



HAZARD MANAGEMENT CAYMAN ISLANDS

ANNUAL REPORT 2021

Foreword from the Director



At 5:30 a.m. on Wednesday, 18 August 2021, Grand Cayman was blanketed in darkness – more than 25,000 households were without electricity as strong winds buffeted homes and uprooted trees, storm surge swamped docks, and rain flooded low-lying neighbourhoods. At that time, the system that would become the most powerful tropical cyclone ever recorded in the Bay of Campeche was still classified as Tropical Storm Grace.

At Hazard Management Cayman Islands (HMCI), we were overpreparing on purpose: TS Grace was meant to serve as a practice run for a more

intense storm. It quickly became apparent, however, that TS Grace was punching above her weight and our planned over-response was entirely appropriate for the level of disruption and damage the storm ended up causing.

If the past two years have taught us anything, it is almost always better to be over prepared than under.

Not only did the spread of COVID-19 locally continue to test our efforts to respond to the public health and economic impacts of the pandemic, the National Emergency Operations Centre (NEOC) was activated three times to prepare for and respond to the impacts of Tropical Storm Elsa, Tropical Storm Grace and Tropical Storm Ida.

COVID-19 Pandemic

The COVID-19 pandemic remained the priority focus in 2021. HMCI was heavily involved in the ongoing efforts to contain and suppress COVID-19, with active involvement on the programme board, and in support of the Government's communication priorities and efforts to limit the impact of the pandemic.

After the virus entered community circulation in September 2021, getting a positive test result meant mandatory quarantine, sometimes without any notice. To assist members of the community who lacked the financial means to purchase groceries or supplies while in isolation, HMCI launched an isolation support facility. In its first

month of operation, this programme delivered non-perishable groceries to the homes of approximately 400 individuals.

We are grateful that, by the time local transmission of the virus occurred, the Cayman Islands had already achieved one of the highest vaccination rates in the world (approaching 80 % double vaccinated) which has continued to limit the loss of life.

NEOC Activations

The NEOC was activated on three separate occasions in 2021: for Tropical Storm Elsa, Tropical Storm Grace, and Tropical Storm Ida. Despite another incredibly active hurricane season, the Cayman Islands came through relatively unscathed. Of these three storms, it was Tropical Storm Grace that caused the most damage. We are fortunate that we were over-prepared for what was only meant to be a tropical storm. Debris clearance teams and utility workers were able to quickly ensure roads were clear for vehicle access and restore power to most homes within days of the storm subsiding.

At HMCI, we take the threat of all hazards seriously and continue to strive to increase and improve Cayman's resilience, response and recovery. In times of emergency or natural disaster, every person who calls the Cayman Islands their home counts on us to ensure our community is ready, resilient and able to quickly recover.

I would like to take this opportunity to thank the HMCI staff and the NEOC stakeholders and volunteers for their dedication, hard work and fearlessness. Our success as an organisation is built on our people, all of whom are aligned under a common purpose: To ensure the Cayman Islands is resilient and prepared, able to withstand and recover from all major crises.



Ms. Danielle Coleman

Director, Hazard Management Cayman Islands (HMCI)

March 2022



Context

Hazard Management Cayman Islands (HMCI) is responsible for the National Emergency Operations Centre (NEOC) and coordinating the national response for all hazards, man-made and natural.

We take the threat of all hazards very seriously and continually strive to be more proactive and dynamic in our efforts to protect our people, property and economy from harm.

Our Vision

To ensure the Cayman Islands is resilient and prepared, able to withstand and recover from all major crises.

Our Mission Statement

Enhance the Cayman Island's resiliency to disasters with full community participation. This will involve participation in the national approach to comprehensive hazard management through preparedness, mitigation, response and recovery, thereby ensuring the preservation of human life, property and economic recovery.

As part of a World-Class Civil Service, we recognise that our success is built on a foundation that starts with our employees. Our values of passion, integrity, commitment and professionalism are therefore important guides to

our interactions with colleagues within the broader Government, as well as with the public whom we are here to serve.

About Us

The Cayman Islands has had an official Hurricane Plan since the early 1970s and regular revision keeps the plan current; however, lessons learned from Hurricane Ivan in 2004 have changed our approach to Disaster Management.

The Cayman Islands National Strategic Plan 1998-2008 included "comprehensive contingency planning" and the establishment of a "national emergency management agency" among its strategies. The document also mentioned prevention and mitigation as desirable activities to be undertaken to safeguard the country. The proposal to form a national agency with a comprehensive mandate to lead the risk management process was therefore in keeping with the plans for national development.

In January 2007, Hazard Management Cayman Islands (HMCI) was established as the government agency responsible for the coordination of all programs dealing with national disasters, whether natural or human-made. HMCI has overall responsibility for the national hazard management program, including preparedness, mitigation, response and recovery.

The agency deals with all hazards and is permanently staffed and ready to operate at all times. HMCI is responsible for the National

Emergency Operations Centre (NEOC) which is located at the Government Administration Building in George Town. The NEOC is activated as required to direct and coordinate the response to national threats. HMCI also has responsibility for maintaining the National Hazard Management plans for all hazards, as well as reviewing and providing feedback for all Government Continuity of Operations Plans (CoOPs).

HMCI Outputs

NEM 1 - National Disaster Preparedness

Maintain a state of maximum preparedness through the provision of necessary resources and ensure the existence of hazard management plans from the community to the national level. Coordinate and monitor the implementation of the national disaster risk management program through public awareness training development and maintenance of disaster plans.

NEM 2 - Policy & Ministerial Advice

Provide policy advice to the Governor, Ministers, Deputy Governor, Chief Officers, Government Departments and others on matters relating to national hazard management and disaster preparedness. The provision of technical advice to the Ministry, Government agencies and the private sector on telecommunication matters.

NEM 3 - Hazard Mitigation

A proactive, cooperative partnership of the public and private sectors to build a culture of safety and resilience, to encourage and facilitate implementation of mitigation measures and minimize the consequences of natural and other disasters.

NEM 4 - National Disaster Response

Provide the tools and support needed to ensure national response readiness in the event of any national disaster. The provision of assistance during or immediately after a disaster for the preservation of life and the

provision of basic essential supplies and services for those people affected.

NEM 5 - Emergency Shelter

Management and Preparedness

Activities

Provide shelter management training activities and ensure the availability of shelters during and after a disaster. Maintain emergency generators and other essential facilities for shelter operations.

Strategic Goals and Strategic Plans

STRATEGIC PLAN 2016 -2021

The Strategic Plan 2016-2021 was revised to reflect changes from a review of the department's operations and previous plan as well as incorporate the changes due to the shift in Ministerial responsibility. The following are some of the key strategies of the plan:

- Ensure the best possible shelter environment for the population of the Cayman Islands through continued development and

enhancement of infrastructure and equipment

- Ensure that the Islands have adequate early warning and notification systems for all hazards (improving early warning systems) and enhance emergency communication
- Enhance the country's resilience through an informed public and facilitate the strengthening of community resilience through organisation and training (building community resilience)
- Provide guidance and a legal framework for the reduction of risk and vulnerability to the physical and built environment through mitigation
- Comprehensive disaster plan development
- Dedicated recovery fund provisions to be made via annual contribution to a disaster recovery fund

The plan also identified service needs and gaps such as:

Seismic data analysis - There is no local resource to scientifically analyse the information that is generated following a seismic event and this is a critical gap.



STRATEGIC GOALS 2020-2021

Strategic Goal 1: Preparedness

Improved national resilience by raising awareness of life-saving techniques and best practices which help citizens prepare for all hazards; providing the knowledge and skills needed to assist in the aftermath of disasters; and by developing, reviewing and maintaining hazard plans.

HMCI offers training to the private and public sector, including to schools, Government Agencies (especially to first responders), community groups and others in areas such as: Community Emergency Response Teams training, Mass Casualty Management, Incident Command Systems, Business Continuity and Hazard Plan Development.

Objective 1: Build awareness of hazards and the measures needed to reduce risk

Objective 2: Enhance the country's resilience through public education and training of first Responders, Community Emergency Response Teams (CERTs) and Volunteer Agency Responders (VARs)

Objective 3: Improve internal and

external communication

Strategic Goal 2: Mitigation

Improve risk analysis for the threats posed by climate change, flooding from intense rainfall, storm-driven waves, storm surges, earthquakes and tsunamis.

- Reduce the damage and economic losses caused by natural or human-made hazards by improved forecasting and warning for hurricane storm surges and inland flooding. Gain a better understanding of the earthquake threat by supporting the production of a seismic study.
- Develop a broader and more effective National Emergency Notification System (NENS).
- Mitigate and reduce the threats posed by hazards by working collaboratively with the Department of Environment, the Department of Planning and other agencies to further the goal of reducing the vulnerability of both built and natural environments.

Objective 4: Strengthen institutional capacity and hazard risk analysis

Objective 5: Improve early warning systems, especially for sudden-onset

hazards

Objective 6: Provide guidance and a legal framework for the reduction of risk and vulnerability

Strategic Goal 3: Response

Throughout 2021/2022, strengthen the disaster management mechanism by ensuring that the Cayman Islands Regiment, the volunteer sector, Churches, Non-Government Organisations, Community Emergency Response Teams, and Shelter Management Teams are a large and viable force, ready to mobilise and deploy at short notice and are capable of supporting a robust, sustained and coordinated national response and relief effort. This includes initial search and rescue operations, initial damage assessments, food and relief distribution, and providing support and assistance for the vulnerable and frail elderly in the communities across all three islands.

HMCI should work to develop and improve the National Hazard Management Plan; ensuring that the 18 emergency support teams (within the NEOC structure) meet regularly to refine their response capacity in their subject matter areas; by updating existing hazard-specific plans, including

lessons learned in exercises and through the experiences from actual activations for threats and hazard impacts.

HMCI should develop new hazard-specific plans to establish standard operating procedures and appropriate response mechanisms for other threats, such as earthquakes and hazardous material incidents that may affect the Cayman Islands.

HMCI should also improve the relief management plan through exercises and expanded engagement with emergency support teams such as Relief Aid Management, Economic Impact Assessment, Volunteer Agencies, Resource Support, Mental Health, Medical Relief Services, as well as the Community Emergency Response Teams and the Regiment.

HMCI should work with first response/responder agencies to ensure they can work together efficiently in major incidents that require the activation of the NEOC; to ensure that loss of life is minimised and that property is protected. This includes through improved evacuation planning, training and exercising.

HMCI should increase shelter capacity and

improve the shelter environment. The number of spaces available at pet-friendly shelters should be expanded, recognising that capacity is currently very limited, and lives are at risk because residents opt to remain at home with their pets as opposed to seeking safer sheltering facilities.

Objective 7: Ensure National Emergency Operations Centre can be set up within one and a half hours.

Objective 8: Refine existing and develop additional national disaster plans, and provide the support needed to each emergency support team in the NEOC structure to ensure national response readiness for all hazards

Objective 9: Increase shelter spaces and improve the shelter environment for the Cayman Islands population and incorporate sheltering for pets

Objective 10: Strengthen emergency communication WebEOC and radio communications

Strategic Goal 4: Recovery

HMCI should work to improve the capacity of the NEOC to support extended operations to promote national recovery

efforts from hazards such as earthquakes and hurricanes.

HMCI should work with key Emergency Support Teams to reduce likely infrastructure impacts and service interruptions, as well as promote processes that encourage a swift, orderly and efficient recovery in these sectors to support the economy and to build added resilience to future threats. This includes in areas such as internet and telephony communications infrastructure, utilities such as electricity and water, and key commodities such as petroleum and food supplies.

HMCI should continue to promote good practices, provide support, and assist in the coordination of all actors and sectors required for the recovery process both before and after a major disaster.

Objective 11: Effectively coordinate disaster recovery through knowledge gained by advance planning and anticipation of expected demands, needs, and requirements in the aftermath of a significant impact

Objective 12: Work to reduce risks and threats in advance and encourage the establishment of procedures and mechanisms that speed up the recovery

process and return to normality

INTERNATIONAL PARTNERS

Overseas Territories (OTs) and the Foreign, Commonwealth and Development Office (FCDO)

HMCI works closely with all OTs in the Caribbean, Bermuda, and the FCDO to share best practices and conduct table top exercises.

Cayman assisted with the facilitation of, as well as participated in, the Annual OT Disaster Management Virtual Conference, by the invitation of the Bermuda Red Cross, on Bermuda Radio talking of Cayman's COVID-19 Response. Topics covered on the show focused on vaccination roll-out and mental health.

HMCI re-engaged with the OTs during 2021 on the concept of establishing an OT Rapid Deployment Team that could be swiftly deployed to provide support for an impacted territory.

Members of the team will have specialist skills such as medical relief, communications, logistics, damage assessment and Emergency Operations Centre coordination etc. By pre-determining these useful skills and resources within each territory, and securing commitments from each

territory to support each other in the aftermath of an impact, it is anticipated the Rapid Deployment Team will provide a useful support mechanism that results in a more efficient and coordinated response when it is needed most. HMCI continues to promote this concept and hopes to develop it further in 2022.

REGIONAL PARTNERS

Caribbean Disaster Emergency Management Agency (CDEMA)

Early 2021, The National Hazard Management Executive (NHME) of the Cayman Islands received a comprehensive familiarisation briefing from the Caribbean Disaster Emergency Management Agency (CDEMA) which outlined the next steps for how Cayman can take advantage of its membership.

The session was an opportunity for Cayman's leaders, including His Excellency the Governor, Martyn Roper, the Premier, Hon. Alden McLaughlin, the Acting Deputy Governor, Eric Bush, the Minister for Home Affairs, Hon. Tara Rivers and Hazard Management Cayman Islands Director, Danielle Coleman, to hear findings and recommendations from a comprehensive disaster management audit of the Cayman Islands conducted by CDEMA.

The briefing provided extremely useful dialogue between the Government and the Executive of CDEMA to improve Cayman's disaster resiliency going forward.

Commenting after the meeting, the Governor said, "It is a testament to Hazard Management Cayman Islands that we scored so well in the Comprehensive Disaster Management Audit, and we stand ready to move forward in the areas highlighted for additional focus. I very much hope that CDEMA membership will be of significant benefit to the Cayman Islands in the coming years and would like to thank Elizabeth Riley, the Acting Executive Director of CDEMA, for such a productive briefing."

2020's highly active hurricane season, the 7.7 magnitude earthquake and the global pandemic are all reminders that we share many of the same challenges with our neighbours in the region. Membership with CDEMA forms an important part of the national resilience and response plans for the Cayman Islands, enabling us to benefit from the collective knowledge and experience of our regional partners.

LITTLE CAYMAN AND CAYMAN BRAC

Sister Islands

HMCI works closely with the Sister Islands to ensure preparedness, mitigation, response and recovery methods are consistent across all three islands. The Sister Islands Emergency Committee (SIEC) is effectively a scaled version of the National Emergency Operations Centre (NEOC) in Grand Cayman and both typically function together when the Cayman Islands is threatened by a hurricane or other significant hazard following a major impact from an event.

A number of activities with both Cayman Brac and Little Cayman occurred in 2021 which included actual activations for tropical storms, several engagement meetings with representatives of the District Administration and the Sister Islands Emergency Committee, emergencies exercises, familiarisation visits to the emergency shelters, distribution of emergency relief kits to elderly as well as an aerial assessment with RCIPS Air Operations and Emergency Relief items re-stock.

HMCI staff met with representatives of the Health Services Authority and the leaders of the Little Cayman and Cayman Brac Community Emergency Response Teams (CERT). Discussions included training opportunities, Tropical Storm preparedness, communication and supply chain security.

HMCI also delivered a Shelter Management course and a week-long Mass Casualty Management training in Cayman Brac which was attended by 31 persons including representatives from first response agencies on both Cayman Brac and Little Cayman.

An earthquake awareness presentation and drill was facilitated at the Education Centre to ensure the students understood how to respond to an earthquake/ tsunami threat.

BROAD SUBJECT MATTER AREAS (PREPAREDNESS, MITIGATION AND RESPONSE)

PREPAREDNESS

In 2021, HMCI transitioned our website content over to a new microsite hosted by Gov.ky. The agency posted over 50 press releases and 500 Facebook posts (increasing the number of followers by 14.83 % to 10,435) and posted 218 times on Twitter (increasing the number of followers by 16.4 %). This positioned HMCI's social media platforms as the second most followed page for a department or agency in the

Cayman Islands Government. HMCI also increased the agency's reach on Instagram to over 2,000 followers.

Over the course of the year, the awareness program delivered 32 hazard awareness presentations for a variety of audiences including Schools/Health Sector/Government Agencies and Private Businesses.

HMCI's Director and Public Awareness Officer attended numerous Joint Communications Service meetings to support the Government's communication priorities for the COVID-19 Pandemic and attended in excess of 25 media appearances on a variety of media channels including Crosstalk, Business Buzz, OC Connor, DMS Stations, Compass Media Resh Hour, Talk Today, and CIGTV.

Other major outreach activities included International Day for Disaster Reduction, World Tsunami Day and National Day of Preparedness activities, with HMCI staff engaging directly with residents about preparedness in hardware stores on weekends during the month of May.

As in previous years, HMCI assisted with content production for the Compass Emergency Guide, and produced a media campaign plan and associated media blitz for the start of the 2021 Hurricane Season. New preparedness tips were produced for with 100 per day being aired across the four DMS radio stations, and HMCI worked with Government Information Services on

hurricane season messaging with monthly themes, media appearances, and preparedness posts.

In response to the major earthquake experienced in 2020, HMCI produced an Earthquake Awareness Video sponsored by the R3 Foundation which was screened at the cinema for three months. Earthquake and tsunami awareness posters were designed and printed, and earthquake and tsunami messaging templates were updated.

School Plans and Hazard Awareness Program

Throughout 2021, HMCI has developed a very close relationship with the Ministry of Education. In our efforts to strengthen the emergency capacity within schools with the ultimate goal of making them safer, we conducted numerous awareness presentations, reviewed 14 school plans and conducted 15 school assessments. HMCI also engaged with the Early Childhood Care and Education Unit and, as a result, now has oversight of all Early Childhood Care and Education (ECCE) Centres Hazard Plans to ensure they are fit for purpose.

Through the revision of plans and visits to schools, we were able to advise them of best practices, safety measures, and potential mitigation measures that could be implemented to ensure the safety and wellbeing of all persons on the school premises during an emergency. This included advising on evacuation routes (specific for each school).

Exercises

HMCI hosted and participated in numerous exercises ranging from our Annual Hurricane Exercise, the Caribe Wave Tsunami Exercise, the Owen Roberts Airport Exercise, an Oil Spill Response Exercise and two Cayman Airways Express exercises.

HMCI capitalised on the Caribe Wave Tsunami Exercise which was conducted in March 2021 and focused on testing our Phase 1 (Radio Interrupt) and Phase 2 (Emergency Notification App) of the National Emergency Notification Systems (NENS). HMCI utilised the exercise as an opportunity to sensitise the public and a small test group to the capabilities of NENS. HMCI also conducted an oil spill exercise to demonstrate the initiating and communication procedures in response to the report of an oil spill.

Our participation in inter-agency exercises allowed us the opportunity to continuously build inter-agency relations and also provided

meaningful feedback on ways to improve our response to these incidences. These exercises also allowed HMCI to enhance our knowledge of the response mechanisms of our partner agencies and to gain additional information regarding their capabilities.

Community Emergency Response Team (CERT)

Throughout the course of 2021, HMCI and the Cayman Islands Red Cross (CIRC) trained over 60 CERT members. For the very first time, HMCI and Red Cross ran three two-day intensive CERT training in April, June, and July. These intensive training courses assisted with the formation of the very first East End CERT. The vulnerability of the Eastern districts reaffirmed the need for the presence of skilled community members who can work with the national mechanism to ensure the safety of residents and enhance the resiliency of their community.

Radio Training

HMCI, in partnership with Department of Public Safety Communications (DPSC), delivered several introductory radio communication training sessions to various teams (Shelter, CERT & Mass Casualty Management) across the three islands. Attendees learned about the features of Government's emergency communications

system (Motorola UHF radios), how to navigate their options, and radio etiquette. Sessions also allowed attendees to practice using the devices in a simulated format.

Mass Casualty Management (MCM) Training

HMCI led the delivery of two 45 hours long MCM courses in 2021 to almost seventy (70) persons. MCM is a Pan American Health Organisation (PAHO) certification which teaches emergency responders to work together efficiently and effectively in a multi-agency response and provide care to multiple injured persons involved in an incident. The first training took place in Cayman Brac (and included participants from Little Cayman) and the second in Grand Cayman.

During the six-day training, public safety personnel learned methods to triage, prioritise, and transport victims to a medical facility. The process of triage allows the respondents of a disaster who do not have enough resources to treat everyone to prioritise care services so that the most services are provided to the greatest number of injured people. The relative isolation of the Sister Islands and limited availability of medical resources to cope with an incident that involves major casualties adds to the importance

of training the available personnel to respond effectively. These sessions also marked the first time that a PAHO representative was not present and newly qualified (local) instructors led both week-long training.

Disaster Response Kits for the Elderly

Recognising the additional challenges that many elderly persons face following an emergency, HMCI teamed up with the Needs Assessment Unit and the Department of Children and Family Services in 2021 to provide essential supplies to help elderly persons cope in the immediate aftermath of a large-scale emergency. Supplies were distributed in April to the persons most in need in Grand Cayman, Cayman Brac and Little Cayman. The items distributed included first aid kits, cleaning and hygiene supplies, as well as food vouchers to cover some of the costs associated with emergency supplies such as non-perishable food.

Experiences from past hazardous events in the Cayman Islands and around the region show that a large percentage of elderly persons are disproportionately impacted by hurricanes and other hazards, and mortality rates for elderly persons tend to increase after a major hazard impact. Reasons for the increased vulnerability are varied and include lacking a regular income

which can make it harder to prepare or cover the cost of repairing a damaged home. The elderly are also often hesitant to reach out for help and add to the burden of family members who are also attempting to recover following a hazardous event. Additionally, approximately 80 per cent of us will eventually age into disability and as we grow older, our sight, hearing, and sense of smell all deteriorate, our levels of mobility decrease, and all of these things combine to create added challenges, especially in an environment where services such as electricity and water have been interrupted.



Continuity of Operations Plans (CoOP)

To ensure disruptions to critical Government functions are minimised and to ensure core functions are resumed as quickly as possible following an incident, all Government departments and agencies are required to complete a Continuity of Operations Plan (CoOP) and update it annually.

HMCI partnered with the Portfolio of the Civil Service to perform an initial review of Government Department Continuity of Operations plans. During this process, we met with various Departments and provided them with written and oral recommendations.

MITIGATION

National Emergency Notifications Systems Phase II (Mobile App)

Communicating critical public health and safety messages to the public quickly and efficiently during major emergencies is a critical function of Hazard Management Cayman Islands. In 2021, this capacity was expanded with the development of Phase Two of the National Emergency Notification System (NENS). HMCI, in

collaboration with the Department of Public Safety and Communications, finalised the installation and testing of a new free mobile alert application that (once downloaded) allows HMCI and DPSC to send critical notifications to subscribers on their mobile phones. Additionally, the same platform can be used to simultaneously send out warning messages through SMS text and email. The full public roll-out of the App is scheduled for the first quarter of 2022.

Climate Change

In 2021, HMCI worked with the UK Joint Nature Conservation Committee and the Department of Environment to chart a path forward on Climate Change related issues. Looking at climate change risk assessment, improved storm surge modelling and nature-based solutions for building capacity and resilience, as well as participating in the beach erosion working group.

Smart Flood Early Warning Detection System for the Cayman Islands

It is generally accepted that climate change is altering usual rainfall patterns in the Caribbean region, and the Cayman Islands will be subject to more droughts, but rain, when it occurs, will be more frequently associated with brief, but torrential rainfall events associated with storms. This, in conjunction with a greater frequency of tropical cyclones and rising sea levels, will result

in increased flooding events in the Cayman Islands. In 2021, HMCI began exploring ways of measuring the depth and extent of flood waters in the Cayman Islands as this will provide a better understanding of the risks associated with these events. As a result, the agency sought sponsorship to cover the cost of several devices that will form the basis of a “smart flood early warning detection system,” which could monitor inundation levels in local communities through an intelligent Internet of Things (IoT) sensor network. To realise this aspiration, HMCI undertook the development of a concept paper for pilot site selection, hardware requirements, and market research for flood sensors. Site Selections for two flood-prone areas in Grand Cayman were identified (Randyke Gardens and Cumber Ave) through stakeholder meetings, which included the Cayman Islands National Weather Service (CINWS), Department of the Environment (DoE), National Roads Authority (NRA), and the Department of Planning.

Storm Surge Modelling

It has long been recognised that it is the sea, not the wind, that is the primary threat during hurricanes, and this is the case whether it relates to loss of life or property damage. A huge percentage of economic losses sustained in our last major hurricane impact was directly attributable to storm surge, and yet our planning and development laws and building regulations

are still primarily designed to withstand wind, largely ignoring the impact of the vertical rise of the sea and the impact of waves.

Our future ability to accurately and scientifically quantify the risk of the foremost threat to life and property in the Cayman Islands took a great leap forward in 2021 when the UK Government paid for flights to be conducted to gather inshore LIDAR bathymetry information. HMCI has been pushing for this for many years. High resolution inshore sea bed mapping is a necessary and critical data set for the production of accurate storm surge and wave models.

Once the information has been processed by the UK Hydrographic Office, it will then be forwarded to the National Oceanic and Atmospheric Administration (NOAA) which have embarked on a USAID-funded program to produce storm surge modelling for the islands in the Caribbean. The Cayman Islands is currently positioned in phase two of the roll-out of the storm surge modelling initiative, but having now acquired the data ahead of most other Islands, it is possible that the modelling will advance sooner, rather than at a later date.

Credit must be given to the Governor’s Office and the UK Joint Nature Conservation Committee (JNCC) for advocating on behalf of the Cayman Islands to the UK Government to fund the aerial imaging of coastal areas around the Cayman

Islands. This work will eventually lead to a much better understanding of risk and vulnerability in the Cayman Islands which is the basis on which effective preparedness, mitigation, and response programmes are built.

Earthquake Risk Assessment of the Cayman Islands

HMCI assisted with the Seismic Probabilistic Study of the Cayman Islands commissioned by the Cayman Islands Government, following the 7.7 Magnitude earthquake event of 2020. HMCI corresponded with the principal consultant, Dr Elisa Zuccolo, from the Department Risk Scenarios, Eucentre Foundation in Italy, sourcing and providing copies of past seismic reports and studies conducted on the Cayman Islands, by providing details of past events, including information gathered from the local seismograph network.

The report, once produced, is expected to provide a better understanding of the earthquake threat to the Cayman Islands, as well as helping residents to better prepare. The information may also be used to inform the planning and development process.

RESPONSE SECTION

National Disaster Fund

In accordance with section 4A of the Disaster Preparedness and Hazard Management Act (2019 Revision), a National Disaster Fund was established to be utilised in the event of a large-scale emergency.

As of December 2021, the closing balance of the fund was KYD 906,277.36. No withdrawals were made during 2021.

National Hazard Management Plan

Regarding HMCI's national plan; the national exercises, along with the activation of the NEOC for Tropical Storm Grace and Ida, have presented learning opportunities. Additionally, Emergency Support Teams reviewed their standard operating procedures and response activities as set out in the hazard-specific plans and provided input and recommendations for plan updates. HMCI worked throughout the year with multiple stakeholders to update and complete the Marine Oil Spill Contingency Plan, securing Cabinet approval in December.

Emergency Shelters

The Emergency Shelters were activated three times (Tropical Storms Elsa, Grace, and Ida) in 2021. During the year HMCI, along with RCIPS, Health Services Authority, Department of Children and Family Services, and the Cayman Islands Red Cross, delivered Shelter Management

training to 300 persons around the three Islands. HMCI continued to explore ways to increase shelter capacity in 2021, particularly in Grand Cayman. Two key projects, expected to finish in 2022, will significantly bolster capacity, namely the John Gray High School addition and the Bodden Town Church of God multi-purpose hall.

NEOC Activations for Storms

2021 was the third most active hurricane season on record with 21 named storms. It was also the seventh consecutive year that a storm formed before the official start of the season on June 1. The Cayman Islands was fortunate not to have experienced any devastating hurricanes this season, however, there were several severe weather events that affected us during the year, including three Tropical Storms that caused flooding, damage to homes, and loss of vegetation. The NEOC was activated for Tropical Storm Elsa, Tropical Storm Grace, and Tropical Storm Ida.

Throughout the activation for Tropical Storm Grace, Emergency Support Teams worked to coordinate the evacuation of elderly persons to nearby shelters, clear debris from roads, and restore electricity. These emergencies highlight the need to always prepare, even if it is only a Tropical Storm, as they too can cause significant damage. Whilst the NEOC activated for Tropical Storm Ida, we did not experience any adverse

weather in Grand Cayman although the Tropical Storm did impact the Sisters Islands. HMCI then promptly provided relief items through the use of the RCIPS X-Ray 1.

Tropical Storm Elsa

On June 27 residents began monitoring a tropical wave that emerged off the coast of Africa. With the system tracking quickly westward, residents were encouraged to secure supplies of non-perishable food and water, along with a plan for sheltering if their home was vulnerable to hurricane impacts. By July 1, Tropical Storm Elsa was forecasted to track uncomfortably close to the Sister Islands and, in response, the Hon. Franz Manderson, Chairman of the National Hazard Management Council, in collaboration with the Directors of CINWS and HMCI, placed Cayman Brac and Little Cayman under a Tropical Storm Alert, and the following day raised the alert to a Tropical Storm Watch.

The District Commissioner, Mark Tibbetts, activated the Emergency Shelter at the Aston Rutty Civic Centre, and Community Emergency Response Teams (CERTs) in both Little Cayman and Cayman Brac were placed on standby. By July 2, Tropical Storm Elsa strengthened into a hurricane and the Cayman Islands National Weather Service forecasted increasing wind speeds, flooding and very rough seas for the Sister Islands. Fortunately, Elsa passed sufficiently

far north of the Sister Islands that impacts were minimal, and on July 5, the Tropical Storm Watch for Cayman Brac and Little Cayman was lifted.

Tropical Storm Grace

On August 9, a Tropical Wave moved off the coast of Africa and by August 14 the system developed into Tropical Storm Grace as it approached the Leeward Islands. The long-range forecast initially had Grace tracking well north of the Cayman Islands but by the following day, it became clear the system was moving further south than anticipated. Residents were therefore advised to closely monitor the system and increase levels of preparedness.

Forecasters at the National Hurricane Centre noted that there was much uncertainty about the intensity of Grace. The storm was expected to interact with the mountainous regions of Hispaniola or Cuba and while Grace briefly decreased in intensity to a tropical depression, by August 16 it was becoming increasingly clear that Grace was a potential threat to the Cayman Islands.

Persons with boating interests were advised to take steps to secure their vessels and a meeting of the National Hazard Management Council was called. At the meeting, the Chairperson, (Acting Deputy Governor) Gloria McField-Nixon, announced the Cayman Islands were to be

immediately placed under a Tropical Storm Warning. By this stage, Tropical Depression Grace was located about 125 miles east of Port Au Prince, Haiti and tracking to the west at 15 mph with maximum sustained winds of 35 mph.

The Cayman Islands National Weather Service warned residents that Grace was intensifying and was expected to impact the Cayman Islands with storm-force winds of 40 to 50 mph, very rough seas and rainfall totals of up to 6 inches. In light of the threat posed by Grace, HMCI directed that a number of shelters be activated, the Cayman Islands Regiment was placed on standby, and residents who were isolating due to COVID-19 requirements were contacted so they could be transported to more robust accommodation if needed, to safely and securely ride out the approaching severe weather.

By August 17, Grace had become better organised, reaching Tropical Storm strength and with the forecast track again shifting further south, the centre of the storm was now expected to pass very close to Grand Cayman.

With the forecast calling for Grace to strengthen to near hurricane strength as it moved just west of the Cayman area, the Chairperson of the National Hazard Management added a Hurricane Watch to the existing Tropical Storm Warning. The National Emergency Operations Centre (NEOC) was activated, all non-essential

government offices were closed, and residents were urged to immediately prepare and brace for impact. By 7 pm on the August 17, Tropical Storm Grace was located about 185 miles ESE of Grand Cayman. The storm was moving west at 15 mph with maximum sustained winds of 60 mph. The National Weather Service forecasted torrential rain overnight and winds approaching 60 knots.

By 1 am on August 18, intense rainfall and strong gusts of winds began impacting the Sister Islands and a 36-knot wind gust was recorded in Grand Cayman at the Owen Roberts International Airport. Throughout the night, conditions in the Cayman Islands deteriorated significantly; sustained winds just below hurricane strength and torrential rain impacted the Cayman Islands, particularly on Grand Cayman, and a storm surge estimated at five feet affected some properties on the southern and western sides of North Sound.

At the NEOC, numerous reports began coming in of falling trees, power outages and some damage to properties. By 7 am Tropical Storm Grace began pulling away to the west of the Cayman Islands, but very strong gusty winds continued for several hours and there was an island-wide power outage on Grand Cayman.

During this time, the initial damage assessment teams confirmed that there were fallen trees, debris, and power cables down on the roads throughout Grand Cayman. The Cayman Islands

Regiment and crews from the National Roads Authority and Department of Environmental Health worked quickly and efficiently to clear the roads of fallen trees and debris and, by 1 pm the All Clear was issued for Cayman Brac and Little Cayman. Then, at 6 pm the All Clear was announced for Grand Cayman.

Flood waters and periodic bands of strong gusty winds continued to affect Grand Cayman throughout the evening on August 18 and residents were strongly encouraged to stay off the roads to avoid the hazardous conditions and allow utility workers and first responders to work unimpeded. With numerous residents reporting that wind and fallen trees had caused damage to roofs, HMCI set up a single distribution point to distribute tarps to those in need.

By August 19, the majority of customers across Grand Cayman had their power restored, but there were still 4,500 customers without electricity. At 6 pm, the power went out again for the whole Island, and the Caribbean Utilities Company (CUC) reported that grid instability had caused the Island wide loss of power but within about 7 hours, at 2 am, on August 20 electricity was again restored to most customers.



Tropical Storm Ida

Less than a week after the passage of Tropical Storm Grace, on August 25th the Cayman Islands National Weather Service (CINWS) began issuing severe weather bulletins for low-pressure system 99 L.

By August 26, the NHC was advising that this broad area of low pressure located southeast of Jamaica was showing signs of organisation and at 10 am, the Chairman of the National Hazard Management Council, in consultation with CINWS and HMCI, placed the Cayman Islands under a Tropical Storm Warning. Government Offices closed to allow staff to prepare in advance of Tropical Depression 9, which was anticipated to strengthen into Tropical Storm Ida, as it passed close to the Cayman Islands overnight.

Strong gusty winds, very rough seas, and periods of very heavy rainfall were expected to begin in the Sister Islands from 9 pm, and then gradually move over Grand Cayman that night. A Flood and Marine Warning went into effect and residents were urged to prepare for impact.

The NEOC announced the opening of six (6) Emergency Shelters including four on Grand Cayman and one shelter in both Cayman Brac and Little Cayman.

At 6 am the following day, the All Clear was issued for Grand Cayman, but the Sister Islands continued to experience strong wind and heavy rainfall for a number of hours. Significant power outages were reported in Cayman Brac and Little Cayman and they remained under the Tropical Storm Warning until 11 am on August 27. Following the All Clear, the Cayman Islands Regiment carried out joint patrols in support of the Royal Cayman Islands Police Service in Cayman Brac, and the Police Helicopter was used to perform a preliminary damage assessment. Additionally, the Sister Islands Community Emergency Response Teams (CERTS) conducted wellness checks on vulnerable persons. And with power restored to most of Cayman Brac by the end of the day, the Sister Islands Emergency Committee was stood down. Some toppled trees and flooding occurred in Little Cayman but by August 28 the power was also restored to all customers on Little Cayman.

Shortly after leaving the Cayman area, the National Hurricane Centre upgraded Tropical Storm Ida to a Hurricane. Ida went on to become a powerful Category 4 Hurricane, resulting in 115 fatalities and over 75 billion dollars' worth of damage, primarily in the states of Louisiana, New Jersey and New York in the United States of America. Widespread catastrophic flooding associated with the hurricane also shut down most of the transportation system in New York City.

Earthquake

Compared to the previous year, 2021 was a much quieter year for seismic activity. The only event that generated local reports occurred on October 16th, when several residents felt the tremors associated with a 5.3 Magnitude earthquake, with the epicentre located 46 miles southwest of George Town. There were no tsunami alerts or warnings issued for the Cayman Islands during 2021.

COVID-19 Pandemic

HMCI was heavily involved in the ongoing efforts to contain and suppress COVID-19 during 2021, with active involvement on the program board, and in support of the Government's communication priorities and efforts to limit the impact of the virus.

On January 8, with the support of the UK Government, the Public Health Department launched the COVID-19 National Vaccination Campaign, beginning with healthcare workers and persons over 70 years old. With the assistance and continuous support of HMCI's public awareness program, the Cayman Islands was able to attain one of the highest-per-capita rates of vaccination in the world.

Partially as a result of the success of this vaccine roll-out, and with the help of a robust response and containment effort, the Cayman Islands was

able to completely eliminate the COVID-19 virus for most of 2021 and, as a consequence, the Cayman Islands was able to record one of the lowest COVID-19 related mortality rates in the Western Hemisphere.

With COVID-19 no longer circulating in the Cayman Islands, the Emergency Field Hospital was demobilised on March 15 and placed back in HMCI's warehouse.

The Cayman Islands Government gradually relaxed testing and entry requirements throughout 2021 but, on September 16, the Chief Medical Officer (CMO), Dr John Lee, announced that the virus had returned to the Cayman Islands, with two positive cases detected through screening.

Isolation Support: In mid-September, shortly after the first confirmation of Coronavirus cases in screening samples, HMCI launched an effort to support around 427 adults and students who were unexpectedly placed in quarantine due to an outbreak of COVID-19 at the George Town Primary School. The isolation support initiative to deliver needed food and water supplies to the residents across Grand Cayman was a joint effort by Hazard Management, the Cayman Islands Regiment, Foster's, Public Health, the Department of Education, Cayman Islands Red Cross, the Community Emergency Response Teams, and numerous others.

October 24 to support vulnerable persons in quarantine, either because they were confirmed



The Islands continued to experience an increase in COVID-19 cases resulting in a significant number of persons being placed in quarantine. In an effort to reduce the burden on Health Services Authority having to meet both the medical needs of patients, and the humanitarian needs of persons required to be quarantine, HMCi officially established an Isolation Support Call Centre on

positive themselves, or because they were a close contact of someone with COVID-19.

The Isolation Support facility was operated and managed by HMCi for over 2 months to meet the need for humanitarian assistance. During this time the support facility carried out over 400

deliveries to families across the three Islands, supporting over 1,400 persons.

Lateral Flow Tests launched

In October, residents were once again wearing masks in public settings, the vaccine booster programme was launched and Public Health announced that Lateral Flow Tests would be introduced as the next step in the Government's COVID-19 Strategy. The initiative was rolled out when double vaccination rates for adults was already approaching 80 per cent, and it helped with the fast identification of positive cases and empowered residents to proactively stay aware of their COVID-19 status as the country transitioned to the new reality of living with the virus circulating in the community. The Government sought to limit the possibility of a spike in the number of COVID-19 cases that could potentially overwhelm health care resources, by moving forward the dates when government primary and secondary schools on Grand Cayman closed for midterm break. On November 14, the Cayman Islands experienced its first COVID-related death in 2021.

Emergency Field Hospital: On Dec 1, with active cases of COVID-19 surging, Operation NIGHTINGALE was launched and the emergency field hospital was re-established to cater for a possible overflow of COVID-19 patients. The Cayman Islands Regiment completed the construction of the 61-bed, facility with the

assistance of HMCI, the Public Works Department, Zebra Electrical, and Electra-Tech. Fortunately, the facility was not used in 2021 and this was attributed to the very high vaccination rates, which proved effective in keeping the vast majority of COVID-19 positives safe from serious illness and therefore out of the hospital setting.

Fire

There were several notable fire incidents in 2021, however, none of them resulted in an activation of the NEOC. There were two significant landfill fires and, in both cases, HMCI assisted by providing refreshments for first responders and with public safety messaging to residents affected by the smoke.

On March 12, the smoke from an area known as the Ironwood Forest led to the evacuation of the nearby University College of the Cayman Islands and Truman Bodden Sports Stadium. Embers from the blaze came down in residential communities but no homes were affected, and the fire was brought under control the following day.

Later that month, on March 25, a fire broke out in the metals area of the George Town landfill. With a large smoke plume emanating from the scene, students at the Cayman International School were sent home and residents in the path of the smoke were advised to close doors and windows and turn off air conditioning units. Southbound traffic

on the Esterly Tibbetts Highway was diverted, and residents and businesses in the vicinity were told to conduct their own assessment and consider evacuating if they felt the smoke presented a sufficient risk or discomfort. Cayman Islands Fire Service (CIFS) crews, working alongside colleagues from the Department of Environmental Health, used four points of attack to dampen down the flames and then employed defensive firefighting tactics such as fire breaks and excavating and extinguishing deep-seated pockets of fire, they were eventually able to bring the fire under control after four days.

CIFS crews returned to George Town landfill on May 5, amid reports the southwest corner of the tip area was on fire and with smoke blanketing communities downwind, the fire service again encouraged nearby residents to stay inside with the doors and windows closed. The fire service was able to fairly quickly contain the fire and extinguished the blaze the following day on May 6.

In early October, a devastating fire occurred on Bonacca Cay in the Bay Islands of Honduras, and with thousands of residents connected to the people of the Bay Islands through familial and marital ties, there was an immediate outpouring of support from the people of the Cayman Islands. The Premier offered his sympathies on behalf of the people of the Cayman Islands. Aid and relief supplies were collected and

subsequently delivered to assist the people on Bonacca Cay who lost their homes and possessions.

Volcanic Ash and Saharan Dust

In 2021, the Cayman Islands experienced dust plumes on more than one occasion. HMCI worked closely with the Cayman Islands National Weather Service (CINWS) and Public Health to monitor the situation and advise residents of the potential threats, in particular to persons with asthma and other respiratory illnesses, due to the elevated dust and particulate matter concentrations. In May, approximately 16,000 people were forced to evacuate their homes in St. Vincent and the Grenadines following a series of explosive eruptions of the La Soufrière volcano. HMCI monitored the ash cloud and publicised the appeal for support for those persons who had been forced to leave their homes in St. Vincent.

The Cayman Islands Regiment

HMCI has worked in close partnership with the Cayman Islands Regiment since its inception with cross-training, exercising, emergency planning, and response to a number of incidents.

One of the principal areas of responsibility for the Regiment is humanitarian assistance and disaster relief operations; it is therefore critical that the reservists understand the Cayman Islands Hazard Management Plan and structure because, when a

large-scale emergency occurs, they will be required to align with and complement the national response mechanism. As such, in 2021, HMCI assisted in the training process for the second cohort of recruits for the Cayman Islands Regiment. The training primarily focused on the Cayman Islands disaster response mechanism and the structure of the National Emergency Operations Centre (NEOC).

The Regiment may be called upon to assist in numerous areas such as search-and-rescue operations, relief aid distribution, clearing roads of debris, damage assessment, and limiting civil disorder. So, whether the Regiment is called upon to relieve suffering, save lives or support the maintenance of law and order in the aftermath of a disaster, they will always be subject to the structure of the NEOC and the National Hazard Management Executive, which is co-chaired by the Premier and the Governor.

The Cayman Islands, like many countries around the world, is vulnerable to a variety of both natural and man-made hazards which have the potential to overwhelm local capacity resulting in a disaster. With the Cayman Islands joining the regional Caribbean Disaster Emergency Management Agency (CDEMA), it is also possible that some members of the Regiment will be called upon to assist other countries in the Caribbean following a large-scale emergency.

Cayman Islands Cadet Corp (Cadets)

The Cadets continued to perform their important role as Call Takers in the NEOC during activations, including during Tropical Storms Elsa, Grace, and Ida. They also assisted with the Isolation Support Line for those isolating due to COVID and in need of humanitarian support.

On November 25, the Governor held an appreciation ceremony for the Cadets at Government House and bestowed 15 Disaster Mitigation Medals to Cadets who have contributed significantly to the disaster mitigation efforts in the Cayman Islands over many years.

LOGISTICS AND OPERATIONS SECTION

Equipment

Given the anticipation of 2021's busy hurricane season, HMCI completed an audit on its equipment to ensure a state of readiness. The equipment included radios, telephones, and computers. HMCI conducted a procurement for two additional vehicles to improve the agency's response and operations capabilities.

National Emergency Operations Centre (NEOC)

The NEOC underwent several changes during the 2021 calendar year that included replacement of desk furniture & computers (laptops), as well as software upgrades to the awareness display screens. Planned for 2022 is an upgrade to the call-centre radio system, and IT infrastructure. Ongoing work and exercises were conducted in 2021 to reduce setup time to under one and a half hours.

Crisis Hub

Introduced in 2019, this “affected” or “missing” persons’ tool is used during disaster response to catalogue information in an organised manner. Crisis Hub was originally established by the Foreign and Commonwealth Office (now Foreign, Commonwealth and Development Office) to make it easier for persons affected by a crisis to be reunited with loved ones. The Governor’s Office ensured Crisis Hub was made available to the Cayman Islands and whilst it has not yet been activated for a local crisis response, a core team of call takers has been trained at HMCI and the Royal Cayman Islands Police Service (RCIPS).

Once the call centre is brought online, a telephone number is broadcast for members of the public to use. Call centre staff then work with the National Emergency Operations Centre and/or Search and Rescue teams to coordinate

information in an effort to account for all affected or missing persons.

HMCI maintains the equipment locally and ongoing training is coordinated through the Governor’s Office, thus ensuring that Crisis Hub is ready to be mobilised when needed. The FCDO can also provide additional Crisis Hub support to the Cayman Islands in a major crisis if the local call centre is overwhelmed by requests for information.

Warehouse and Relief Supplies

Throughout the calendar year, the logistics team worked on reorganising the warehouse space to accommodate more supplies, as well as make it more operationally efficient. This effort, along with the purchase of a forklift, has improved disaster relief operation capabilities. HMCI is now able to transfer preloaded pallets onto trucks for delivery to any of our 12 relief distribution centres in Grand Cayman. In the coming year, plans are in play to install a climate-controlled space to store delicate equipment and supplies. Through a donation from R3, HMCI now uses an electronic inventory management system, as opposed to a manually updated spreadsheet. We have yet to complete data entry of assets and, inventory notwithstanding, we are seeing benefits of access via mobile devices, low stock and expiration alerts to name a few.

Conclusion

HMCI and the disaster management mechanism in the Cayman Islands made progress in 2021. The capacity to break down silos across Government and build partnerships across agencies, as well as with the private sector and NGO organisations, is critical to the success of HMCI's mission.

HMCI is primarily tasked with training, empowering, and exercising the 18 functional areas of the national response system and, of course, planning for the hazards we face by producing and updating plans, as well as working to mitigate and prepare for the effects of these threats in advance, so that the need to respond is reduced if the threat can't be eliminated entirely.

This capacity to come together in a coordinated and focused way is one of our strengths and, whilst it is certainly not the only factor that supported our national response to the COVID-19 pandemic, it certainly played a part and almost certainly saved lives. It is effectively 'a whole country' approach; a united effort to achieve intended objectives. And when we do come together in that way, whether it is to prepare for a threat, respond to an impact, or even recover from a hazardous event; we are able to achieve great things in the Cayman Islands. Evidence of this can be inferred from the low COVID-19 mortality rates in the Cayman Islands compared to other Islands and territories in 2021.

The Cayman Islands Regiment also proved its worth during the year. The Regiment is now better equipped and is a valuable resource, especially in the response phase for a storm, or any other type of hazard that impacts the Cayman Islands.

There is still much work to be done to improve across all areas of disaster management in the Cayman Islands. The small, but committed, team at HMCI is striving to fulfil the responsibility that it has been given.

Work continues towards an improved understanding of the risks we face and implementing strategies to lessen those vulnerabilities as well as building greater resilience and a more robust response capacity to ensure the Cayman Islands continues to thrive in the years ahead, no matter what hazards and threats we face.

