to remain open as long as weather conditions permit.
- Free obstructions to storm and wastewater drainage.
- Keep evacuation routes open for as long as prudent to ensure evacuees can exit the evacuation zones safely.
- Install temporary barricades, traffic cones and other traffic control devices to assist law enforcement in effective evacuation traffic management.

3.3.10 Infrastructure Services – Transit

- Provide transportation for residents and emergency responders as required.

3.3.11 Community Development – Social Services

- Provide assistance to residents displaced by flooding as required.
- Coordinate Emergency Shelter operations.

3.3.12 Utilities (NS Power, Berwick Electric, Gas etc.)

- Perform disconnect operations where this is considered necessary and in the interest of public safety.
- Secure services and equipment to ensure continuity of supply.
- Coordinate the priority restoration of affected services as dictated by emergency needs of municipal services and other essential users.
- Assist with clean up and restoration of services.
- Repair and restore any downed power lines and/or transformers.
- Assess ability to resume normal operations.

4.0 PUBLIC EDUCATION & AWARENESS OF HURRICANE PREPAREDNESS

Emergency public information is used to keep the public informed of the general progress of the storm and provide information on health and safety. The release of timely, consistent and effective public information helps all Kings County residents and visitors understand threats, potential impacts, available services and timelines for response and recovery. Pre-scripted Public Service Announcements (PSAs) are outlined at [Annex E](#).

Ongoing public awareness and education shall be an integral component of this plan. To this end, this Plan, as part of the Regional Emergency Management Plan, shall be posted on the [Municipality of the County of Kings](#), the Towns of [Berwick](#), [Kentville](#) & [Wolfville](#)'s websites in order that the public may have access to it and printed information shall be provided to residents in historically vulnerable areas. During an emergency evacuation, residents are to be able to access to the local media sources for information and instructions.

As part of Community Outreach, the Kings REMO Regional Emergency Management Coordinator will provide an overview of Hurricane Awareness to members of the community on an ongoing basis.

4.1 Evacuation Warnings

To be effective, Evacuation Warnings/Announcements should have the following characteristics:

- Authority**—Warnings are more credible and more likely to stimulate appropriate public actions if they are issued by a recognised authority.
- Consistency**—To avoid confusion and uncertainty, it is important that consistency be maintained when multiple warnings are issued to the public.
- Accuracy**—Accuracy and currency of information contained in the warning also affect understanding and belief. Errors can cause people to doubt subsequent warnings.
- Clarity**—An unclear warning can cause people to misunderstand or ignore it. Warnings should be in simple language, without the use of jargon.
- Level of Certainty**—Certainty determines the level of belief in a warning and affects decision making by those to whom the warning is given.
- Level of Detail**—Insufficient information creates confusion, uncertainty and anxiety, and public imagination will tend to fill the information void. This can promote rumours, uninformed misconceptions or fears.

- Clear Guidance**— Messages containing clear guidance about protective actions people should take and the time available for doing so are more effective than those which provide no specific instructions.
- Repetition of Warnings**—Where time permits, warnings should be repeated preferably using more than one delivery method. This provides confirmation of the warning message, helps increase persuasiveness and overcomes the problem of people not responding after hearing a warning only once.
- Impact Areas**—Warning information that clearly states the areas actually or likely to be affected by the event is most effective.
- Methods of Information Dissemination**—Warnings are more effective if a range of methods is used rather than a single method, thereby reaching as many people as possible in the shortest time. Methods need to be chosen to fit the time-frame available and should recognise that some modes are appropriate in reaching many people but with only relatively simple or generalised information (e.g. radio, television) whereas others can provide more specific information to targeted individuals (e.g. telephone, facsimile machine, computer, two-way radio, door-knocking or use of community leaders or wardens). Use of the Standard Emergency Warning Signal (SEWS) “[Alert Ready](#)” will enhance the effectiveness of electronic media warnings by alerting listeners for an urgent safety message to follow.
- Information Dissemination for Special Needs Groups**—Consideration must be given to the specific problems of special needs groups. Dissemination to, and receipt of information by, many of these groups will pose different challenges, for example, language. Neighbours can also help by checking on special-needs people in close proximity.

5.0 PLAN TESTING, REVIEW & MAINTENANCE

5.1 Plan Testing Schedule & Responsibility

The Kings County Regional Emergency Management Coordinator (REMC) is responsible for coordinating the annual testing (in whole or in part) of the Regional Hurricane Preparedness and Response Plan in order to verify its overall effectiveness and provide training to the emergency personnel. The exercise can take the form of a simple tabletop or a more elaborate functional exercise.

5.2 Plan Review & Maintenance

The Kings County HPRP will be maintained by the Regional Emergency Management Planning Committee (REMPC) and the Regional Emergency Management Coordinator (REMC).

The HPRP will be reviewed annually and, where necessary, revised by a meeting(s) of the [Regional Emergency Management Planning Committee](#) (REMPC) and the [Regional Emergency Management Advisory Committee](#) (REMAC). The REMP shall be revised subject to the approval of Municipal Councils.

REVIEWS

MONTH	DAY	YEAR	BY
June	01	2020	Kings REMO REMC
June	01	2021	Kings REMO REMC

PLAN REVISIONS

MONTH	DAY	YEAR	CHANGE	APPROVED
June	01	2022	1	2022-07-18

6.0 DISTRIBUTION LIST

Distributed electronically:

Municipal Units:

- [Municipality of the County of Kings](#)
- [Town of Berwick](#)
- [Town of Kentville](#)
- [Town of Wolfville](#)

- [Village of Aylesford](#)
- [Village of Canning](#)
- Village of Cornwallis Square
- [Village of Greenwood](#)
- [Village of Kingston](#)
- [Village of New Minas](#)
- [Village of Port Williams](#)

Fire Departments

- Kings County Fire Departments

Regional Emergency Management Planning Committee (REMPC)

- [NS EMO](#) – Western Zone Planning Officer
- [Acadia University](#)
- [Annapolis Valley Amateur Radio Club](#) (AVARC)
- [Annapolis Valley First Nation](#)
- [Annapolis Valley Regional Centre for Education](#) (AVRCE)
- [Brigadoon Village](#)
- Community Services – Kings County
- [NS Department of Natural Resources and Renewables \(DNRR\)](#)
- [NS Department of Public Works](#) (DPW)
- [NS Emergency Health Services](#)
- Fire Services
- [Glooscap First Nations EMO](#)
- [Kentville Police](#) / [Kings County RCMP](#)
- [Kings Transit Authority](#) (KTA)
- [NS Department of Agriculture](#)
- [NS Health](#)
- [Canadian Red Cross](#)
- [Valley Communications](#)
- [Valley Search and Rescue](#) (SAR)

Annexes

- A [Declaring a State of Local Emergency \(SOLE\)](#)
 - [Form 4 \(Council\)](#)
 - [Form 5 \(Mayor\)](#)
- B [Criteria for Hurricanes](#)
- C [Kings REMO Actions - Hurricane](#)
- D [Hurricane Event Checklist](#)
- E [Public Service Announcements \(PSA\)](#)
- F [Hurricane Safety Tips](#)
- G [Protecting Property from High Winds](#)
- H [Lessons Learned – Hurricane Disasters](#)
- I [Hurricanes – Frequently Asked Questions \(FAQ\)](#)
- J [Hurricanes - References](#)
- K [Abbreviations and Acronyms](#)
- L [Definitions](#)

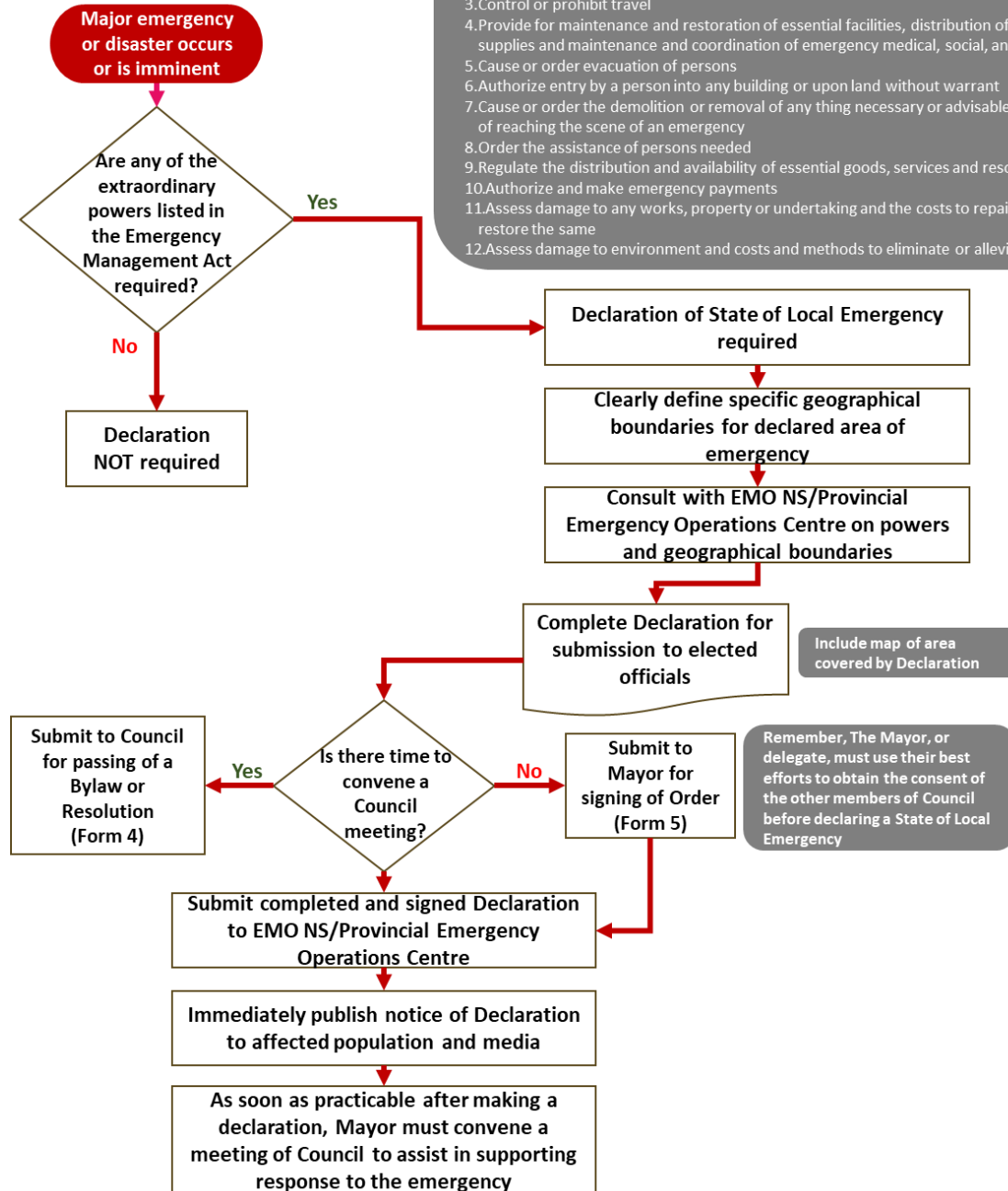
Annex A – Declaring a State of Local Emergency (SOLE)

Declaring a State of Local Emergency

Reference: [Nova Scotia Emergency Management Act](#)
(Section 12 / Section 14 / Section 18)

Emergency Powers in Brief:

1. Acquire or utilize personal property by confiscation or any means considered necessary
2. Authorize or require a qualified person to render aid
3. Control or prohibit travel
4. Provide for maintenance and restoration of essential facilities, distribution of essential supplies and maintenance and coordination of emergency medical, social, and other services
5. Cause or order evacuation of persons
6. Authorize entry by a person into any building or upon land without warrant
7. Cause or order the demolition or removal of any thing necessary or advisable for the purpose of reaching the scene of an emergency
8. Order the assistance of persons needed
9. Regulate the distribution and availability of essential goods, services and resources
10. Authorize and make emergency payments
11. Assess damage to any works, property or undertaking and the costs to repair, replace or restore the same
12. Assess damage to environment and costs and methods to eliminate or alleviate the damage



FORM 4

DECLARATION OF A STATE OF LOCAL EMERGENCY

MUNICIPALITY: _____

Section 12(2) of the *Emergency Management Act*, S.N.S. 1990, c.8

WHEREAS the area herein described is or may soon be encountering an emergency that requires prompt action to protect property or the health, safety or welfare of persons therein;

Emergency Area:

The area general described as:

[Empty rectangular box for describing the emergency area]

Province of Nova Scotia (hereafter

referred to as the "Designated Area(s)")

Yes

No

Nature of the Emergency:

[Empty rectangular box for describing the nature of the emergency]

AND WHEREAS the undersigned is satisfied that an emergency as defined in Section 2(b) of Chapter 8 of the Statutes of Nova Scotia, 1990, the *Emergency Management Act*, exists or may exist in the Designated Area(s) noted above;

THE UNDERSIGNED HEREBY DECLARES pursuant to Section 12(2) of the *Emergency Management Act*, a State of Local Emergency in the Municipality noted above as of and from ____ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____.

THIS DECLARATION OF STATE OF LOCAL EMERGENCY shall exist until _ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____, or for a maximum of 7 days from the date and time specified above unless the Declaration is renewed or terminated as provided in Section 20 of the *Emergency Management Act*.

DATED at _____, in the Municipality of _____, Province of Nova Scotia, this _____ day of _____, 20____.

Council, Municipality _____

Name _____

Positions _____

[Authorized by Resolution No. _____ dated the _____ Day of _____, 20____.

FORM 5

DECLARATION OF A STATE OF LOCAL EMERGENCY

MUNICIPALITY: _____

Section 12(2) of the *Emergency Management Act*, S.N.S. 1990, c.8

WHEREAS the area herein described is or may soon be encountering an emergency that requires prompt action to protect property or the health, safety or welfare of persons therein;

Emergency Area:

The area general described as:

[Empty rectangular box for describing the emergency area]

Province of Nova Scotia (hereafter

referred to as the "Designated Area(s)")

Yes

No

Nature of the Emergency:

[Empty rectangular box for describing the nature of the emergency]

AND WHEREAS the undersigned is satisfied that an emergency as defined in Section 2(b) of Chapter 8 of the Statutes of Nova Scotia, 1990, the *Emergency Management Act*, exists or may exist in the Designated Area(s) noted above;

AND WHEREAS the Council of the Municipality is unable to act;

AND WHEREAS the undersigned has (check appropriate box)

(a) Consulted with a majority of the members of the
Municipal Emergency Management Committee

Yes

No

(b) Found it impractical to consult with the majority
of the Municipal Emergency Management Committee

Yes

No

THE UNDERSIGNED HEREBY DECLARES pursuant to Section 12(3) of the *Emergency Management Act*, a State of Local Emergency in the Municipality noted above as of and from ____ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____.

THIS DECLARATION OF STATE OF LOCAL EMERGENCY shall exist until _ o'clock in the forenoon () or afternoon () of the _____ day of _____, 20____, or for a maximum of 7 days from the date and time specified above unless the Declaration is renewed or terminated as provided in Section 20 of the *Emergency Management Act*.

DATED at _____, in the Municipality of _____, Province of Nova Scotia, this _____ day of _____, 20____.

Mayor's Signature

Municipality of

Annex B – Criteria for Hurricanes

Category	Description	Injury Risk to People/Animals	Damage Risk to Homes	Damage Risk to Industrial Structures	Power Outages
1	<p>Sustained winds 119-153km/h</p> <p>Very dangerous winds will produce some damage</p>	People, livestock and pets struck by flying or falling debris could be injured or killed	Potential loss or damage to roof and porch coverings and awnings; unprotected windows may break if struck by flying debris; masonry chimneys can be toppled	Potential loss or roofing and siding especially from windward corners, rakes and eaves; damage to overhead doors and unprotected windows; windows in high rise buildings can be broken by flying debris; falling and broken glass will pose a significant danger; occasional damage to commercial signage, fences and canopies	Extensive damage to power lines and poles will likely result in power outages that could last a few to several days
2	<p>Sustained Winds 154-177 km/h</p> <p>Extremely dangerous winds will cause extensive damage</p>	Substantial risk of injury or death to people, livestock and pets due to flying and falling debris.	High chance of roof structure removal if not anchored properly; high probability of unprotected windows broken by flying debris; substantial risk of roof and siding damage to apartment buildings; unreinforced masonry walls can collapse.	Substantial risk of roof and siding damage; falling and broken glass pose a significant danger; commercial signage, fences and canopies could be destroyed; roads blocked due to broken trees	Near-total power loss is expected and could last from several days to weeks. Potable water could become scarce as filtration systems begin to fail.
3	<p>Sustained Winds 178 – 208 km/h</p> <p>Devastating damage will occur</p>	High risk of injury or death to people, livestock and pets due to flying and falling debris.	High risk of removal of roof and exterior walls to poorly constructed homes; unprotected windows broken by flying debris; high percentage of roof covering and siding damage to apartment buildings	High risk of roof covering and siding damage; isolated structural damage to wood or steel framing; significant damage to older metal buildings including collapse of older unreinforced masonry buildings; windows blown out of highrise buildings could result in falling glass; most commercial signage, fences and canopies will be destroyed; roads blocked due to tree damage.	Electricity and water will be unavailable for several days to a few weeks after the storm passes.

Category	Description	Injury Risk to People/Animals	Damage Risk to Homes	Damage Risk to Industrial Structures	Power Outages
4	Sustained Winds 209 – 251 km/h Catastrophic damage will occur	Very high risk of injury or death to people, livestock and pets due to flying and falling debris.	High risk of collapse of older unreinforced masonry buildings; most windows blown out of high-rise buildings resulting in falling glass; fallen trees and power poles will isolate residential areas.	Steel frames in older industrial buildings can collapse; nearly all commercial signage, fences and canopies will be destroyed; most trees will be snapped or uprooted, and power poles downed.	Power outages will last for weeks to possibly months. Long-term water shortages will occur. Most of the area will be uninhabitable for weeks or months.
5	Sustained Winds > 252 km/h	Very high risk of injury or death to people, livestock and animals from flying or falling debris, even if indoors in mobile homes or framed homes.	High risk of frame homes being destroyed, with total roof failure and wall collapse; extensive damage to roof covers, windows and doors; wind-borne debris will be lofted into the air causing damage to nearly all windows, whether protected or unprotected; fallen trees and power poles will isolate residential areas; high risk of low-rise apartment buildings being destroyed.	Significant damage to wood roof commercial buildings; complete collapse of many older metal buildings; most unreinforced masonry walls will fail, which can lead to collapse of the buildings; high risk of industrial buildings being destroyed; nearly all commercial signage, fences and canopies will be destroyed; nearly all trees will be snapped or uprooted, and power poles downed.	Power outages will last for weeks to possibly months. Long-term water shortages will occur. Most of the area will be uninhabitable for weeks or months.

Annex C – Hurricane Event – Kings REMO Actions

Reference: Kings REMO Regional Emergency Management Plan (REMP), 2018-09

Hurricane

A. Possible Major Effects	Probability
1. Casualties / Deaths	Low
2. Disruption of community	High and Localized
3. Disruption of utilities	Low to Moderate
4. Damage to property	High in localized areas
5. Disruption of traffic	High
6. Disruption of communications	Low to Moderate
7. Evacuation	Moderate to High
8. Contamination of normal water supplies	Moderate to High
9. Loss of economic activities	Low to Moderate

B. Potential Actions at the Scene	Agency Responsible
1. Warning of imminence	Provincial flood authority
a. Long term	Meteorological services/Canadian Tide & Current Tables (Environment Canada)
b. Short term	Police
2. Establish an emergency headquarters	Council Chambers – ECC
3. Establish adequate communications	Communication Coordinator
4. Establish a control perimeter	Police
5. Establish routes for emergency vehicles	Police
6. Notify hospitals of casualties including number and type	Medical/Police
7. Rescue	Fire/Police/Rescue services
8. Establish a temporary morgue	Medical Coordinator
9. Establish a news release system	Information Officer (Command Staff)
10. Establish emergency welfare services	Welfare/Social Services/Volunteer agencies
11. Establish an inquiry service	Welfare/Social Services
12. Eliminate hazards from damaged utilities	Engineering/Utilities
13. Protection of property and relocate resources where necessary	Police
14. Provide auxiliary power	Engineering
15. Clear debris	Engineering
16. Mobilize necessary manpower & equipment	EMO/Canada Manpower Centres
17. Establish jurisdiction	Government
18. Establish traffic control	Police
19. Establish dyking as required	Engineering
20. Check stocks of sand and sandbags	Engineering
21. Evacuation of personnel, livestock, etc.	Welfare/Social Services/Volunteer agencies/Agriculture
22. Storage of furnishings and equipment	EMO
23. Establish emergency health facilities	Health service

C. Equipment	Sources
1. Rescue equipment	Police/EMO
2. Pumps	Engineering/Fire Department
3. Medical and health supplies	Health Services
4. Transportation/Boats	EMO/Various sources/Transportation Coordinator
5. Communication equipment	Province/Police/EMO/Communication Coordinator
6. Auxiliary generators	Various sources
7. Mobile public-address equipment	Police/EMO/Radio Stations/Fire Department
8. Food and lodging	Welfare/Social Services
9. Diving equipment	Engineering/Industry
10. Heavy equipment (bulldozers, etc.)	Engineering/Industry
11. Auxiliary lighting equipment	Engineering/Utilities/Fire Department
12. Storage facilities for equipment, furnishings, livestock	Province

Annex D – Hurricane Event Checklist

Pre-Incident Phase

- Arrange for personnel to participate in necessary training and develop exercises relevant to hurricane events in Kings County
- Coordinate the County's preparedness activities, seeking understanding of interactions with participating agencies in hurricane scenarios
- Ensure that emergency contact lists are updated
- Contact supporting emergency response agencies to review and determine whether major developments have arisen that could adversely affect response operations (e.g., personnel shortages, loss of equipment, etc.)
- Annually review and update the Kings REMO Regional Emergency Management Plan (REMP) and Supporting Plans
- Familiarize staff with requirements for requesting a State of Local Emergency (SOLE)
- Ensure that supplies, such as communications devices and sandbags, are prepared and ready for use. This includes primary and alternate communications and warning systems
- Identify and review local contractor lists to see who may provide support specific to flood response
- Review, revise, and, where necessary, establish mutual aid agreements with local agencies and other County agencies and private contractors relevant to multiple agency response to the impacts from a hurricane

Response Phase

- The Kings REMO ECC Manager will provide overall guidance for the deployment of resources across Kings County
- Activate mutual aid agreements
- Activate the Kings REMO Emergency Coordination Centre (ECC) and implement appropriate staffing plans. Contact appropriate supporting agencies to assign liaisons to the ECC for coordination of specific response activities
- Estimate emergency staffing levels and request personnel support, including specialized staff such as engineers, building inspectors, heavy equipment operators, and/or environmental remediation contractors
- Develop and initiate shift rotation plans, including briefing of replacements during shift changes (set the operational period briefing cycle)
- Submit request for State of Local Emergency (SOLE), as applicable
- Coordinate the evacuation of affected area, if necessary. Assign appropriate agency liaisons to the ECC, as the situation requires
- Support Search and Rescue operations by coordinating resource requests outside of the jurisdiction
- Request the Canadian Red Cross to activate Emergency Shelters and open shelters, if needed
- Formulate Emergency public information messages and media response using “one voice, one message” concept
- Record all ECC activities, completion of personnel tasks, incoming and outgoing messages, and the names of those sending and receiving them. These should be documented in ECC logbooks
- Coordinate damage assessments in coordination with Public Works Departments

- Assist with coordinating Public Works activities, such as debris removal from:
 - Storm drains
 - Main arterial routes
 - Public right-of-way
 - Dams
 - Other structures, as needed
- Contact local contractors for support, if necessary. Establish contact with private sector partners
- Coordinate with law enforcement agency (Kentville Police and/or Kings RCMP) to provide law enforcement to affected areas (road closures, security, etc.)
- Collect and chronologically file records and bills generated during the incident in order to ensure timely submittal of documents for reimbursement (Finance/Administration Section)

Recovery Phase

- Monitor secondary hazards associated with floods (contamination, damage to bridges/roads, impacts to utility lines/facilities) and maintain on-call personnel to support potential response to these types of hazards
- Deactivate/demobilize the ECC. Deactivate mutual aid resources as soon as possible
- Activate and implement applicable mitigation plans, community recovery procedures, and continuity of operations/governments plans until normal daily operations can be completely restored
- Implement revisions to the Kings REMO Regional Emergency Management Plan (REMP) and Supporting Plans based on lessons learned and best practices adopted during response
- Offer recommendations to Municipal Government and Public Works departments for changes in planning, zoning, and building code ordinances
- Participate in After Action Reports and critiques
- Submit valuable success stories and/or lessons learned to NS EMO and other County partners

Annex E – Public Service Announcements (PSA) - Hurricanes

Preparing for Hurricane Season

There are basic steps you can take to prepare for hurricane season:

- Learn about the [Kings REMO Regional Emergency Management Plan](#) and EM Support Plans, warning signals, and evacuation routes.
- Know where to find emergency shelters.
- Inform local authorities about anyone with special needs, such as the elderly or bedridden, or anyone with a disability. Don't wait until the hurricane is on its way. Do this now.
- Make plans to ensure your pets' safety. Emergency shelters can not accept pets due to safety and sanitation requirements.
- Locate and secure your important papers, such as insurance policies, wills, licenses, and stocks.
- Post emergency phone numbers at every phone and program these into your cell phone.
- Make sure you have a battery-powered radio on hand. A weather radio can be especially helpful for up-to-the minute reports on weather and location-specific storm watches and warnings.
- Be prepared to turn off electrical power and gas in case you are asked to evacuate.



Before hurricane season, stock your home with supplies. At a minimum, these should include:

- Several clean containers for water—enough to hold two litres of water per person per day for at least three days. This should be enough for drinking and sanitation. You should also have water-purifying supplies on hand, such as chlorine or iodine tablets, or unscented ordinary household chlorine bleach.
- A first aid kit and manual.
- Prescription medicines and special medical supplies.
- Baby food and prepared formula, diapers, and other baby supplies.
- A 3 to 5-day supply of non-perishable food.
- Flashlights and extra batteries.
- Sleeping bags and extra blankets.
- Personal hygiene supplies, such as soap, toothpaste, and sanitary napkins. Baby wipes are useful for the whole family in cases where bathing facilities are not available.
- And an emergency kit for your car with food, flares, booster cables, maps, tools, first aid kit, fire extinguisher, and sleeping bags.



Expect to evacuate and prepare for it. When a [hurricane watch](#) is issued, you should:



- Review your emergency plans and supplies, and check to see if any items are missing. Make sure you have supplies in your home and an emergency kit in your car.
- Turn on the radio or television for weather updates.
- Listen for disaster sirens and warning signals.
- Fill sinks and bathtubs with water as an extra supply for washing.
- Fill your car's gas tank.
- If no vehicle is available, make arrangements with friends or family for transportation.
- Secure any items outside which may cause injury or damage property during high winds—items such as bicycles, grills, propane tanks, lawn furniture, and flowerpots. Secure any structurally unstable buildings and tie down loose building materials.
- Cover windows and doors with plywood or boards, and place large strips of masking tape on the windows to reduce the risk of breakage and flying glass.
- Put livestock and family pets in a safe area.
- If possible, put vehicles under cover.
- Adjust the thermostat on refrigerators and freezers to the coolest possible temperature.

Because of the destructive power of a hurricane, you should never ignore an evacuation order. Authorities will most likely direct you to leave if you are in a low-lying area, or within the greatest potential path of the storm. If a hurricane warning is issued for your area or you are directed by authorities to evacuate:



- Take only essential items with you.
- Make sure you have an emergency kit in your car.
- If you have time, turn off the gas, electricity, and water.
- Unplug appliances to reduce the likelihood of electrical shock when power is restored.
- Follow the designated evacuation routes and expect heavy traffic.

If you are ordered NOT to evacuate, there are things you can do to get through the storm in the safest possible manner:

- Monitor the radio or T.V. for weather conditions.
- Stay indoors until the authorities declare the storm over.
- Even if the weather appears to have calmed—do not go outside. The calm “eye” of the storm can pass quickly, leaving you outside when strong winds resume.
- Stay away from all windows and exterior doors. Take shelter in an interior bathroom or in a basement that will provide protection from high winds and flying debris. Bathtubs can provide shelter, especially if you can cover yourself with plywood or other similar material. These spaces can help assure your safety during a structural collapse.

- Turn off power when there is standing water or fallen power lines.
- Prepare to evacuate to a shelter or to a neighbor’s home if your home is damaged, or if you’re instructed to do so by emergency personnel.
- Many hurricane-related injuries are cuts caused by flying glass and debris. Other injuries include bone fractures and puncture wounds from exposed nails, metal, or glass.

Learn about the Dangers of Hurricanes

Hurricanes are among nature’s fiercest storms. The three greatest dangers hurricanes pose are extreme wind speeds, storm surge and torrential rains.

- **Hurricane-force winds** are 119 kilometres per hour and greater. Even the weakest storms can uproot trees, down power lines and damage buildings. Category 5 storms can cause catastrophic wind damage to residential and commercial buildings.
- When hurricanes come ashore, they push a dome of sea water over the land. This is called **storm surge**. Storm surges may range from a few feet high to more than 3 metres above normal sea level. A storm surge can batter buildings off their foundations and present an extreme drowning danger. It is never safe to “ride out” a hurricane in a surge zone. Do you live in a surge zone?
- Hurricanes bring with them **torrential rainfalls** that often cause severe flooding. Generally, storms that move slowly produce heavier rainfall. Inland areas also are at risk from flooding and flash flooding caused by hurricanes.



Hurricane Evacuation

This is an important message from the Kings County Regional Emergency Management Organization. If a hurricane warning is issued for your area, or authorities tell you to evacuate, take only essential items. If you have time, turn off gas, electricity, and water and disconnect appliances. Make sure your automobile’s emergency kit is ready. Be sure to take prescription drugs with you. Follow the designated evacuation routes and expect heavy traffic. To learn more, contact your local emergency management authorities.

Returning Home

- Avoid downed and sagging power lines
 - Report them immediately to the power company, police or fire department
- Be alert for driving restrictions
 - Avoid flooded roads and washed-out bridges and roadways
 - Follow directions provided by public safety officials
- Enter your home with caution
 - Open windows and doors to ventilate and dry out your home
 - Check refrigerated foods for spoilage
 - Use the telephone only for emergency calls
 - Do not use candles or open flames indoors. Use a flashlight to inspect for damage

- Inspect the utilities in your home
 - **Check for gas leaks.** If you smell gas or hear a blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can. From a safe place, call to report a gas leak to your utility provider. If you turn off the gas for any reason, it must be turned back on by a professional
 - Look for **electrical system damage.** If you see sparks, broken or frayed wires, or if you smell something burning, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician for advice
 - Check for **sewage and water line damage.** If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company and void water from the tap.

Power Pointers

- If you see a downed power line, do not touch it. Do not touch tree limbs or other objects touching a power line.
- Do not attempt to tie generators into the house circuit. This can be dangerous to you, your neighbors and to linemen. Plug appliances directly into the generator.
- Should the power go out while you are cooking, remember to turn the stove off and remove any cookware from the cooking surfaces and oven.
- Do not open refrigerators or freezers during an outage unless absolutely necessary.
- Repeated openings cause the cold air to escape and food to thaw more quickly.
- If you smell gas, leave your home immediately, and call the power company.

Safeguarding Your Health

Conditions following hurricanes are uncomfortable and pose numerous health risks. Keep in mind that power outages may last for several days or weeks. Take the following precautions to avoid illness:

- Discard food from your refrigerator if it has reached room temperature. Foods that are still partially frozen or "refrigerator cold" are safe to eat. If in doubt, throw it out.
- Don't drink tap water until authorities say it is safe. Instead, drink bottled water or boil water for at least one minute before drinking. You also can disinfect water with chlorine or iodine (follow package directions) or with ordinary household bleach -- one-eighth teaspoon (about eight drops) per gallon of water. Sterilize water containers and drinking cups with a solution of household bleach.
- Poisoning from carbon monoxide is an avoidable hazard during power outages. Never use generators, camp stoves or charcoal grills inside your home, garage or near open windows, doors or vents. Carbon monoxide is a colorless and odorless gas that can build up and cause sudden illness and death. If you feel dizzy, light-headed or nauseous, seek immediate medical attention.
- Weather conditions following hurricanes are usually very hot and humid. You may not have air conditioning for a long period of time. Avoid heat-related illnesses by drinking plenty of fluids and taking care to not overexert yourself when cleaning up and repairing damage.

- When cleaning up debris, look out for broken glass and exposed nails, a leading cause of tetanus. If you are punctured by a nail or receive a deep wound, get a tetanus shot.
- After a hurricane, it's normal to experience emotional distress. Allow yourself and family members time to grieve. For more information about coping with disaster-related stress, visit the [Canadian Red Cross 'Coping with Crisis' web page](#).

HURRICANE SAFETY TIPS



Take these steps to prepare yourself, and your loved ones from dangerous weather.

Have An Emergency Plan

Create an emergency plan and review it with everyone in your home. Make sure everyone knows the safest location in the home.



Follow Emergency Instructions



Follow all instructions from authorities regarding evacuation or other safety protocols. Check radio, television or other media outlets for emergency information.

Have an Evacuation Route

Make sure you know your evacuation route before the hurricane hits and keep a full tank of gas.



Stock Up On Supplies

Be sure to have the proper necessities, such as: water, blankets, first aid kits, flashlights, batteries, radios, and any pet care items.



Protect Important Documents

Make sure important documents such as ID cards and other vital information are placed in a secured, waterproof container.



Out-Of-Town Contact

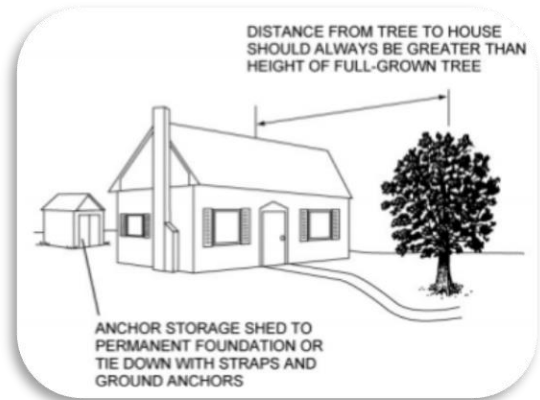
Make sure to have an out-of-state friend or family member as a contact, so they can check on your whereabouts.



Annex G – Protecting Property from High Winds

If the area immediately surrounding your home contains trees, outbuildings, trash cans, yard debris, or other materials that can be moved by the wind, your house will be more likely to be damaged during a hurricane. The wind can topple trees onto your house and can pick up smaller objects and drive them through windows and glass doors.

You should ensure that all trees on your property are far enough away to prevent them from damaging your home if they should fall. The distance between the structure and any nearby tree should always be greater than the height the tree will reach when it is fully grown. All storage sheds and other outbuildings should be securely anchored, either to a permanent foundation or with straps and ground anchors. Smaller objects, such as trash cans, barbecue grills, and outdoor furniture should also be anchored or, if you have adequate warning, moved indoors. You should also clear away any debris, such as fallen tree branches.



Benefits of this Mitigation Strategy:

- Helps to prevent damage to a structure and its contents
- Helps to prevent injuries to occupants

Keep these points in mind during the removal of trees and potential windborne missiles:

- Remove large trees near your property. They can be extremely dangerous for both you and your home. Therefore, this is a job for a skilled contractor.
- Use the straps and ground anchors also used for manufactured homes to anchor outbuildings, especially small garden sheds that are usually not placed on a permanent foundation.
- Secure outdoor furniture and barbecue grills by bolting them to decks or patios or by attaching them to ground anchors with cables or chains.
- Secure trash cans with cables or chains attached to ground anchors or wood posts firmly embedded in the ground. Trash can lids should be attached to cans with cables or chains.
- Contact your local agricultural office to get suggestions on which varieties of trees will be less susceptible to storm damage.
- Contact an arborist for assistance with pruning existing trees properly. Improperly pruning trees or damaging root systems can make them more susceptible to storm damage.

Annex H – Lessons Learned – Hurricane Disasters

- | | |
|------------------------------|--|
| ECC Staffing | <ul style="list-style-type: none">• ECC needs to be activated in advance of disaster - Key staff deployed to ECC prior to disaster• Ensure staff is clearly identified for shift work within the ECC to avoid fatigue and unstaffed positions• Consider additional staffing depth in key positions• Mandate staffing of assigned positions for shift periods• Establish a clear delineation for shift changing and transition of duties to next shift |
| ECC Planning Process | <ul style="list-style-type: none">• Conduct more training and exercises to establish a “Battle Rhythm” and practice implementing the planning process |
| Debris Removal | <ul style="list-style-type: none">• Establish debris disposal site permits prior to the storm• Establish debris contracts in place and have signed prior to the storm – beneficial in getting recovery efforts underway early• Debris must be properly disposed of to avoid health and environmental issues• There needs to be an enhanced public communication plan to provide guidance for the removal of debris from public property |
| Environmental Hazards | <ul style="list-style-type: none">• The clean-up effort post-Hurricane impact can be an immense undertaking• A Storm’s collective environmental damage can create a potentially hazardous environment for emergency responders and the general public – regional officials need to identify environmental hazards and communicate appropriate warnings to emergency responders and the public• There needs to be a comprehensive plan to accurately and quickly communicate critical information to the emergency responders and areas residents who need it |
| Public Information | <ul style="list-style-type: none">• Create pre-planned comfort/information stations throughout the County with backup power (potentially at community centers and libraries) that provides residents the opportunity to charge devices, check emails, contact relative and receive information.• Evacuation - Informational awareness to residents needs to be improved to provide greater understanding of the hazards being mitigated by responders before re-entry can occur |

- Communications**
- Effective emergency management and incident response activities rely on flexible communications and information systems that provide a Common Operating Picture (COP) to emergency management personnel and their affiliated organizations.
 - Develop key messages in advance – many key messages can be written before disaster strikes so they can be quickly disseminated before an event, during the response, and in the recovery stages
 - Identify new Communication Channels – when all primary communication systems and technology fail, communicators must think creatively and adapt to the crisis by identifying new communication channels
- Rescues**
- The requirement may arise to re-direct Operations services staff and contractors with large equipment from protecting infrastructure to conducting rescues
 - Amphibious quads, zodiacs, front-end loaders, rock trucks and combines can be essential to rescue operations
 - Traffic control is vital to rescue and evacuation operations
- Public Health & Medical Support**
- Hurricanes can create enormous public health and medical challenges
 - Residents displaced by the storm and isolated by the flooding can find themselves without access to their usual medications and sources of medical care
 - Immediate challenges may include the identification, triage and treatment of acutely sick and injured patients; the management of chronic medical conditions in large numbers of evacuees with special health care needs; the assessment, communication and mitigation of public health risk; and the provision of assistance to local health officials to quickly re-establish health care delivery systems and public health infrastructures
- Mass Care & Housing**
- An evacuation exodus of people will create an urgent need for suitable shelters
 - Those unable to move due to health reasons or lack of transportation, or who simply did not choose to comply with the Evacuation Order, may have significant difficulty in finding suitable shelter after the hurricane has devastated the region
- Evacuation**
- Not everyone has the physical ability or financial resources to be able to leave, as much as they may want to
 - A common theme when considering failure to evacuate is that people often do not understand or appreciate the nature of the hazard or of the risk
 - A better job must be done when issuing evacuation orders, including using proper language and communications channels to ensure that both coverage and comprehension is optimal.
 - Start evacuations early, especially for those with no means of transportation

**Crisis
Communications**

- Establishing and maintaining credibility of the source and accuracy of information is critical to managing rumours
- Using opportunities to provide printed information to residents such as during evacuee registration can significantly help to supplement other forms of communication
- Anticipate disruptions in communications services, possibly for extended periods of time
- Hurricanes can cause widespread damage that can strand residents without access to working landline or cellular telephone services
- In the absence of direct channels of communication to residents, mass media must be relied upon

Annex I – Frequently Asked Questions (FAQ)

Source: [Canadian Hurricane Centre – Frequently Asked Questions](#)

How many Hurricanes have hit Canada?

Since 1951, **23 Hurricanes** or hurricane strength post-tropical storms have made landfall in Canada (about 1 every 3 years)¹. Over the last few years, the average number of hurricanes that have entered Canadian Territory have been increasing.

Why does Canada have a Hurricane Centre?

Canada has a hurricane centre because tropical storms, hurricanes and post-tropical storms can have a significant impact on Canadian weather and on Canadians.

These storms often bring severe rainfall and wind speeds and behave differently than other types of storms and can therefore be quite complex and challenging to forecast. The Canadian Hurricane Centre provides the public with the expertise of specially trained forecasters and issues tropical cyclone-specific public warnings to warn the public about these potential weather hazards.

The [Canadian Hurricane Centre](#) (CHC) was created in 1987 after it became clear that Canadians needed an expert source for information that was focused specifically on how tropical cyclones affect Canada. Before the creation of the Centre, Canadians relied largely on forecasts from the United States for hurricane-specific information.

What is meant by a Tropical Storm Watch/Warning?

A **tropical storm watch** is a public announcement for a specific geographic area that tropical storm conditions are a possible threat within 36 hours. This includes sustained winds between 63-118 km/h.

A **tropical storm warning** is a public announcement that tropical storm conditions are expected in a specific geographic area within 24 hours. This includes sustained winds between 63-118 km/h. As tropical storms are usually accompanied by heavy rainfall, local flooding can also be expected.

¹ [Canadian Hurricane Centre](#), as of August 2018

What is meant by a Hurricane Watch/Warning?

A **hurricane watch** is a public announcement for a specific geographic area that hurricane conditions are a possible threat within 36 hours. These conditions include average sustained winds of at least 119 km/h, dangerously high-water levels, or a combination of high water and waves.

A **hurricane warning** is a public announcement that one or both of the following dangerous effects of a hurricane are expected in a specific geographic area in 24 hours or less: (1) average sustained winds of at least 119 km/h; (2) dangerously high water levels, or a combination of dangerously high water levels and exceptionally high waves. This can happen even if expected winds are less than hurricane force. A hurricane also brings the threat of local flooding from heavy rainfall.



How often does the Canadian Hurricane Centre issue Tropical Cyclone Bulletins?

Tropical cyclone bulletins are generally issued every six hours once a storm is forecast to impact Canada or Canadian waters within a 72-hour period. Bulletins are issued at 9:00 p.m., 3:00 a.m., 9:00 a.m., and 3:00 p.m. Atlantic Daylight Time. Tropical cyclone bulletins provide forecast discussions and wind speed information.

Once a storm begins to have a significant impact on Canada or Canadian waters, intermediate bulletins are issued in addition to the regular bulletins above, at 6:00 p.m., 12:00 a.m., 6:00 a.m., and 12:00 p.m.. These bulletins are brief and state the position, movement and intensity of the storm.

How many Hurricane Centres are there?

The World Meteorological Organization recognizes the [National Hurricane Center](#) in the United States as the official lead hurricane agency for the Atlantic Basin. However, many countries, including Canada, have weather offices with meteorologists specializing in tropical cyclones. In Canada, Environment Canada created the [Canadian Hurricane Centre](#) to meet our safety and security needs, and the centre is the only Canadian organization authorized to issue tropical cyclone watches and warnings.

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Annex J – References

Federal

- [Environment & Climate Change Canada – Canadian Hurricane Centre](#)
- [Public Safety Canada - Hurricanes](#)
- [Public Safety Canada: Severe Storms – What To Do?](#)
- [Canadian Red Cross – Coping with Crisis](#)
- [Canadian Red Cross – Hurricanes: Information & Facts](#)

Provincial

- [NS EMO – States of Emergency](#)

Regional

- [Kings REMO Regional Emergency Management Plan \(REMP\), Change 1](#)
- [Kings REMO Comfort Centre/Emergency Shelter Policy](#)
- [Kings REMO Regional Emergency Guide](#) (See Severe Weather - Hurricanes)

Annex K – Abbreviations & Acronyms

AREP	Agency Representative
DFAA	Disaster Financial Assistance Arrangements
ECC	Emergency Coordination Centre
ECCC	Environment and Climate Change Canada
ECCMT	Emergency Coordination Centre Management Team
EMO	Emergency Management Office
FPRP	Flood Prevention and Response Plan
IAP	Incident Action Plan
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Management Team
IO	Information Officer
LO	Liaison Officer
LSC	Logistics Section Chief
MAC	Multiagency Coordination (MAC) Group
NS DPW	Nova Scotia Department of Public Works
NS DNRR	Nova Scotia Department of Natural Resources and Renewables
OSC	Operations Section Chief
PSC	Planning Section Chief
REMAC	Regional Emergency Management Advisory Committee
REMC	Regional Emergency Management Coordinator
REMP	Regional Emergency Management Plan
REMPC	Regional Emergency Management Planning Committee
SO	Safety Officer
UC	Unified Command

Annex L – Definitions

Cyclone	The word cyclone comes from the Greek word kyllon which means cycle, circle or coil of a snake. In the Northern Hemisphere, the counterclockwise movement of air around and into any low pressure system is called cyclonic circulation. A low which intensifies in the tropics is called a Tropical Cyclone; if the storm's winds reach 120 kilometres per hour or more, the storm is called a hurricane. In the Arabian Sea, Indian Ocean and around Australia, hurricanes are called cyclones (See Hurricane, and Typhoon)
Eye of the Storm	In a severe tropical storm such as a hurricane, there is a roughly circular area right in the centre, between six and 60 kilometres in diameter, where the winds are comparatively light, and the weather is fair. This is called the eye of the storm. (see Hurricane)
Flood/Flooding	A temporary condition caused by the accumulation of runoff from any source, which exceeds the capacity of a natural or man-made drainage system and results in inundation of normally dry land areas.
Floodplain	The area, usually lowlands adjoining a watercourse, which has been, or may be, covered by flood water.
Hurricane	<p>In the Atlantic and eastern Pacific oceans intense tropical storms with wind speeds of 120 kilometres per hour or more are called hurricanes. They are called typhoons in the western Pacific and cyclones in the Arabian Sea, Indian Ocean and around Australia. Whatever their name, these tropical storms can extend up to thousands of square kilometres in area and last for several days.</p> <p>In the North Atlantic, the hurricane season starts June 1, but most occur during August, September and October. On average, hurricanes hit the east coast of Canada less than once a year. The most famous hurricane to strike Ontario was Hurricane Hazel on October 15, 1954. In less than 18 hours, more than 178 millimetres of rain fell causing flash floods in creeks and rivers and killing 80 people. (see Eye of the storm)</p>
Hurricane Season	The portion of the year having a relatively high incidence of hurricanes. The hurricane season in the Atlantic, Caribbean, and Gulf of Mexico runs from June 1 to November 30.
Landfall	The intersection of the surface center of a tropical cyclone with a coastline. Because the strongest winds in a tropical cyclone are not located precisely at the center, it is possible for a cyclone's strongest winds to be experienced over land even if landfall does not occur. Similarly, it is possible for a tropical cyclone to make landfall and have its strongest winds remain over the water. Compare direct hit, indirect hit, and strike.
Saffir-Simpson Hurricane Wind Scale	The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 categorization based on the hurricane's intensity at the indicated time. The scale provides examples of

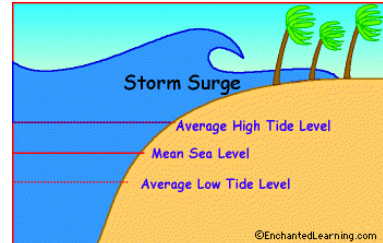
the type of damage and impacts associated with winds of the indicated intensity.

Storm Drainage System

A drainage system for collecting runoff of stormwater on highways and removing it to appropriate outlets. The system includes inlets, catch basins, storm sewers, drains, reservoirs, pump stations, and detention basins

Storm Surge

This is the abnormal rise in the level of water along the shoreline as a result of strong winds associated with a storm.



Tropical Cyclone

A warm-core non-frontal synoptic-scale cyclone, originating over tropical or subtropical waters, with organized deep convection and a closed surface wind circulation about a well-defined center. Once formed, a tropical cyclone is maintained by the extraction of heat energy from the ocean at high temperature and heat export at the low temperatures of the upper troposphere. In this they differ from extratropical cyclones, which derive their energy from horizontal temperature contrasts in the atmosphere (baroclinic effects).

Tropical Depression

A tropical cyclone in which the maximum sustained surface wind speed is 62 km/hr or less.

Stormwater

Precipitation from rain or snow that accumulates in a natural or man-made watercourse or conveyance system

Watch & Warnings

Environment Canada issues a weather watch when forecasters expect severe and possibility dangerous weather to develop. Forecasters issue weather warnings when severe weather is occurring or about to occur.

