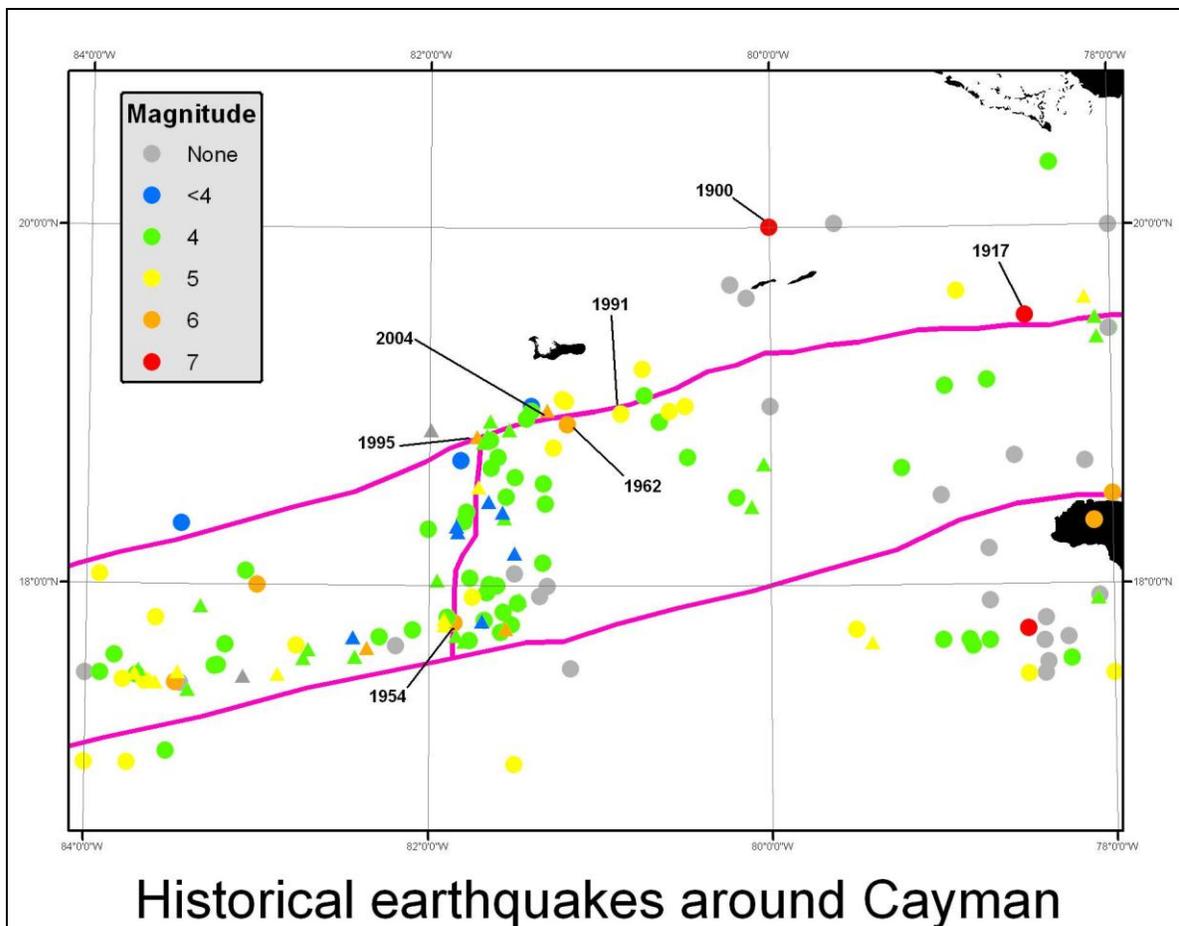


# DISASTER MANAGEMENT CAPABILITY REVIEW

## CAYMAN ISLANDS

15<sup>th</sup> - 25<sup>th</sup> JANUARY 2007



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- Annex D:**                   **Disaster Management: HMG’S Response: Overseas Territories**

## **Main Abbreviations Used in the Report**

CIG	Cayman Island’s Government
CUBiC	Caribbean Uniform Building Code
DMCRT	(FCO/DFID) Disaster Management Capability Review Team
ECLAC	UN Economic Commission for Latin America and the Caribbean
EIA	Environmental Impact Assessment
HMCI	Hazard Management Cayman Island
JCS	Joint Communications Service
LoGB	Honourable Leader of Government Business
NHMC	National Hazard Management Council
NHME	National Hazard Management Executive
NHC	National Hurricane Committee
NHP	National Hurricane Plan
NSC	National Security Committee
OTEP	Overseas Territories Environmental Programme
PAHO	Pan American Health Organisation
RNLI	Royal National Lifeboat Institute
SIEC	Sister Islands Emergency Committee
TAOS	The Arbiter of Storms

## **EXECUTIVE SUMMARY**

**1. The three members of the joint FCO/DFID Disaster Management Capability Review Team (DMCRT) wish to pay tribute to the fortitude and resilience of the entire Community in the Cayman Islands for the remarkable recovery from one of the most devastating hurricanes in Caribbean history. All major financial indicators show that Cayman has not only recovered but are now exceeding pre-Ivan levels. This is all the more remarkable as the damage per acre on Grand Cayman was reported as greater than in New Orleans following Hurricane Katrina and ECLAC reported that per capita losses in excess of \$75,000 were the highest they had ever recorded.**

2. It is the considered view of the DMCRT that the Cayman Island's are now better prepared for responding to major hurricanes than any other Caribbean Overseas Territory. Plans for some other hazards are also of a high standard.

3. But the Government of the Cayman Islands (CIG) recognised in the immediate post-Ivan period that the Territory needed to prepare more thoroughly for a wider range of hazards than hitherto. It also recognised that the dedicated and committed public servants who had negotiated Cayman through Ivan and the recovery phase could not continue to give hazard management their full attention while also performing their regular duties in front line Ministries. A decision was therefore taken to establish a dedicated agency with its own fulltime staff to re-energise hazard preparedness and response arrangements, and to start to put in hand plans for areas not previously covered by the National Hurricane Committee. An experienced Director with considerable regional experience, Dr Barbara Carby, was recruited as the first head of the new agency, which was formally launched on 17 January 2007 as Hazard Management Cayman Islands (HMCI). Planning can be greatly assisted by the use of modern technology with the Lands and Survey Department breaking new ground with the combination of digitalised maps of the Territory into which hazard forecast and worst case scenarios can be factored.

4. It was evident from all our meetings, with few exceptions, that there is widespread enthusiasm for a multi hazard approach to disaster risk reduction and a groundswell of support for an agency that will offer co-ordination, technical assistance and dedicated staff. This support and the investments made in the new agency, offer a timely and necessary opportunity to put in place systems and measures to protect further the well being and prosperity of the Cayman Islands and its Community.

5. Considerable effort and safeguards are required, however, if the opportunity is to be maximized. There will need to be high level support and succinct articulation, as well as a Community-wide understanding of how the new agency will function. The Community will need to feel re-assured that the excellent work of the NHC will be continued under the direct auspices of HMCI. Because there will be such high expectations, the agency will need to deliver tangible outputs as early as possible. Strategic objectives and supporting activities will need to be defined and prioritised. One of the first tasks will be to recruit 8 staff, for whom funding has been approved, to join the Director and Deputy Director, McLeary Fredrick. Any further delay in the recruitment process could seriously endanger the planning for the forthcoming hurricane season, and the start of planning for a wider range of credible threats to the Cayman Islands. But with the imperative to move forward,

there should be no diminution in the preparation for hurricanes which will remain the constant and ever present threat to the Community.

6. There will need to be a re-structuring of the senior command, and particularly a clarification of duties and responsibilities, if HMCI is to assume a pivotal position at the heart of planning for risk reduction and emergency response. HE The Governor has constitutional responsibility to HMG, and to the Community, to ensure that the Territory is properly prepared at all times. The Chief Secretary has day-to-day responsibility under the Governor for all aspects of hazard management, assisted by the Deputy Chief Secretary and all senior Government officials. The Government of Cayman (CIG) has a responsibility to ensure that adequate measures are taken and are properly funded. It has already taken a strong lead with the recovery programme and has ensured that the financial and other resources have been made available to re-build Cayman. There are positive signs that CIG will continue to play a defining role in how all hazard planning is taken forward.

7. Central to the success of the new agency, and of advancing multi-hazard risk reduction in general, will be continued and consistent support for the agency at all levels. The Governor and Leader of Government Business will need to set performance targets and ensure that agreed outputs are achieved. They will also need to maintain the high levels of direction that they have jointly shown over the last year. The DMCRT was encouraged to note that the Disaster Management Steering Committee, established in 2005, will evolve into the National Hazard Management Executive (NHME). The new national disaster structure, with minor revision, should provide an appropriate framework to institutionalise support and accountability. However, the authority of the agency should be set out in legislation. Government agencies, the private sector and civil society must assist by engaging with the new agency and contributing to risk reduction where appropriate.

8. In 2006, the focus for the creation of the new agency appears to have been diminished by the need to prepare for the 2006 hurricane season. Given the delay in recruitment to the HMCI, similar questions were raised with the DMCRT about HMCI's priorities in advance of the 2007 hurricane season, which is now less than four months away (e.g. all hazard planning v hurricane preparation). The final allocation of HMCI resources will be a decision for the NHME (formerly the Disaster Management Steering Group) but, providing that experienced and suitably qualified staff are assigned to the new agency, it should be feasible to make a start on other hazard risk reduction activities whilst also addressing hurricane preparations. As operational structures and responsibilities for hurricane preparedness remain typically the same, the availability of additional resources and expertise within the new agency can be expected to make a positive contribution to hurricane preparedness.

9. The report presents a list of recommendations grouped under the headings of:

- 1) Hazards, Vulnerability and Risks,
- 2) Structures and Organisations, and
- 3) Plans and Planning.

10. The DMCRT recommendations are presented in the body of the report and are also brought together in a consolidated list at the end of the report (see Chapter 6).

The key findings are:

- The new HMCI is a positive and welcomed initiative but it will need to be carefully nurtured and given full support and backing across the spectrum if it is to deliver its wide-ranging and necessarily ambitious mandate.
- Early attention needs to be paid to how the National Hurricane Committee is to be amalgamated into the new national structure. Top level direction, from HE The Governor, Cabinet and the NHME will remain largely the same as in previous years. The proposed operations group under the new structure has the same sub-committees, membership and responsibilities as in the 2006 plan. Until new procedures for the HMCI have been approved, each group and sub-committee is expected to perform the same functions and maintain similar levels of preparedness. For hurricane preparedness at least, there should be little divergence from past practice. However, because there is a new office and two full time staff, more rapid progress is expected when addressing areas of concern.
- Hazard risk considerations are currently not factored automatically into planning decisions or Environmental Impact Assessments, partly the result of absent or incomplete legislative frameworks. Addressing these issues will take time. A preliminary step would be for planning submissions to be shared automatically with the HMCI for comment.
- In most Cayman hurricane plans, for example the continuity of business format, preparedness actions are only scheduled to start at 48 hours, although some preparedness activities are often initiated in advance of this point. The DMCR strongly believe that Cayman should come in line with practice in some other Caribbean countries and formally start preparations at 72 hours. Allowing sufficient time is particularly important for evacuation procedures, especially if tourists are to be given the opportunity to leave the islands;
- Government agencies should be encouraged to develop further their continuity plans to incorporate other hazard scenarios, beyond hurricanes, and to articulate how national response and recovery responsibilities will be discharged. Further opportunities to incorporate disaster risk reduction into Ministry portfolios and corporate plans should be investigated.
- The report highlights priority areas for further refinement of hurricane preparations (e.g. shelter, media handling, evacuation, recovery planning). It is recommended that a comprehensive hurricane scenario exercise be organised before the next hurricane season to enhance understanding of new institutional arrangements and familiarity with the 2006/7 hurricane plan.
- There will continue to be a critical shortage of shelter space until around 2010 when many new public buildings are expected to come on stream (See Annex C). Until more shelter places are available in Government buildings, it will be necessary to

enter into formal or informal arrangements to utilise any spare private sector accommodation;

- The Sister Islands Emergency Committee has concerns about the numbers who could be evacuated quickly from Little Cayman and have proposed new evacuation arrangements through Cayman Brac;
- As Cayman’s tourism potential continues to flourish, and more visitors come to the Territory, there is a pressing need for enhanced major incident plans to address the possible larger scale of casualties resulting from a wider range of differing scenarios. Hurricane plans should include further provisions for the evacuation of larger numbers of tourists;
- Major incident plans require revision. Further incident command training and exercises are required for all emergency responders to improve inter-agency co-ordination;
- The DMCRT was asked by ministers and senior officials to outline how HMG would respond to a future hurricane, disaster or emergency. Although the team explained to Cabinet the range of resources available, many of them introduced since Hurricane Ivan, it is nevertheless recommended that HMG makes renewed efforts to articulate and update the scope of assistance available. The FCO paper “DM UK response,” already circulated by HE The Governor, provides a useful, initial oversight (see Annex D);
- HMCI is encouraged to develop a strong relationship with DFID’s disaster risk reduction adviser, with other Caribbean Overseas Territories and regional and institutional organisations involved with or promoting disaster risk reduction. Such relationships should be mutually beneficial, allow resources and technical expertise to be shared and enable concerted efforts to increase capabilities for disaster risk reduction.

11. In conclusion, the review team found that the Cayman Islands has made a remarkable recovery from Ivan and that in many instances, hurricane preparedness is stronger than before Ivan. CIG is placing a noteworthy emphasis on building a greater national resilience to hurricanes and, increasingly, other potential shocks or hazards. However, more improvements are still required to hurricane preparations, and policies that have been articulated by CIG (eg protection of the environment, beach set back, etc) now need to be institutionalised in national plans, disaster legislation and the regulatory environment. The launch of HMCI presents a timely opportunity for reviewing all work in progress and for re-organising structures for planning for, and mitigating against, all hazard and risks. However, increased momentum and tangible results are clearly expected of HMCI. If HMCI is to deliver effectively, the NHME will need to take a very close interest in its work and will need to offer firm direction and guidance. Furthermore, it is unlikely that HMCI will make rapid progress until all its staff have been recruited, which may take Cayman closer than comfort to the 2007 hurricane season.



# DISASTER MANAGEMENT CAPABILITY REVIEW

## TERMS OF REFERENCE

A joint FCO/DFID team will carry out a disaster management capability review in Grand Cayman from 15-19 January 2007. The review team will comprise of Frank Savage, FCO Adviser: OTs and Disaster Management (Team Leader), Roger Bellers, DFID Disaster Management Adviser and Larry Covington, FCO/OTD OT Law Enforcement Adviser.

The following Terms of Reference have been agreed with the Governor, HE Mr Stuart Jack.

1. To review the disaster management capability of the Government of Cayman, to include:
  - i. Threat assessment; hazards and vulnerability
  - ii. Structures and organisation
    - Responsibilities
    - Command structure
    - Policy and strategies
    - Organisations
    - Emphasis and priorities
    - Role of the DM/EM Agency
    - Legislation and emergency powers
  - iii. Plans and resources
    - National Plan
    - Major incident plans
    - Plans by hazard scenario
    - Capacity and resources (equipment, staff, training) by function and for differing scenarios:
      - Co-ordination/EOC
      - Communications
      - Forecast and warnings
      - Relief supplies and distribution
      - Evacuation Planning
      - Shelter
      - Public information
      - Health
      - Security
    - Departmental disaster management plans and resources, with particular reference to police, health sector; public works, airport, fire services (inc. search and rescue)
2. To review training needs and to make recommendations as necessary.
3. To hold an Exercise during the Review to test response capabilities of the major agencies, followed by an exercise review.
4. To submit a report with recommendations to HE the Governor at the conclusion of the review.

# REPORT

## **1 Introduction**

1.1 The Cayman Islands are blessed with a dedicated and well educated/well trained public service, supported by a vibrant private sector and a number of well established voluntary organisations. The Disaster Management Capability Review Team (DMCRT) has been impressed by the dedication and professionalism displayed by all sections of the public service interviewed during the review. All were fully seized of the need to prepare for, and mitigate against, as far as possible, all known threats to the Cayman Islands. The breadth of experience, and willingness to innovate and push out the boundaries of knowledge was both encouraging and welcomed. With the “benefit” of the Ivan experience, Cayman has set new regional, and in some areas world standards, for hazard mitigation and preparedness.

1.2 The DMCRT have referred to the following documents in the preparation of this review report:

DFID’s Assessment of The Cayman Islands 27<sup>th</sup> – 31<sup>st</sup> October 1998  
Impact of Hurricane Ivan – A Technical Review of the hazards and their effects  
Emergency Powers Law (2006 Revision)  
Emergency Powers Law (1997 Revision) – Emergency Powers Regulations 2004  
Emergency Powers Proclamation Order  
Bill to Establish an Office of Disaster Preparedness and Emergency Management – 14<sup>th</sup> July 2005  
A Strategic Framework for Disaster Risk Management for the Cayman Islands dated December 2006  
A National Disaster Risk Management Agency for the Cayman Islands undated  
National Threat Assessment for 2006

1.3 The DMCRT met with the following persons, agencies, organisations and bodies during the course of the review:

HE The Governor: HE Mr Stuart Jack  
Head of Governors Office: Simon Tonge  
Leader of Government Business: The Honourable Mr Kurt Tibbitts  
Chief Secretary: George McCarthy  
Deputy Chief Secretary: Donnie Ebanks  
Permanent Secretary- Education, Training, Employment, Youth, Sports & Culture: Angela Martins  
Attorney General: Sam Bulgin  
Solicitor General: Cheryll Richards  
Financial Secretary: Kenneth Jefferson  
Cabinet Secretary: Orrett Connor  
Lands & Survey Department: Robin Ransom  
Director of Planning: Kenneth S Ebanks  
Permanent Secretary- Ministry of Tourism, Environment, Investment and Commerce: Gloria McField-Nixon  
Director- Hazard Management Cayman Islands: Barbara Carby

Director-Department of Environment: Gina Ebanks-Petrie  
Director-GIS: Pat Ebanks  
Permanent Secretary-Communications, Works and Infrastructure:  
Carston Ebanks  
Director-Public Works Department: Max Jones  
Department of Children and Family Services: Deanna Lookloy  
Director-Tourist Board: Pilar Bush  
District Commissioner, Cayman Brac: Ernie Scott  
Commissioner of Police: Stuart Kernohan  
Collector of Customs: Carlon Powery  
Assistant Collector of Customs: Langlie Powery  
Chief Fire Officer: Roy Grant  
Civil Aviation Authority (CAA)- Director of Aerodrome and ANS Regulation:  
Jeremy Jackson  
Director of Commercial Affairs: Nicola McCoy  
Chief Officer- Ministry of Health: Diana Montoya  
CEO, Cayman Health Services Authority: Lizzette Hawell  
Chairperson Health Disaster Committee  
Director, Cayman Islands Department of Environmental Health: Roydell Carter  
CEO, Cayman Islands Airport Authority: David Frederick  
Commissioner of Corrections and Rehabilitation: Dr William Rattray  
Director of Prisons: Dwight Scott  
ExxonMobil (Esso) – Country Manager Cayman Islands: Alan Neesome  
Chevron (Texaco) Terminal Manager: Tony Cook  
Operations Coordinator: Allan Foster  
Caribbean Utilities Company Ltd (CUC) – President & CEO: Richard Hew  
Vice President Transmission & Distribution: Lee Tinney  
Manager Engineering Services: Sacha Tibbetts  
Water Authority Cayman (WAC) – Director: Gelia Frederick-Van Genderen  
Port Authority of the Cayman Islands – Port Director: Paul Hurlston  
Manager Cruise Operations and Security: Joseph Woods  
Bodden Shipping Agency Ltd – General Manager: Luria Nicholson-Peterson  
Red Cross-Cayman Branch-Director: Jondo Malafa Obi

Additionally the DTCRT met twice with a large group of “Stakeholders” involved in hazard management.

- 1.4 This review is not an audit or inspection of individual organisations and agencies. The observations and recommendations of the DMCRT contained in this report are based on the critical assessment of the information presented to members of the DMCRT, the situation observed on the ground and the documents submitted.

## **2 Threat Assessment, Hazards and Vulnerability**

### Hurricanes

- 2.1 The Cayman Islands, because of its location in the North Atlantic hurricane belt has been repeatedly struck by hurricanes and tropical storms that have generated off the coast of Africa or within the Caribbean Sea and Gulf of Mexico. From 1950 to 2002 “Grand Cayman has experienced seven tropical storms and six hurricanes, and the Sister Islands six tropical storms and five hurricanes.” In the great storm of November 1932, 69 people died and a further 31 perished at sea.
- 2.2 On 11<sup>th</sup> September 2004 Grand Cayman received a near direct hit from Hurricane Ivan. Sustained Category 4 winds of 140-145 mph were experienced in George Town with gusts reaching over 180 mph. Between 11<sup>th</sup> and 13<sup>th</sup> September, tropical storm force winds were sustained for 40 hours. Hurricane force winds were accompanied by storm surge flooding between 8-10 feet, mostly due to winds pushing water up in the South and West of North Sound. Heavy waves caused often catastrophic damage up to 25 feet above sea level where there was no reef protection. Rainfall totalled 16.5 inches.

### Hurricane Vulnerability

- 2.3 Hurricane Ivan demonstrated not only how physically exposed the Cayman Islands are to hurricane hazards, but also the value of preparedness and a resilient infrastructure to reduce losses and speed a recovery. Only two persons died during Ivan with 29 injuries being recorded, primarily because of hurricane preparations and shelter availability (private and public). Although economic losses have been estimated at US\$3.5 billion (a per capita record for ECLAC), insurance, a good building code, resilient key facilities, and the build quality of larger hotels and finance houses limited further losses and damage.
- 2.4 The majority of Ivan’s damage was caused by the storm surge rather than high winds (75% - 25% according to ECLAC). Despite at least four previous examples of serious hurricane induced storm surge flooding, and repeated recommendations for storm surge modelling, the impact of storm surge was unpredicted and not planned for. Critical facilities and equipment were poorly sited or opportunities available to reduce risks not taken. This situation is now being addressed. The Lands and Survey Department is testing a storm surge modelling programme for all islands that should be finished in June 2007. This will enable storm surge considerations to be factored into siting and design parameters as well as real time hurricane preparations.
- 2.5 Throughout the visit, the DMCRT found a raft of other initiatives aimed at further reducing hurricane vulnerability and risks. Hurricane preparedness plans are in a constant process of revision, resources allocated to preparedness have increased, infrastructure has been further strengthened and business continuity plans have been introduced for all Government Ministries. Commitments were repeatedly given that all government buildings, and notably key facilities, would be built to Category 5

Hurricane standard and be located in higher locations. Numerous examples were given of efforts to water-proof or relocate essential equipment at higher levels (e.g. generators).

- 2.6 This systematic progress, explained by a broad consensus that prosperity will only continue if hurricane impacts can be further absorbed, suggests that the Cayman Islands are now less vulnerable than before Hurricane Ivan struck. However, there remain some areas for further improvement or consideration. Progress since Ivan must be maintained. There should be no complacency that because Cayman survived Ivan, future storms will also be manageable. Whether Ivan was a 1 in 100 year or 1 in 200 year event from the wind perspective<sup>1</sup>, historical data suggests wave damage and storm surge to represent a 1 in 75 or 1 in 100 year event. Notwithstanding the possibility of more intense and possibly frequent storms as a result of climate change, Ivan should not be considered a worst case scenario, especially from the economic perspective. Another hurricane, with different characteristics, could produce stronger winds and destructive waves on, for example, Seven Mile beach.
- 2.7 There are positive indications that shelter space will be increased although there are currently no firm Government agreed targets. Public shelter space on Grand Cayman at present is approximately 4,100, although this figure could be significantly increased in an absolute emergency by a reduction in personal space standards. PWD has submitted a paper to CIG indicating a need for 13,000 places by 2010. Although more shelter will come on stream with the new airport and the building of new schools, these will take time. Before Ivan approximately 5,000 were evacuated in advance of impact. If people choose not to leave (e.g. because of complacency or weariness at repeatedly moving), or time is not available (from a sudden shift in intensity or direction), more shelter may be required.
- 2.8 The Cayman Building code rates buildings to 130 mph. CIG has taken a decision, however, that critical facilities in the future should be built to Category 5 standards (sustained winds greater than 155 mph), although this is not required in the code. The Caribbean Uniform Building Code (CUBiC) calls for “Class 1 Buildings” (those considered essential for use after hurricanes or earthquakes) to have an “Importance factor” of 1.5, which effectively increases the design loads by 50% over those for “normal” buildings. **An “importance factor” for key facilities is recommended for the Cayman code to institutionalise resilience.**
- 2.9 The principle of locating key facilities in safer areas seems to be generally accepted by Government agencies interviewed. Since 2002, hotels of seven storeys require a set back from the sea, with five storey hotels requiring 100 feet. However, the DMCRT were informed that some buildings were still being constructed close to the waters edge. Given the concern among the international scientific community about global warming, and a predicted rise in sea levels, and more violent weather patterns, **the DMCRT recommends that consideration to the dangers posed by hazards should be more firmly established in planning regulations. It is recommended that a more systematic system of beach set-backs (to offer protection but also to**

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<sup>1</sup> There is some divergency between models and historical data. See Page 19, “Impact of Hurricane Ivan”, S.Young, 2005.

**maintain a healthy beach environment) be established. 75 feet has been muted but is not uniformly implemented.**

- 2.10 Environmental Impact Assessments (EIAs) are expected of all major developments (they are not mandatory for all). There is a clear opportunity for EIAs to include hurricane risk assessments and risk reduction measures. **The Planning Control Authority should circulate planning submissions to the HMCI for comment in addition to the current agencies (e.g. fire, national road authority, water authority, environmental health).**
- 2.11 Hurricane vulnerability is exacerbated by a high potential for secondary environmental hazards. There is no hazardous material register on the island to indicate the potential scale should there be future flooding. However, pollutants are kept on the waste disposal site before shipment to the United States. There is a danger these may be displaced in future hurricane induced flooding. This risk is increasing as Texaco no longer remove used oil from the island. As a result, more barrels are now kept at the landfill site which is fast becoming a major concern to public health and the environment. Because the landfill site is nearing full capacity, additional land will be required if debris is to be removed following any future storm. These aspects are recognised and there are positive signs they are being acted upon; steps are underway to remove or secure materials on the existing site and handling capacity is being increased. Initial meetings and preliminary research has taken place to introduce a hazardous materials register.
- 2.12 **Efforts should be made to see whether insurance, which greatly aided the recovery from Hurricane Ivan, could reduce premia (which have increased 2 or 3 fold since Ivan) if further protective building measures were adopted. Such a system has been successfully applied in Barbados.**
- 2.13 One of the most impressive initiatives underway is the hurricane modelling capacity being developed by Lands and Survey in collaboration with the TAOS<sup>2</sup> system. This system has been designed to model wind speeds, storm surge and wave action for experienced storms or to NHC forecasts, as well as to provide quantitative loss assessments. This ability to determine loss according to building type and location, has the potential to demonstrate benefits and parameters of building regulations and zonation. Depending on information inputs (e.g. Red Cross household vulnerability data or that from the recently commenced livelihood surveys), the model can include social aspects of vulnerability. As such, it will be able to inform policy decisions when determining acceptable levels of risk. Although Lands and Survey have taken a lead in developing the system, they have contributed more resources than initially anticipated and are keenly looking forward to HMCI involvement to promote the system, and advance its application to development and risk reduction planning. **Closer collaboration between Lands and Survey and HMCI on the new GIS hazard mapping system is recommended.**

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<sup>2</sup> The Arbiter of Storms (TAOS)

## Earthquakes

- 2.14 As the Cayman Islands are 25 miles north of the Oriente Fault Zone where the North American and Caribbean Plates meet, the potential to experience a serious earthquake cannot be discounted. Three earthquakes of magnitude 6 or above have occurred within fifty miles of Grand Cayman since 1960. Although data is not available of felt (i.e. experienced) intensity on the Cayman Islands, Caribbean Disaster Management Project seismic hazard maps (1998) put Grand Cayman in the zone likely to experience a MMI 7 event with a 10% exceedence every 50 years<sup>3</sup> (the sister islands are in an area between MMI 5 and 6). This compares with a figure of 7 for Anguilla and the British Virgin Islands.
- 2.15 The potential for damage should a major earthquake strike is uncertain. On the one hand the building code contains provisions for earthquakes alongside those for hurricanes. However, the potential for liquefaction is not known or represented in hazard maps or planning considerations. Furthermore, little attention has been given to earthquake planning. There is no national earthquake plan. As an indication of the lack of earthquake planning, search and rescue teams receive no specific earthquake instruction and the health authority does not automatically apply non-structural earthquake risk reduction measures to their hospitals and clinics.
- 2.16 This worrying situation is due to change as a result of heightened awareness following the seismic 2004 event and the recent acknowledgement that greater emphasis must be placed on all hazard planning. Recent advances include:
- 4 seismographs are being installed (2 in Grand Cayman, and 1 on each of the Sister Islands) to monitor seismic activity. This will be used to inform local understanding of seismic risk as well as the tsunami warning system for the Caribbean via the US Geological Survey/University of Puerto Rico tsunami warning system. The director of HMCI has also managed to gain some technical and material support from colleagues in Jamaica.
  - Land and Survey aim to incorporate seismic mapping into their Geographic Information System (GIS) for earthquake loss modelling. This corresponds with, and will contribute to, the HMCI strategic commitment to all hazard risk assessment and reduction.
  - HMCI have already sent personnel for instructor training in urban search and rescue.
  - HMCI (then as NEMA) conducted an awareness raising scenario exercise for the Ministry of Education in December 2006 and there are plans to extend the process to other Ministries. Public awareness, via multi media channels, is a major component of the HMCI strategic plan.

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<sup>3</sup> According to FEMA “VII. People have difficulty standing. Drivers feel their cars shaking. Some furniture breaks. Loose bricks fall from buildings. Damage is slight to moderate in well-built buildings; considerable in poorly built buildings.”

## Tsunami

- 2.17 The Cayman Prepared website (<http://www.caymanprepared.gov.ky>) quotes Lander et al (2002) stating: "Since 1498 there have been 27 verified true tsunamis and an additional nine as 'very likely true tsunamis'. In the past 136 years there have been three destructive tsunamis in the North Eastern Caribbean, the last one being in 1946." The website continues to report on large boulders on the south coast of Grand Cayman that were probably moved by a tsunami. Reference is also made to the 1692 earthquake generated tsunami that killed over 2,000 in Port Royal, Jamaica.
- 2.18 The threats posed by tsunamis cannot and should not be ignored, although there is no historical evidence of deaths on Grand Cayman, and despite an assessment by the University of the West Indies (UWI) Seismic Research Unit (SRU) that maintains the tsunami risk is low as compared to other regions and other hazards.
- 2.19 It is encouraging that the Cayman Islands are involved in the US backed Caribbean Tsunami warning programme. Dr Carby's long association with international risk reduction agencies should ensure CIG are suitably included in region wide tsunami initiatives and contribute towards national risk assessments and appropriate reduction strategies.
- 2.20 It may be noted that not one person interviewed throughout the week's interviews referred to the tsunami threat. To an extent set-backs and siting provisions for storm surge and wave action will serve to provide a measure of mitigation from tsunamis. **The DMCRT recommends that a tsunami plan and awareness campaign be drawn up to advise the Community on the immediate actions to be taken whenever a tsunami warning is received, or when an earthquake is felt or the sea is seen to recede.**

## Flooding

- 2.21 Examples were given by some of those interviewed of flooding experienced during tropical storms, typically because of storm surge and wave action. No examples were given of rainfall induced flooding, or of flash floods. More than one person interviewed stated that even heavy rain would run off the islands relatively quickly. The prospects are positive that future development planning, aided by Lands and Survey GIS, will take storm surge and flooding into appropriate consideration. The Fire Service is already determining location of sub-stations according to which areas may be cut off by floods to ensure a response across the islands.
- 2.22 It is not known whether this situation will be maintained with further development. At present there is no requirement for hydrological surveys to be part of development plans or EIAs. **It is recommended that rainfall-induced flood potential is included in HMCI's multi hazard risk assessment process.**

## Wild Fires

- 2.23 Department of the Environment officials raised concern over an increasing threat of wild fires. Ivan killed a significant amount of shrubs and trees across the island that

are now dry and pose a potentially serious fire hazard. Although the Fire Service has a control programme, and the crop spraying airplane can be equipped with a 550 gallon tank, **it is recommended that response capabilities should be re-assessed, particularly for more inaccessible areas.** One of the main areas of risk is the Blue Iguana re-settlement area.

### Epidemic and Health Risks

- 2.24 The Cayman Islands impressive health care network (three hospitals, five district health care centres), backed up by effective environmental health standards (water quality, hygiene, vector control, etc) suggest that health risks are minimized as far as possible. There is a comparatively advanced capacity to mount an effective response to epidemic.
- 2.25 A plan has recently been introduced for Avian Influenza (H5N1) under guidance from the Pan American Health Organisation (PAHO) and a committee formed to oversee national contingency arrangements. At present, the plan still addresses the health sector response (surveillance, quarantine, treatment) rather than national level implications and corresponding requirements (security, water, immigration, etc). The plan builds upon measures introduced in response to the 2003 Severe Acute Respiratory Syndrome (SARS) scare. In respect of the regular reporting of new H5N1 cases in new locations, **it is recommended that momentum towards finalising the H5N1 plan is maintained and national requirements for response and containment are put in place.** When the H5N1 plan is finalised, it will provide the basis upon which the response to any kind of epidemic can be mobilised. It is worthy of note that more deaths were reported worldwide from H5N1 in 2006 than in any previous year.

### Man Made and Toxic Hazards

#### Air Crash

- 2.26 Grand Cayman has a busy international airport. An air crash, or related incident, should be regarded as a probability at some point in the future and suitable contingency plans should be maintained accordingly. Mandatory airport safety plans are in place and are tested. A mandatory bi-annual multi-agency disaster exercise also takes place. It is recognized that an air crash at the airport at Cayman Brac would present significant major incident response and management issues for the emergency services. The proposal for the Royal Cayman Islands Police Service to purchase a helicopter (it currently has a lease arrangement with a local company) will greatly assist in delivering essential command and support personnel should such a major incident occur.

#### Marine Safety

- 2.27 A recurring concern amongst those interviews was how the Cayman Islands would respond to a major Cruise ship incident. Up to thirty thousand cruise ship passengers and crew could visit Grand Cayman on a single day. Although cruise ship fire safety

and security standards are extremely high, the risks of such an event cannot be discounted. If a cruise ship had to be evacuated (for reasons of fire, explosion, mass-poisoning or running aground), local capacities would be overwhelmed. There are no specific cruise contingency plans in place and no examples were given of CIG authorities having regular safety meetings with Cruise ship company representatives, as happens in other destinations. Few were aware of how Cruise ship companies would handle a response or the extensive resources they can apply. The DMCRT noted and welcomed that there had recently been a table-top exercise with Royal Caribbean Cruise Lines and the port authorities. **Closer collaboration and co-ordination with all the major cruise ship lines based in Miami is strongly recommended.**

- 2.28 A dive boat capsized recently and the team received reports of several other small marine incidents, suggesting that a review of safety standards is required. Although regulations do exist, and Cruise ship companies independently assess safety standards of excursion operators, comment was made by senior officials that inspection and adherence could and should be tightened. There are positive signs that this situation is being addressed. A multi agency committee chaired by the Commissioner of Police is reviewing maritime disaster response capabilities and capacities. A Maritime Disaster Response Plan will be produced which will address such issues as search & rescue, accidents/incidents involving cruise ships, pleasure craft and water sport activities (diving, snorkelling, windsurfing et al), regulation & licensing, oil spills and environmental damage. It is intended that the plan will be completed in four months. A new marine regulations bill has been drafted which will tighten regulation of commercial vessels. **It is recommended during this review that CIG examines the benefits of a voluntary in-shore search and rescue service based upon the Royal National Lifeboat Institute (RNLI) model, and as operated in the BVI by the Virgin Islands Search and Rescue (VISAR).** A VISAR type operation would provide a first class search and rescue service at minimal cost to CIG, but would require buy-in from the private sector.

#### Fire and Explosion

- 2.29 The Cayman Islands has a well-equipped and trained Fire Service with a full complement of 160 staff capable of mounting an effective response to fire and explosions on an island wide basis. As importantly, there is evidence of an effective fire prevention and inspection regime. Fire provisions are included in the building code, fire alarm systems are mandatory in larger buildings, sprinkler systems are required on buildings over two storeys (or ten rooms), as well as a requirement for pressurised stairs for those over five floors. The DMCRT was assured that all hotels on Seven Mile beach are in compliance with the fire inspection regime. A concern about the storage/handling of Liquid Petroleum Gas (LPG) will soon be addressed by placing the main LPG tanks underground. The soon to be completed hazards material register should direct safety inspections.

#### Hazardous Materials

- 2.30 The recent multi agency initiative to identify the types, quantities and locations of hazardous materials is welcomed. Concern about the storage and presence of

hazardous materials and potential pollutants at the landfill sites have already been mentioned. More than one person interviewed proposed that inspection regimes should be tightened and backed up by legislation.

- 2.31 Measures are in place to respond to a hazardous materials incident, depending on type and scale. Environmental Health and the Fire Service have protective suits (reportedly around 40 in total) and have received training.

### Oil spills

- 2.32 A major threat to Cayman's environment and position as a leading tourist destination is posed by oil spill. Oil handling and safety standards, under the authority of Chief Petroleum Inspector, are considered robust as are the safety measures and inspection routines carried out by Exxon Mobil (Esso) and Chevron (Texaco) at their sites. If there were to be a spill, Department for Environment would co-ordinate the marine oil response (they are have overall responsibility for HazMat), with the Chief Petroleum Officer co-ordinating a land base operation. But the Department of the Environment has limited capacity and informed the team that it could not tackle a major oil spill. The Sister Islands Emergency Committee (SIEC) in Cayman Brac also expressed serious concern over the potential for a major oil spill.
- 2.33 Oil handling facilities maintain contingency plans that are reviewed by a National Co-ordinator for Oil Spill Response. There is uncertainty whether these plans have been tested. Similarly, it is uncertain when the National Oil Spill plan was last updated. The Department of Environment is preparing GIS mapping able to provide quick reference to oil and chemical responders with three types of information; shoreline sensitivity to oiling, biological resources in the affected area (e.g. bird nesting areas) and human resources. This is expected to be functional by the end of 2007. **It is strongly recommended that there be an urgent revision of the Oil Spill Plan to ensure that Cayman is adequately protected, and key officials know how to access free international advice and assistance in cases of major spillage.**

### Environment

- 2.34 Those met demonstrated a high familiarity of the relationships between environmental management, sustainable development and disaster risk reduction. Many examples were apparent of good practice, or the potential for good practice, within regulatory and planning regimes.
- 2.35 There are, however, some areas for concern. EIAs are not mandatory, the quantity and handling of hazardous waste is often unknown, the land fill site poses a contamination threat, and although an oil spill plan exists, it remains untested. Legislation proposed in 2003 to codify EIAs, to offer protection to environmental assets and introduce beach set backs, has not been enacted. **The proposal to develop a sustainable development strategy incorporating environmental concerns should be supported, as should legislation to ensure authority and compliance.** It is also noted that CIG is a signatory to an Environment Charter under the auspices of the Overseas Territories Environmental Programme (OTEP) which imposes obligations and restrictions for the protection of the environment. Cayman is possibly in breach of

the Charter in respect of a lack of legal protection to some areas of the mangrove swamps. The DMCRT was informed that draft legislation has been prepared but not yet enacted.

### Mass Migration from Cuba

- 2.36 The Chief Immigration Officer currently chairs a multi-agency/department committee tasked with producing a contingency plan to deal with any mass illegal migration from Cuba. The plan will address detention, health, welfare and educational issues of managing large numbers of Cuban migrants should they land in the territory. It is the considered view of the Chief Immigration Officer that Cayman Brac could receive large number of migrants should an exodus from Cuba take place. The Committee does not yet appear to be fully operational and therefore **the DMCRT encourages the Committee to produce a suitable contingency plan without delay. The plan should take an incremental approach to the numbers that might be expected, and in any case should examine the case for larger numbers than arrived from Cuba in the mid-1990s. Discussions should be opened with HMG to establish the level of assistance that would be available from the UK and the international community and it is recommended that the Committee takes note of the plans produced by DFID for the Turks and Caicos Islands for managing a large influx of Haitian illegal immigrants. The director HMCI should be a committee member. The national organisation she headed in Jamaica was responsible for the housing and care of significant numbers of Haitian displaced persons in 2004**

## **3 Structures and Organisation**

### Responsibilities

- 3.1 OT Governments have the responsibility for ensuring that their Territory is adequately prepared to respond to all major hazards and risks. This responsibility includes financing to provide for a suitably robust infrastructure and professionally trained staff to manage the necessary mitigation, preparedness and response programmes and strategies. HE The Governor is responsible to HM Government for ensuring that the Territory is properly prepared at all times and he is expected to work closely with the Leader of Government Business and Cabinet. Under the direction of HE The Governor, the Chief Secretary has day-to day responsibility for ensuring that Cabinet decisions and directions are followed and that all appropriate plans are in place, and tested regularly as required. The Chief Secretary is assisted in this critical area by the Deputy Chief Secretary, who has line management responsibilities for many of the senior managers involved and in particular the Director HMCI.
- 3.2 In Cayman, the National Hurricane Committee has until last year been the vehicle for planning for, responding to and recovering from hurricanes. Members of the DMCRT know from their close association with the Cayman Islands over many years of the excellence of the work of the NHC and the dedication and professionalism that members brought to their work. It is a tribute to their planning abilities, and organisational skills that there were so few fatalities and serious injuries during Hurricane Ivan in 2004. Ivan brought home to the CIG and the Community, however,

the need to prepare for disasters in ever greater depth, and to prepare for a wider range of hazards. Post Hurricane Ivan consultants advising on the recovery programme and the United Nations Development Programme recommended the creation of a national agency to lead multi hazard risk management. In 2005, Cabinet agreed to create a new agency and preliminary staff were hired to develop the concept. Hazard Management Cayman Islands (HMCI) was formally launched on 17 January 2007 during the review.

### The Disaster Management Structure

- 3.3 A new National Disaster Management Structure has recently been approved by Cabinet and the various roles and responsibilities are laid out in an undated document entitled “A National Disaster Risk Management Agency for the Cayman Islands.” Attached to this report is an organisational chart to show chains of command and areas of responsibility (copy appended at Annex ‘A’). The DMCRT has no issue with the roles and names of the various Committees and sub-committees; the Committees are known by a variety of different names in other Territories but the tasks and responsibilities are broadly similar.
- 3.4 The DMCRT has some concerns, however, about the reporting lines, which unless addressed could hinder the progress and effectiveness of the HMCI. On the current chart, the 4 sub-committees- Preparedness, Mitigation, Operations and Recovery- are all shown as being directly mandated by the National Hazard Management Council (NHMC) and reporting directly back. The co-ordination, and at times commissioning role of HMCI, is not recognized. We would prefer to place HMCI between the NHMC and the Sub-Committees to establish that the agency will operate as the agent of the NHMC, with the responsibility to ensure that the Sub-Committees respond in a timely and effective fashion to directives and requests from the NHMC. The HMCI should provide the Secretariat for the NHMC and each of the 3 HMCI Deputies, when appointed, should sit on one or more of the Sub-Committees. This will ensure that HMCI is aware at all times of progress, or lack of progress, on policy initiatives cascaded down from HE The Governor, Cabinet or the NHMC. We agree that the Sister Islands Committee and the District Emergency Committees should continue to be responsible to the National Hazard Management Executive (NHME) through the HMCI. **The DMCRT recommends that consideration be given to adoption of the proposed/revised organizational chart attached at Annex B.**

### National Hazard Management Executive (NHME)

- 3.5 The stated role of the NHME is to provide policy guidance and to review progress of the national disaster risk management programme. This is right, but members of the NHME have an additional important role as drivers of the change process and the champions of best practice. They will also be instrumental in Cabinet and influential in the Legislative Assembly in making the case for the necessary resources. The document suggests that the NHM Executive should meet twice a year. **Given the very considerable agenda facing the Cayman Islands, it is recommended that meetings on at least a quarterly basis should be held in the short to medium**

**term.**

#### National Hazard Management Council (NHMC)

- 3.6 The NHMC is responsible to the NHME for ensuring that policy directives are worked into appropriate strategies and plans, and that “all the bases are covered.” With nearly 20 different Ministries and Departments represented, as well as the voluntary sector and a representative of the private sector, care will need to be exercised when deciding the Council’s operating procedures to ensure that the Council meets regularly and that it does not turn into a “talking shop.”
- 3.7 The NHMC will need to be the agents of change as Cayman moves from a single hurricane focus to an all hazards approach. In other Territories the size of the Council has been kept tighter by the introduction of a Disaster Management Advisory Council, the primary purpose of which is to provide a vehicle for more involvement by the private sector, voluntary organizations and the Community in planning and mitigation. The DMCRT has some concerns that the formal interface with the private sector that was in evidence during and immediately after Ivan is not now so apparent in current planning documents. It is noted that there is a private sector liaison sub-committee but there is no reference that it is operational. The private sector and the voluntary organizations need to be drawn more into the planning process. **The DMCRT recommends that consideration be given to the formation of a group or Committee to meet formally with leaders of the main groupings within the private sector and the leading voluntary organisations.**
- 3.8 The proposed structure of the Operations committee (see “Emergency Response Structure”, in the National Disaster Risk Management Agency for the Cayman Islands) implies that the various Emergency Support Teams will be organised into four “Response Clusters”, a concept first raised during the 2006 NHC plan revision. This approach is strongly supported, assuming that the Emergency Support Teams closely resemble the prior NHC sub-committees (clarification is again necessary). The DMCRT found instances of departments and organizations being represented on more than one committee. Whilst this may prove unavoidable for planning purposes, this could prove unwieldy under emergency conditions. **Further streamlining of the Emergency Response structure is strongly recommended.**

#### Hazard Management Cayman Islands (HMCI)

- 3.9 CIG provided funding in 2006 to establish a dedicated agency, with full-time staff, to take forward the new Government policies in respect of all hazard planning. Dr Barbara Carby, a very experienced and well-respected Caribbean hazard management specialist was recruited in August 2006 and the new agency was launched on 17 January 2007. HMCI is housed in spacious and well equipped accommodation in the Cayman Corporate Centre Building that survived Ivan with minimum damage. A new, purpose built Emergency Operations Centre is to be constructed on The Ridge, which will provide the permanent accommodation for HMCI when completed in 24-36 months time.

- 3.10 HMCI has an agreed establishment of 10 positions, to include the Director and 3 Deputy Directors. At present only the Director and one Deputy Director are in post. Funding has been approved for the remaining positions and job descriptions were submitted over three months ago for approval. The DMCRT is concerned that even if approval was given to recruit the remaining 8 positions before the end of January, it is unlikely that the new appointees could be in post before April, which is worryingly close to the start of the new hurricane season.
- 3.11 **It is recommended that the recruitment process for the 8 vacant positions be started immediately. It is for consideration that experienced members of the public service could be seconded on short-term contracts to HMCI to ensure that the new agency gets quickly into its stride.** The DMCRT was informed that this approach did not find favour with other Ministries when recently discussed but if the secondments were for a strictly short-term duration of around 3 months, they would enable the HMCI to bring its new office fully on stream and make a start with its formidable agenda. **It is further recommended that consideration be given to inviting the Private Sector to nominate a suitably trained and skilled person to fill one of the Deputy Director positions on a secondment basis. This would serve to draw on the considerable resources and experience of Cayman's influential Private Sector.**

#### Policy and Strategies

- 3.12 Until Hurricane Ivan in September 2004, the policy and strategies in respect of risk reduction and mitigation were predominately targeted towards hurricanes. There were some sector related plans in place e.g. airport crash, oil spills, etc, but there was no strategy for dealing with a wider range of natural hazards (earthquakes, tsunamis, etc) or man-made disasters (hazardous materials, cruise ship accidents, etc). Following the devastation caused by Ivan, and the painful but successful recovery operations, CIG decided that a broader approach was needed. It was recognised that Cayman would need to develop a comprehensive suite of contingency plans for a wide range of hazards and scenarios, and would need to invest more heavily in new buildings constructed to higher standards, additional shelters, new plant and machinery as well as the latest equipment and technology for risk mapping, communications and response capability.
- 3.13 The HMCI and its new structures, provides a timely opportunity to advance disaster risk reduction in the Cayman Islands, to address deficiencies noted in this report and to meet the high expectations of many of those interviewed by the DMCRT. The strategy, although still being defined, needs to be inclusive of all sectors of society; private sector involvement should be organised in collaboration with the Chamber of Commerce, and the considerable resources of NGOs, churches and community leaders needs to be harnessed.
- 3.14 The DMCRT has been impressed by the commitment of CIG and its senior officials to tackle a formidable and challenging agenda, but has some concerns that without strict prioritisation and additional resources where necessary, the programme could be subject to slippage.

- 3.15 To be effective, there needs to be a clear articulation and understanding of the new structure. In particular, explanations must be given as to how roles and responsibilities under the old NHC will integrate and merge with the new system. **A strong PR/marketing campaign is recommended for the HMCI.**
- 3.16 With the Hurricane season only four months away, **it is recommended that early prioritisation is given to ensuring preparations under the guidance of the new system.** This task will be made very much more difficult if the vacant HMCI positions are not speedily filled.
- 3.17 The National Risk Management Strategy put forward by the Director of HMCI (“A Strategic Framework for Disaster Risk Management for the Cayman Islands”) is an impressive collection of accepted good practice objectives. It is also ambitious in its scope. But with a reported confusion (in some departments) surrounding HMCI role, and the delay in its start (since NEMA was first considered), HMCI will need to establish its credibility by delivering tangible benefits at the earliest possible time. Strategic objectives and supporting activities should be defined and prioritised.
- 3.18 **DMCRT recommends that HMCI should prepare a yearly work programme complete with delivery dates and specific performance indicators. Individual work programmes should be introduced for each of the Deputy Directors. Similarly, terms of references should be prepared for each of the National Hazard Management Council new Sub-Committees. Each Sub-Committee, as they become functional, should decide their own prioritised work programmes under HMCI direction and guidance.** Such mechanisms for performance monitoring and accountability may already be under consideration. Even if in place, the effectiveness of the HMCI will only be maximised if there is appropriate commitment at all levels.
- 3.19 The commitment within the December 2006 strategic framework to establish international partnerships and exchanges with other Overseas Territories, regional and international organization is welcomed and considered necessary. The DFID Disaster Risk Reduction Adviser is particularly keen that good practice is shared between the Territories and that collective approaches can be made to regional/international agencies so their risk reduction programmes are more driven by national strategies and requirements. The Adviser remains available to offer advice (personally or from other sources) and as a conduit for communication with other UK Government Departments involved in Disaster Risk Reduction. It is hoped the HMCI will make a valid contribution to advancing disaster risk reduction within the OTs and the region.
- 3.20 Every effort needs to be made to involve the private sector, NGOs, Churches and voluntary organisation in the new agenda for hazard management. **It is recommended that formal links be established with the Chamber of Commerce and other leading groups who could provide a conduit through to their members and the Community at large.**

#### Legislation and Emergency Powers

- 3.21 “If at any time there has been an earthquake; or there has been or there is an

immediate threat of a hurricane, fire, outbreak of pestilence, outbreak of infectious disease or other calamity; or there is in effect in relation to the Islands a tropical storm watch or warning, or a hurricane watch or warning; or action has been taken or is immediately threatened by any person or body of persons of such a nature and on so extensive a scale as to be likely to endanger the public safety or to deprive the community or any substantial portion of the community of supplies or services essential to life; the Governor may, after consultation with the Leader of Government Business by “proclamation of emergency” declare that a state of emergency exists.” (Emergency Powers Law (2006 Revision) Part II – Public Emergency Section 3 (1). **It is understood that the Governor always has a drafted proclamation available to enact this provision of the law and we recommend that this practice continues.**

- 3.22 Section 4 of the Emergency Powers Law enables the Governor, after consultation with the “National Hurricane Committee” and any other relevant agency, by order declare an area to be an unsafe area and may, in that order or a subsequent order, direct that the unsafe area be evacuated by a specified time. A constable may arrest any person he reasonably suspects of committing an offence in relation to compulsory evacuation areas. For this section to be truly preventative, there must be adequate, safely located, hurricane shelters. During Ivan one shelter became flooded and the occupants needed to be rescued and moved.
- 3.23 Under Section 5 of the Law, the Governor may make regulations (Emergency Regulations 2004) for securing the essentials of life to the community, preservation of the peace, securing public safety, defence of the islands, maintenance of public order, the suppression of mutiny, rebellion and riot; for securing and regulating the supply and distribution of food, water, fuel, light and other necessities; and for maintaining the means of transit or locomotion and for any other purposes essential to the public safety and life of the community.
- 3.24 Hazard Management Cayman Islands (HMCI) was launched on Wednesday 17<sup>th</sup> January 2007. It is intended that the organisation and functions of the agency (see “A National Disaster Risk Management Agency for the Cayman Islands”) will be enacted in legislation. The DMCRT was informed that a draft Bill was with the Attorney General’s Chambers but we were informed that the bill to be named “The Disaster Preparedness and Emergency Management Bill 2005” (dated 14<sup>th</sup> July 2005) does not address the role and functions of HMCI. The Attorney General advised that there were ‘windows’ on the legislative timetable that could be used for the bill to become law in either February or April 2007 but detailed instructions from the Director HMCI would be required urgently for this to be achieved. The Attorney General also indicated that he would make a ‘draftsperson’ available for such legislation. Given the need for public consultation, these early windows may not provide sufficient time but **it is strongly recommended that Director HMCI engages with the Attorney Generals Chambers to provide the detailed instructions required as a matter of urgency so as to ensure that appropriate legislation is enacted before the beginning of the 2007 Hurricane Season.**
- 3.25 The purpose of the Bill should be to give the National Hazard Management structure and the HMCI legal authority. **It is recommended that the Bill includes provision for the regular updating of National Plans (all hazard) and policies.**

**Consideration should be given to the inclusion of a yearly HMCI performance report.**

#### **4 Plans and Resources**

##### Plans

- 4.1 The DMCRT requested copies of all the main contingency plans and the following were made available either before or during the review:

National Security Committee Crisis Plan (Final 4<sup>th</sup> Draft – 23<sup>rd</sup> August 2004)  
The National Hurricane Plan 2006  
Sister Islands Hurricane Plan (Part 2 of NHP)  
Cayman Islands Influenza Pandemic Contingency Plan  
Cayman Islands Government Continuity Plan (Finance & Economics)  
Joint Communications Service Strategic and Operational Plan  
GIS Airport Emergency Communications Plan  
Department of Tourism 2006/7 Departmental Disaster Control Plan  
Hurricane Shelter Management Training Manual 2006  
Governor's Office Disaster Plan  
National Hurricane Plan 2006  
RCIPS – Hurricane Contingency Plan 2006  
RCIPS – Crashed Aircraft Plan  
RCIPS – Crisis Management Plan 2006  
RCIPS – Employee Crisis Plan 2006  
RCIPS – Mass Fatality Crisis Plan 2006  
RCIPS - A Contingency Plan to Counter Aircraft Hi-Jacking Situations and Aircraft Bomb Alerts 2006  
RCIPS - Contingency Plan to deal with Escaped Prisoners 2006  
RCIPS – Contingency Plan to deal with Serious Public Disorder 2006  
Fire Service Major Disaster Plan – Section 6 Cayman Islands Fire Service Operational Orders  
CIAA Hurricane Plan 2007  
Port Authority Hurricane Plan 2007  
Port Authority Mass Casualty Contingency Plan

- 4.2 All of the government agencies/departments and utilities companies interviewed assured the DMCRT that they had Hurricane and/or Business Continuity, or similar plans, even if not submitted to the team. Many promised to provide the team with electronic copies. **It is essential that the HMCI requests and retains copies of all hazard/disaster management plans and that the plans are updated annually.**
- 4.3 The Cayman Government maintains an excellent web site at [www//caymanprepared.ky](http://www.caymanprepared.ky) where some of the above plans, and a number of others, can be accessed. **The DMCRT recommends that HMCI regularly up-dates and maintains the web site, and gives it more robust marketing, so that members of the Community use it automatically as their first point of contact for disaster information.**
- 4.4 Cayman has a wide range of hazard specific and sectoral contingency plans, most written to very high standards. Four aspects are immediately noteworthy:
- The most extensive and well developed is the National Hurricane Plan. Roles and responsibilities are clearly articulated for functional and sectoral requirements. Agencies have developed supporting operational procedures. It is encouraging that lessons learnt from Hurricane Ivan have been incorporated into the 2006 revision, both on an individual plan or agency basis, but also through the creation of new committees.
  - There is a CIG “Continuity of Government (CoG) Plan” under the direction and management of the Chief Secretary. Introduced to a common format, the Chief Officer (formerly Permanent Secretary) of each department is required to draw up and maintain a CoG Plan for the running of the department, which in turn forms part of the national CoG Plan. Examples were seen in all Government departments, who typically have allocated a disaster management focal point to develop the plan. The Chief Officer has this important requirement as part of his/her formal job description/performance plan. This system appears to have engendered an obvious culture of awareness within Government Departments on the need to have comprehensive plans and to maintain them on an annual basis. Although the plans focus primarily on hurricanes there is the potential, and requirement, to incorporate provisions for other hazard types in the future.
  - There is systematic consensus of the importance of risk reduction and contingency planning to Cayman’s prosperity and sustainable development. Numerous examples were found of measures being introduced to address other risks on a sectoral basis or departmental basis. There is a clear need for these activities to be co-ordinated. There is widespread support for the HMCI and the adoption of a multi hazard risk reduction approach.
  - Resource allocation for the HMCI, the new EOC, the protection of new Government buildings to Category 5 standards and the replacement of infrastructure and materials damaged by Ivan, are testament to a strong political commitment for disaster risk reduction.

## National Disaster Plan

- 4.5 One of the obvious deficiencies is the absence of an overarching National Disaster Plan, or framework, which sets out guidance for the planning for and mitigation of all hazards. Parts of the National Hurricane Plan could form the basis for the National Plan, although most of its provisions refer to hurricane preparations, emergency response and short term relief.
- 4.6 **The DMCRT recommends that the development of a National Disaster Plan should be made an early priority for the new HMCI.** The Plan should allocate responsibilities for all hazards, at all stages, with references to supporting plans and mechanisms e.g. a recovery plan, national disaster mitigation strategy, etc.

## Major Incident Plan

- 4.7 In 2004, the National Security Committee considered a draft Crisis Management Plan for the handling of all major incidents, including terrorism and chemical and biological weapons. Predominantly arranged around co-ordination between the emergency services, the plan does not appear to have been adopted (possibly because of the onset of Hurricane Ivan). There was some evidence during the Exercise on Friday 19 January 2007 (see Section 5) that not all agencies involved were fully aware of the command structure at the scene of the accident, or procedures to co-ordinate a multi-agency response.
- 4.8 **The DMCRT recommends that the Governor considers the requirement for a Major Incident Plan to provide an agreed framework for inter-agency co-operation.**
- 4.9 It is noted in the very thorough “A National Disaster Risk Management Agency for the Cayman Islands” document dated January 2007 that HMCI will, during operations, be “responsible for co-ordinating all operations.” **The DMCRT recommends that clarification is given to the respective roles of lead responders and HMCI to avoid the potential for confusion or inter-agency rivalry.**

## Hazard Specific Plans

### National Hurricane Plan (NHP)

- 4.10 Regular revision and testing of this plan, along with commitment and resource allocation, helped reduce losses and aided recovery from Ivan. Noted deficiencies have since been addressed by the 2006 plan revision and the creation of new sub-committees and supporting operating procedures. Although the National Hurricane Plan provides an organisational template for the management of the response to other hazards, there are some aspects that require consolidation.

- 4.11 Some interviewed were uncertain of their roles under the 2006 revision, stating that although some activation took place for Tropical Storm Ernesto, the plan has not been sufficiently tested. Furthermore, there is some confusion how the plan will be affected by the introduction of HMCI.
- 4.12 Although others were of the opinion that the 2006 revision would not affect their responsibilities (“we know what we have to do”), **articulation of the role of the HMCI vis a vis the NHP is recommended, as well as testing the plan well in advance of the upcoming hurricane season.**

#### Other Hazard Plans

- 4.13 Considerable enthusiasm is evident for the further development of hazard specific contingency plans and in some cases contributory actions are already underway, eg with the review of marine search and rescue plans, preparations for a possible Cuban influx, etc. But it is also the case that some plans, whether major incident or oil spill, require testing and updating.
- 4.14 The December 2006 HMCI document correctly states that “credible threats which must be addressed include major transportation accidents, earthquakes, major power failure, hazardous material incidents, major fires and major medical emergencies.” The strategy rightly recommends conducting risk assessments to determine investments and requirements for risk reduction.
- 4.15 **Whilst appreciative of this approach, DMCRT recommends that HMCI should give priority to the investigation and development of hazard specific plans to cover earthquake, tsunami, large scale evacuations (especially aimed at tourists) and cruise ships.** The latter needs to be buttressed by plans for moving large numbers of visitors (cruise ship passengers, holiday-makers, short term residents and as appropriate members of the Community) off island in the event of a large scale incident.
- 4.16 The development of hazard specific plans (and accompanying risk reduction strategies) will depend on the allocation of responsibilities to lead the process, preferably by a lead agency, according to hazard type.

#### Sectoral Plans

- 4.17 Many of the sectoral (or generic function) plans, eg shelter, relief distribution, public information, are based on the requirements of the NHC. Most do not incorporate responsibilities or actions to be taken for other threats. It is believed that many, along with the organisational structures responsible for them (e.g. NHC Sub-Committees) can be adapted to include actions specific to differing hazard types. For example, those given responsibility for shelter from hurricanes could be responsible for post earthquake arrangements.
- 4.18 Although the following section will comment on issues relating to the plans as they currently exist, whether for hurricane or other scenarios, it is worth mentioning that

many interviewed were confused whether they would retain their responsibilities with the shift to a multi hazard risk reduction approach.

- 4.19 **For sector plans, the DMCRT strongly recommends articulation of the planning approach and formats to be used. Whilst the scope of disaster planning is expanded, it is vital that the effectiveness of hurricane preparations is not compromised.**

#### Co-ordination

- 4.20 Command and control procedures have been strengthened since Hurricane Ivan. The 2006 hurricane plan revision clearly sets out leadership and co-ordination mechanisms, as does the Risk management structure prepared by HMCI and agreed in January 2007. Under emergency conditions, the Governor has lead authority and has recourse to the use of emergency powers, as required. It is anticipated that these will be exercised after due consultation with the Leader of Government Business, and the National Hazard Management Executive, as and if conditions allow.
- 4.21 The structure of National Hurricane Committee direction and co-ordination mechanisms was well understood. Similar clarity must be attained for the new risk management structure. **The role of the Director in the new NHMC should be made apparent. The role of the new council in relation to the proposed operations team (when under emergency conditions) should be defined.**
- 4.22 The current hurricane plan places responsibility for the supervision of Emergency Operations Centre (EOC) operations on the Chief Secretary, assisted by the Deputy Chief Secretary. **The separation and delineation of responsibilities is not fully articulated at present and greater clarity is required, not only for the response to hurricanes, but also for all other hazards. Such clarity should be provided, and duties and responsibilities practised before the new hurricane season.**
- 4.23 **It is recommended that the Chief Secretary assumes responsibility for the overall direction and response to all hazards under the direction of HE The Governor, and for this to be make clear in all relevant plans and documents.**
- 4.24 **The role of the Director of HMCI will also need to be clarified in respect of the EOC. It would appear logical to the DMCRT that the Director should assume the role of the Director of the EOC when activated.**

#### Forecasts and Warnings

- 4.25 Cayman Islands have a demonstrated capacity to monitor effectively tropical storms. The DMCRT were informed that public information, and in consequent public confidence, was thorough and appreciated during Hurricane Ernesto. The use of the TAOS storm surge modelling and predictive impact programme should allow further translation of NHC (and best track) forecasts into anticipated impact on the Cayman Islands.

## Evacuation Plans

- 4.26 On island evacuation procedures have been assisted with the preparation, by Lands and Survey, of flood area inundation maps. With the new TAOS/GIS system, scheduled to be fully functional in June 2007, CIG has the potential to produce risk maps for each district in the Cayman Islands, including the extent of flooding in the worst case scenario. **It is recommended that these new techniques should be used to determine which districts should be evacuated and which shelters should be opened.**
- 4.27 One of the contributory factors for exceptionally low casualties and fatalities during Hurricane Ivan was Cayman's ability to evacuate over 5,000 persons before the onset of the hurricane and around 10,000 immediately after Ivan. This reduced by a considerable margin the numbers requiring shelter, and social assistance, during the early part of the recovery phase, at a time when Cayman's resources were stretched to the limit. Since Ivan, there has been an increase in population and in the numbers of tourists visiting the island, including the large numbers who come as day visitors from cruise ships.
- 4.28 It is important therefore that robust evacuation plans be put in place for pre and post disaster situations which build on the experience gained in Hurricane Ivan. All the major agencies (Airport Authorities, Cayman Airways, Police, Immigration, Customs, HMCI, etc) will need to be involved in drawing up the necessary plans. **It is recommended that such a plan be given a high priority and be in place before the next hurricane season.**
- 4.29 There is no substitute for sufficient shelter space on all the islands. It is possible that a storm either forms near the Cayman Islands or unexpectedly rapidly intensifies to place those who decided not to evacuate at risk. Hurricane Wilma intensified from a Category 1 Hurricane to a Category 5 monster within twelve hours. The prediction was for strengthening to Category 2 over a twenty-four hour period.
- 4.30 At present, evacuation plans may be hampered by insufficient public awareness, particularly amongst tourists. NHC will only consider advising persons to leave the islands 48 hours in advance. With a large projected increase in visitors to Cayman, the DMCRT questions whether 48 hours allows sufficient time to organize a large scale evacuation, especially if a storm picks up forward speed. **It is recommended that Cayman moves to a 72 hour timescale which is in line with many other Caribbean countries.**

## Shelter

- 4.31 The shelter evacuation programme in Hurricane Ivan was well managed and was deemed a success by external observers. Cayman has set a very high standard from which other OT Governments could develop best practice. The hurricane shelter procedures are comprehensive and are a model for other territories. In the past Cayman has welcomed participants from other OTs on shelter training.

- 4.32 DMCRT is informed that all shelters have been inspected by PWD post-Ivan, strengthened as required and equipment improved (e.g. up-rated generators, increased fuel storage capacity and improved cooking facilities). The shelter in Bodden Town is currently being renovated and the floor level raised to prevent flooding on future occasions. A new civic centre is also planned for Bodden Town to meet Category 5 standards. It is widely accepted by CIG that more shelter is required, and that it must be built to Category 5 Hurricane standards. There are plans for three new High Schools which we were informed will incorporate indoor sports facilities designed to serve as large-scale shelter.
- 4.33 The Government also plans to build a new airport terminal to Category 5 Hurricane standards, which it plans to ear-mark as an emergency, stand-by shelter facility for up to 6000 tourists who could not be pre-evacuated, or provided with places in Government run shelters. It needs to be recognised that the airport will be a critical facility for receiving emergency teams and equipment post-disaster and evacuating non-essential personnel and tourists, therefore any plans to use the facility for sheltering large numbers of evacuees will need to factor this into the shelter plan. There will also be considerable security issues that will need to be considered.
- 4.34 It will take time before this additional shelter space is available. At present public shelter space is for approximately 4,100 persons. Public Works Department (PWD), responsible for assessing shelters, has indicated in a planning paper that the target requirement should be closer to 13,000, of which circa 6,000 shelter places would be earmarked for tourists in the new airport terminal building when completed. Cayman has many private sector buildings, including hotels, which offer the possibility of additional shelter places.
- 4.35 **It is recommended that the Government should open a dialogue with the private sector, including with the major hotels, to identify any spare capacity that may exist which could be used on a payment basis in the event of a shortfall in Government shelter places.** The Governor made an initial attempt to open discussion in 2006 but without much success but this should not discourage a further attempt. Under emergency powers in the wake of a devastating disaster, hotels could be requisitioned to provide shelter for homeless members of the Community. It can be argued that it is in the best interests of the major hotels to have an agreed plan in place with CIG to cover such an eventuality.

#### Health Disaster Plans

- 4.36 The Health Disaster Committee, essentially the same officials who respond to hurricanes and major incidents, has plans for SARs, H5N1 (to be developed further) and mass casualty management.
- 4.37 The depth of contingency arrangements is laudable but further refinement is required to address the deficiencies identified during Ivan. These include further protocols to arrange for relief nurses from overseas as well as the waterproofing of the main generator. Although plans are comprehensive, and the unit demonstrated considerable effectiveness during the contingency exercise, **the DMCRT considers that there is room for further improvement or clarification in the following areas, and**

**recommends that:**

- **Plans should place further emphasis on utilising private sector medical resources.**
- **Medivac arrangements are typically for a small number of casualties. These should be extended to provide for significantly higher casualty figures resulting from other major incidents (e.g. air crash, cruise ship accident, etc).**
- **There was some confusion why a separate committee had been established for H5N1. Although PAHO clearly saw this as an opportunity to establish influenza planning, consideration should be given to streamlining committees together.**

4.38 The Chief Medical Officer (CMO) referred to earlier confusion as to whether in a crisis, he should be keeping PAHO and DFID fully informed of developments. The CMO has now decided only to inform PAHO of medical needs. If the systems in place function properly, there should be no breakdown of communication; PAHO will inform DFID of any Cayman situation. At the same time, DFID should be receiving information and updates from Cayman's National EOC, which will enable humanitarian health concerns to receive prompt attention.

#### Relief Distribution

4.39 Considerable thought has gone into how the Essential Relief Services will function. In respect of post Ivan distribution mechanisms, this is acknowledged. Apart from being informed that the committee has received supplies management training, no other plans were submitted. It is uncertain how the District Committees will function, or whether they are all up to appropriate standards. Although there is a strong indication that the Red Cross will be involved in relief distribution, this has yet to be defined. **A proposed MoU between CIG and the Red Cross is still to be signed, and the DMCRT recommends that this should be re-visited.**

4.40 **The findings of the National Assessment of Living Conditions should be used to inform relief distribution plans (and those for risk reduction).**

#### Volunteer Organisations

4.41 The DMCRT was informed of the dialogue between the Chief Secretary and the voluntary sector but at present this does not appear to have led to an increase in voluntary sector involvement in the hurricane plan (and by extension in all other hazard responses). The Red Cross had previously agreed to act as co-ordinator for the voluntary sector, but HMCI has subsequently decided to allocate an officer to co-ordinate voluntary sector inputs. The Red Cross is confused by this apparent change of direction and clarification is required of respective roles. The Cayman Red Cross Branch is part of an important and influential international organisation with world-wide relief capability and capacity, **and the DMCRT recommends that HMCI should consider all means for harnessing their potential in Cayman.**

## International Relations

- 4.42 Cayman Islands understanding of, and involvement with the international system, whether for risk reduction or emergency response, has typically been partial, which became apparent during and after Hurricane Ivan. There is now an international aid committee and a committee responsible for impact assessment. The Director of HMCI's familiarity with the international system will enable the necessary linkages to be formed and ensure correct information flows to facilitate assistance when required. Commitments to collaborate with CDERA and other OTs, as expressed in the December HMCI strategy paper, are well considered.
- 4.43 Many of those interviewed during the visit re-iterated previous requests for clarification of the assistance that could be expected from the UK in any future disaster. HE The Governor circulated a paper in 2006 which outlined UK response capabilities and gave information on the scope of possible assistance. This paper is attached at Annex D. The paper highlights the positive changes introduced by the UK, many as a consequence of the Ivan experience. Critical to accessing UK or international assistance is a requirement to objectively articulate humanitarian or recovery needs.
- 4.44 This notwithstanding, the DMCRT needs to record that at senior ministerial and official level, there is still a serious concern about the level of assistance Cayman could expect from the UK in a future worst case scenario. **This issue is of such critical importance to the Governments of the Overseas Territories that the DMCRT feels compelled to recommend that a further attempt be made to explain the types and scope of assistance that an OT could expect to receive from the UK.**

## Media Management and Public Information

- 4.45 Considerable effort has been invested by the NHC since Ivan to develop mechanisms to provide timely public awareness and safety information whilst also protecting the Cayman Islands' image overseas. A Joint Communication Services Committee was established as a sub-committee of the NHC to co-ordinate consistent messages with representatives from Government Information Services, Tourism and Finance departments. Although public information was reportedly extensive during the preparations for Ernesto, the DMCRT found some uncertainty with respective responsibilities within the sub-committee, and in particular how differing agendas could be reconciled and who had leadership. A critical issue was whether responsibilities altered if dealing with local or international media. HE the Governor, with responsibility for external affairs and internal security, and the LoGB and the Cabinet, with responsibility for finance and tourism, must have ultimate responsibility for messages and information intended for international consumption. These aspects must be addressed if public information is to be consistent and credible. **DMCRT recommends HMCI places an officer (allocated the role of public awareness in the strategy document) within the Joint Communication Services Committee (JCSC) to offer technical advice and guidance.**

## Sister Islands Plans

- 4.46 The DMCRT visited Cayman Brac and met with the District Commissioner and the Sister Islands Emergency Committee (SIEC). The Committee meets regularly and has well developed hurricane plans, which were all reviewed in 2006. The DMCRT was informed that a commitment was given that the SIEC would be the mechanism to respond to any disaster threat, or event, in the Sister Islands. One of the greatest strengths of the Committee is the close working relationship they have with each other and other members of the community.
- 4.47 Cayman Brac is considered locally to be more secure in a hurricane than either Grand Cayman or Little Cayman, primarily because of the Central Bluff which rises to around 150 feet at its highest point. Shelter is provided at the Aston Ruddy Civic Centre and in the West End School, with an official total of 380 places for a population of around 2,000. During Ivan these shelters held up to 580 persons. Further shelter is available in caves which we were informed took over 500 persons during Ivan.
- 4.48 The Civic Centre has been renovated and strengthened to Category 5 Hurricane standards in the last 5 years and provides excellent accommodation and support facilities. A new annex is close to completion which has been identified for housing medical cases and aged and infirm members of the community during a hurricane. Additional shelter places could also be found by using the new Children's Day Care Centre next to the Civic Centre and the Retired Seaman's Association facility across the road from the Centre. The central administration building is reported to be constructed to Category 5 Hurricane standards and could also provide shelter for around 100 persons *in extremis* on the upper floor. The DMCRT was also informed that many families use the extensive network of caves for personal and family shelter (reportedly some 600 persons preferred caves during Ivan). Shelter capacity is therefore extensive. It was agreed during the meeting that it would be useful to make a more thorough assessment of total shelter space as there are indications that shelter needs may be increasing; prior to a hurricane, members of families living on Grand Cayman return to Cayman Brac to shelter from the hurricane, thus increasing the population by a significant margin.
- 4.49 The provision of shelter, along with the proposed re-location of critical infrastructure (for example the power generation plant) to high ground and building of new roads to areas that may be flooded, indicate an awareness of risk. However, there are some areas that could be consolidated.
- 4.50 Communications remain a potential problem. Although there are two satellite telephones on the Brac (one owned by CUC), the telephone and internet system is trunked through Grand Cayman. Further satellite telephone should be considered along with a B-Gan internet system (as possessed in the EOC). Local VHF radio coverage is weak as radio signals are interrupted by the Bluff. **A further repeater or directional aerials need to be considered. HAM radio equipment and antennae should be repaired and maintained.**

- It was noted with concern that the Police Station on Cayman Brac is located in a flood prone area, and is therefore extremely vulnerable. It is important that the RCIPF has plans for relocation in the event of forecasts of flooding to the area. There has been no training or practice of a multi agency response to a major incident. This is of growing importance now that cruise ships have started to include Cayman Brac on their schedules. **It is recommended that such training is put in place.**
- Committee members stated that communication and involvement with Grand Cayman NHC could be improved. Although progress has been made with the new teleconference link to the EOC, there was a sense that the SIEC would like to have more autonomy, for example in determining when shelters would be opened on the Brac. **The DMCRT recommend that this should be considered.**
- The Emergency Committee raised with the DMCRT the present arrangements for the evacuation of Little Cayman. The current arrangement is to use 19 seater Twin Otters to evacuate persons to Grand Cayman, which given the distance involved, and the availability of suitable aircraft, results in a maximum evacuation capability/capacity of less than 50 persons per hour. The Committee would prefer the plan to provide for persons to be evacuated from Little Cayman to be brought initially to Cayman Brac, where they could subsequently be air lifted by larger aircraft to Grand Cayman, or direct to Miami. **The DMCRT sees merit in the proposal and recommends that it is explored further.**

#### Recovery Planning

- 4.51 The revision to the National Hurricane Plan now includes some aspects to enhance the timeliness and effectiveness of a national recovery to a major disaster. Plans are now in place for debris management (a major concern post Ivan) and procedures are in place to collate damage and losses, with persons trained in the ECLAC methodology.
- 4.52 However, there is uncertainty over how a recovery would be organised. In preparation for the 2005 and 2006 hurricane seasons, LOGB/CIG took responsibility for developing a recovery planning mechanism. **It is recommended that the Recovery Sub-Committee to the proposed new National Hazard Management Council should finalise its working and operating procedures as a priority.**

#### Mitigation

- 4.53 As Cayman Islands has no explicit disaster risk reduction strategy, the creation of the HMCI is a welcome opportunity to ensure appropriate all hazard risk management throughout Caymanian society. The approach being suggested by HMCI is considered robust and realistic. Risk reduction, if appropriate and cost effective, must be guided by appropriate risk assessments. For this reason the DMCRT was impressed by GIS hazard modelling system being developed by GIS. **Although Lands and Survey have taken a lead in developing the system they have contributed more resources than initially anticipated and, in consequence, are keenly looking forward to HMCI involvement to promote the system, and advance its application to development and risk reduction planning. Lands and Survey would like to**

**volunteer a member of staff to work in the EOC when activated to assist with hazard maps, etc. The DMCRT recommend that this be pursued.**

- 4.54 Possibilities for other OTs to adopt the TAOS/Lands and Surveys storm surge modelling programme are being investigated. To this end offers by Lands and Survey to share advice are appreciated. DFID OTD has agreed funding to the Turks and Caicos Government to invite CIG Land and Survey to visit TCI to offer technical assistance on incorporating hazard risk mapping into the national GIS system.

#### Critical or Key Infrastructure Resilience

- 4.55 Many critical facilities failed or were compromised during Hurricane Ivan. The DMCRT was repeatedly assured of CIG's commitment that critical facilities, Government buildings and infrastructure will now be build to withstand Category 5 winds and be located in comparatively higher locations.

- 4.56 The airport suffered some structural damage but was quickly re-opened and provided the key entry point for emergency teams and supplies. There are plans to develop and extend the terminal building to Category 5 Hurricane standards. The port suffered from chronic lack of container space following Ivan; additional quayside space has been acquired but the port would continue to be a bottleneck in the future unless there was a considerable expansion of its facilities. CIG has considered plans in the medium to longer term to relocate the port away from its location in the heart of Georgetown, but the cost is at present prohibitive. Work will start shortly on two finger piers to accommodate cruise ships alongside which would facilitate a faster turn around time for container and cargo vessels carrying essential supplies and equipment but concerns have been expressed about the vulnerability of the piers in very heavy seas. An all weather port on the existing site might provide the optimum solution. Road access within Grand Cayman will be improved when the Eastern Highway is completed.

- 4.57 Critical facilities for command and control failed during Hurricane Ivan, which made the task of managing the crisis considerably more difficult. The ground floor to the EOC (on the upper floor of the Fire Station) flooded to a depth of two feet preventing access or egress (the Governor and most of the EOC senior command were trapped in the building for around 36 hours). The RCIPF Headquarters and the main Georgetown police station had to be abandoned and while the latter has been repaired to higher standards, the HQ building had to be condemned and is to be demolished. Government House, formerly the Governor's fallback HQ, had to be evacuated and given its beach-front location, cannot be considered as a safe command centre in the event of hurricanes or serious flooding. Virtually all the Fire Services and Royal Cayman Islands Police Force vehicles were damaged beyond repair during Ivan from flooding and have needed to be replaced at considerable cost. Contingency plans are now in place to move vehicles to higher ground in the event of further hurricanes or flooding. The DMCRT also was informed of plans to provide makeshift shelter for the reconnaissance aircraft used to provide an aerial survey of the damage immediately following a disaster.

- 4.58 CIG has approved plans for a new EOC on higher ground in Georgetown which will

also house the Emergency Telephone Service (911- Cayman equivalent to 999) and the Cayman Meteorological Service. A new headquarters for the Cayman Fire Service is to be constructed at Bodden Town with provision also for sections of the RCIPF, although the senior police command will remain for the short-term in the new headquarters suite located in Elizabethan Square. A new Police Headquarters in Georgetown is planned for 2011 and will provide the RCIPF with a long over-due police command and control facility which at present is not available to them. An interim RCIPS Command and Control Centre is being established in new RCIPS accommodation located at Governor's Square.

- 4.59 The structure of Cayman's main hospital was largely undamaged during Hurricane Ivan and the problems of flooding in the emergency generator plant room are currently being addressed. The hospital is well staffed (44 doctors) and is equipped with modern diagnostic equipment. It has 120 beds. It has a fleet of 4 ambulances with two older vehicles in reserve, manned by a fully trained team of para-medics.
- 4.60 Co-ordination and policy direction should be enhanced by the hurricane resistant facilities in Citrus Grove where the Governor and Cabinet are expected to re-locate to in the event of a hurricane. There are dedicated communication links including video-conferencing capabilities to the EOC and Sister Islands.
- 4.61 The new HMCI is accommodated in a modern building in Georgetown which survived Ivan with minimal damage. The offices of HMCI are equipped with all the latest technology and communications equipment, including a facility to hold tele-conferences with most Government agencies.

#### Resources (Human, Financial and Other)

- 4.62 Members of the National Hurricane Committee have served their Community with distinction while also filling demanding full-time positions in key Ministries. Some have carried the onerous burden of the post-Ivan relief and continuing recovery programme without much of a break. Not surprisingly, there are now signs in a number of areas that the pace of required reform has slowed and that a fresh direction and re-energised approach is required. The new HMCI should provide the stimulus and direction to lead a programme of change away from a single hazard (hurricane) to an all hazard approach.
- 4.63 The Government's post-Ivan recovery programme severely depleted CIG's reserves. Although many Government assets were insured, it is uncertain whether reserves have been fully restored to pre-Ivan levels. We were informed that there is a legal requirement for the CIG to maintain a cash balance sufficient to fund 90 days of normal Government business, which is estimated to be approximately C\$90m. Despite the ECLAC report's estimation of loss (presented in December 2004), the Cayman economy has continued to expand with GDP growth estimated to be between 3-4% over the next three years. Cash reserves, insurance and strengthened Government infrastructure, suggests CIG should be in a better position to effect a recovery than before Hurricane Ivan. But the Cayman Economy is heavily dependent on external forces (e.g. strength of the US economy for tourism, international financial indicators for competitiveness of its financial services, etc) and any global

downturn could have a damaging effect on Cayman's ability to fund any future massive reconstruction programme.

#### Financial Planning

4.64 Further risk transfer and financial mechanisms are under consideration. The government has expressed an interest in the Caribbean Catastrophe Risk Insurance Initiative to which DFID has contributed US\$10 million as part of start up capital. We understand that the Government will join the scheme when premiums have been established.

4.65 It was suggested to the DMCRT at senior level that the CIG should establish a dedicated fund for the response to disasters at a level of 1% of Government revenue per year. This would need Cabinet consideration and approval but it merits serious consideration.

#### Communications

4.66 During Hurricane Ivan, virtually all communications to and from Cayman were interrupted and it was difficult for HE The Governor to contact HM Government and external agencies. There has subsequently been considerable investment in new and more robust communications systems, including the purchase of different types of satellite communications systems that include internet connectivity. **It is critical that all staff develop a detailed knowledge of the new communication systems to enable them to use them under emergency conditions.**

4.67 The EOC, in addition to numerous satellite telephones also has a satellite internet system which will facilitate rapid documentation transfer. The FCO Overseas Department Directorate Law Enforcement Adviser on deployment into Territories in response to disasters, including pre-deployment in respect of hurricanes, also carries extensive satellite communication equipment.

#### Security

4.68 Security of the Territory primarily falls under the responsibility of the Royal Cayman Islands Police Service (RCIPS) supported and aided by HM Customs & Excise (HMCE), Immigration Department (ID), Prison Service (PS), Cayman Islands Airport Authority (CIAA) and Cayman Islands Port Authority (CIPA).

4.69 The Commissioner of Police reports directly to HE The Governor, who *inter alia* has responsibility for defence, external affairs, internal security, police and the civil service. The RCIPS together with the ID and PS falls under the Cayman Islands Government Internal & External Affairs Portfolio/Ministry headed by the Chief Secretary. HMCE falls under the Finance & Economics Portfolio headed by the Financial Secretary with the CIAA and CIPA under the Tourism, Environment, Investment and Commerce (TEI&C) Portfolio headed by the Minister responsible for TEI&C.

4.70 A National Security Committee (NSC) chaired by HE The Governor determines an

annual National Threat Assessment. The 2006 assessment, in addition to crime and terrorism threats, addressed all hazard management threats such as Avian Influenza, Flu Pandemic, Cruise Ship Health Hazards, Food Contamination, Climate Change, Maritime Oil Spills, Explosion/Fire at Oil Tanks and Propane Gas Depot.

- 4.71 **With the launch of HMCI, there is a very strong argument that the hazard management issues/threats which were addressed by the NSC in 2006, should be transferred to HMCI.** This would avoid any possibility of duplication of effort. The Director HMCI would be responsible for updating the NSC as requested on the delivery of preventative and mitigation control planning and strategies in respect of such hazard management threats
- 4.72 There is in place a drug control strategy to address the identified drug importation and exportation threat to the territory. All threats identified in the National Threat Assessment should be subject to preventative and mitigation control planning and strategies.
- 4.73 The Commissioner of Police, Collector of Customs, Chief Immigration and Commissioner of Corrections & Rehabilitation/Director of Prisons are all fully aware and cognisant of their individual organisations roles and responsibilities in responding to the various types of hazard and disaster. It is imperative that all are included in the all Hazard Management planning and response process. **It is noted that the Collector of Customs, Chief Immigration and Commissioner of Corrections & Rehabilitation/Director of Prisons do not appear in the proposed membership of the NHMC; given the serious problems that arose with law and order following Ivan,** it is recommended that they be appointed to the NHMC. Post Hurricane Ivan instances of ‘looting’, prison escape and associated potential prison disorder, vulnerability of security at customs warehouse and depots, food, water and petrol distribution centres/petrol stations have all been raised as significant security concerns with the DMCR. The Commissioner of Police is fully aware of these concerns acknowledging that the primary responsibility for preventing and responding to crime and disorder rests under his command of the RCIPS.
- 4.74 One of the main lessons which HMG drew from Hurricane Ivan, was the need to be in a position to provide without delay re-inforcements from overseas to assist local police forces. Security Sector mutual aid from the other Caribbean Overseas Territories and Bermuda in respect of all major incidents is available on request from HE Governor in liaison with the FCO Overseas Territories Directorate (FCO-OTD) and the FCO-OTD Law Enforcement Adviser. HMG has drawn up a MOU on a cost sharing basis between COT Governments and HMG which is expected to be signed in the near future. The MOU includes provision for re-inforcements from other law enforcement agencies such as customs, immigration and prison officers.
- 4.75 All of the agencies have specific disaster, crisis, operational and business continuity plans. However the implementation of these plans needs to be exercised both individually and collectively to ensure effective delivery of the territories emergency and security response and it is **recommended that there is at least one individual and collective exercise per year.**

## 5 Disaster Management Exercise

5.1 An exercise 'Operation Exercise Hammerhead' was held on Friday 19<sup>th</sup> January 2007 between 1030 and 1300hrs to test the Cayman Islands emergency services response and management of a major incident. The exercise was based on a road traffic accident on Linford Pierson Highway between a fully laden fuel truck and a school bus carrying a large number of students, which resulted in a number of dead and critically injured students. The casualties were heroically acted by students from the George Hicks High School.

5.2 The following agencies took part in the exercise:

911  
Cayman Islands Fire and Rescue Service  
Royal Cayman Islands Police Force  
Health Service Authority  
Red Cross  
Government Information Services

5.3 An exercise debrief was held at 1430hrs at the Fire Service Headquarters where the individual agency incident commanders/team leaders reported back on their respective agencies response and management of the exercise and most importantly on the lessons learnt. All of the participating agencies critically examined their performance and identified areas for improvement. The DMCRT have the following observations on 'major incident' response requirements and the exercise.

5.4 Whilst a disaster is defined as "an occurrence causing widespread destruction and distress; a catastrophe", from the perspective of the 'Emergency Services' of police, fire and health (ambulance/paramedic/triage response) their response to disasters is generally dealt with as a 'Major Incident', with a universally accepted definition as follows:

*"Any event or circumstance (happening with or without warning) that causes or threatens death or injury, disruption to the community, or damage to property or to the environment on such a scale that the effects cannot be dealt with by the emergency services, local authorities and other organisations as part of their normal day-to-day activities."*

5.5 Police, fire and health services generally add to the generic 'Major Incident' definition by the addition of the following language:

*"A major incident is any emergency that requires the implementation of special arrangements by one or more of the emergency services, the health services or the local authority for:*

- *the initial treatment, rescue and transport of a large number of casualties;*
- *the involvement either directly or indirectly of large numbers of people;*

- *the handling of a large number of enquiries likely to be generated both from the public and the news media, usually to the police;*
- *the need for the large scale combined resources of two or more of the emergency services;*
- *the mobilisation and organisation of the emergency services and supporting organisations, e.g. local authority, to cater for the threat of death, serious injury or homelessness to a large number of people.”*

5.6 Health services generally add the following language to the definition of major incident:

*“Any occurrence which presents a serious threat to the health of the community, disruption to the service, or causes (or is likely to cause) such numbers or types of casualties as to require special arrangements to be implemented by hospitals, ambulance services or health authorities.”*

5.7 Worldwide, the effective delivery of ‘Essential and Emergency Services’ is extremely demanding, particularly in respect of resource (human & equipment) allocation, with it being recognised that no single organisation will have the appropriate skills and resources to meet the response requirements of each and every type of major emergency. The key to effective arrangements between organisations is the ability to apply sound principles, founded on experience and skills, to the specific problems in hand, particularly in relation to the delivery of the following five fundamental activities which have been identified as being critical to an effective Integrated Emergency Management (IEM):

- Assessment
- Prevention
- Preparation
- Response
- Recovery Management

- 5.8 Effective collaboration, co-ordination and communication between all ‘Essential and Emergency Services’ involved in disaster/major incident preparedness and response is an absolute prerequisite. It is vital if the identified five core activities of assessment, prevention, preparation, response, and recovery management are to be effectively delivered, that a clear understanding of the capability and capacity of the various stakeholders is known and understood by all. Ownership and commitment, in word and in action, by senior managers in the delivery of a National Disaster/Major Incident Preparedness Response Plan, is paramount.
- 5.9 The generic planning arrangements for responding to the wide range of ‘major incidents’ must be cohesive and consistent, whether the emergency arises from natural causes, human error, technical failure, or through criminal acts such as terrorism. All response plans have to be flexible and deliverable; they have to work on a public holiday, at the weekend or in tropical weather conditions, and at any location. Most major incidents are considered to have the following four stages which should be included in response plans:
- the initial response
  - the consolidation phase
  - the recovery phase;
  - the restoration of normality.
- 5.10 Whilst there is no one recognised model response to a ‘major incident’, emergency and essential services should maintain a state of readiness so that they can provide a rapid initial response, having in place standard recognised emergency procedures and practices which can be activated at short notice. The response will need to vary just as the nature and effects will vary. Nevertheless, many responses require a combined and co-ordinated operation, and certain features will be common to a variety of different eventualities:
- the basic objectives of the combined response will be similar on each occasion;
  - the same basic command and control structure (Gold- Strategic; Silver – Tactical; Bronze – Operational) should apply when responding to ‘major incidents’;
  - accurate records will be required for briefings, debriefings, formal inquiries and disseminating information about the lessons learnt.
- 5.11 ‘Major Incident’ response plans must define roles and responsibilities clearly at all levels. Organisations need to establish and test ‘call-out’ and activation arrangements. Protocols must aim to ensure an efficient and timely response. If people are not aware of the contribution which their own and other sections will need to make the result will often be a muddled response. Effective planning should therefore ensure that arrangements and activities of different departments/units within an organisation are cohesive. Contingency planning must build on routine arrangements and should be integrated into an organisation’s everyday working structure. It should make best use of people’s existing skills and knowledge in their own domain of work.
- 5.12 At the exercise debrief the participating agencies individually recognised what had

been done well and not so well. All agencies emphasised the requirement to have a better understanding of each others roles and responsibilities in responding to major incidents, with a requirement to train and exercise together more frequently. Whilst there was much to applaud in the participating agencies response to the exercise, in the post exercise evaluation all the main participants recognized short-comings and some weaknesses and acknowledged that much could and should have been done better. The following areas have been identified as requiring specific attention by the participating services:

- Initial Scene Assessment (CHALET - Casualties/Hazards/Access/Location/Emergency/Type/Safety);
- First responders initial first aid capability and capacity;
- Location and establishment of Triage Points;
- Location and establishment of body-holding area and temporary mortuary facility;
- Location and establishment of a Joint Emergency Services Control Centre (JESCC) at the incident;
- Implementation of Command and Control Structure – Gold/Silver/Bronze;
- Clear identification of Commanders and Control personnel by wearing of appropriately worded reflective tabards;
- Command communications between emergency agencies using agreed multi-channel hand-held radios and protocols;
- Individual emergency service communications
- using agreed multi-channel hand-held radios and protocols;
- Location and establishment of Scene Access Control Centre
- Establishment of a traffic cordon;
- Location of inner and outer cordons;
- Location and establishment of cordon access points;
- Location and establishment of Rendezvous Point (RVP);
- Location and establishment of a Marshalling Area;
- Location and establishment of Casualty Bureau/Family Liaison;
- Location and establishment of relatives and friends reception areas;
- Crowd Control;
- Location and establishment of Media/Press Centre working to agreed media/press strategy.

5.13 Wherever possible, people should perform in an emergency those tasks with which they are already familiar and trained. Nonetheless, personnel will require some additional training to prepare them for the special circumstances experienced during a major emergency and for any extra dimensions to their role. It is no use having plans in place if people are not trained to perform in accordance with them. **At the exercise debrief all of the agencies called for additional training and regular joint major incident exercises. To address these recognised requirements the DMCRT recommends the creation of a joint emergency services major incident training team who would be responsible for addressing the identified training and agency role/responsibility awareness issues, and for planning and organising major incident exercises.**

5.14 There is a wealth of information and training material on emergency services major incident response. The DMCRT commends amongst many the following three documents to assist in emergency service response planning and the development of a training strategy:

- London Emergency Services Liaison Panel Major Incident Response Manual (6<sup>th</sup> Edition);
- UK Home Office: Addressing Lessons from the Emergency Response to the 7<sup>th</sup> July 2005 London Bombings – what we learnt and what we are doing about it (22<sup>nd</sup> September 2006);
- London Regional Resilience Forum Preparing for Emergencies: Looking Back, Moving Forward – The Multi-Agency Debrief – Lessons identified and progress since the terrorist events of 7<sup>th</sup> July 2005 (September 2006)

## **6 Consolidated list of Recommendations**

(Paragraph locations are given in brackets at the end of each)

### Hazards, Vulnerability and Risks

1. The Cayman Building code rates buildings to 130 mph. Commitments were given that critical facilities would be built to withstand Category five standards, however, this is not required in the code. An “importance factor” for key facilities is recommended to institutionalise resilience. (2.8)
2. The DMCRT recommends hazards should be more firmly established in planning regulations. Consideration should be given to establishing a more systematic system of beach set-backs (to offer protection but also to maintain a healthy beach environment). 75 feet has been muted but is not uniformly implemented. (2.9)
3. The Planning Control Authority should circulate planning submissions to the HMCI for comment in addition to the current agencies (Fire, National Road authority, water authority, environmental health). (2.10)
4. Efforts should be made to see whether insurance, which greatly aided the recovery from Hurricane Ivan, could reduce premia (which have increased 2 or 3 fold since Ivan) if further protective building measures were adopted. (2.12)
5. HMCI should assist Lands and Survey to develop and promote the new GIS hazard and risk mapping system. (2.13)
6. The DMCRT recommends that a tsunami plan and awareness campaign be drawn up to advise the Community on the immediate actions to be taken if a tsunami warning is received, or when an earthquake is felt or the sea is seen to recede. (2.20)
7. At present there is no requirement for hydrological surveys to be part of development plans or EIAs. It is recommended that rainfall-induced flood potential is included in HMCI’s multi hazard risk assessment process. (2.22)
8. A significant amount of shrubs and trees across the island are now dry and pose a potentially serious fire hazard. Response capabilities should be re-assessed, particularly for more inaccessible areas. (2.23)
9. Momentum towards finalising the H5N1 plan should be maintained and national requirements for response and containment put in place. When the H5N1 plan is finalised, it will provide the basis upon which the response to any kind of epidemic can be mobilised. (2.25)
10. Closer collaboration and co-ordination with all the major cruise ship lines based in Miami is recommended to ensure contingency plans are proportionate to potential requirements. (2.27)

11. It is recommended that CIG examines the benefits of a voluntary in-shore search and rescue service based upon the Royal National Lifeboat Institute model, and as operated in the BVI by the Virgin Islands Search and Rescue (VISAR). (2.28)
12. It is strongly recommended that there be an urgent revision of the Oil Spill Plan to ensure that Cayman is adequately protected. (2.33)
13. The suggestion to develop a sustainable development strategy incorporating environmental risk should be supported, as should legislation to ensure authority and compliance. (2.35)
14. The DMCRT encourages the preparation of a contingency plan for a possible exodus of Cuban migrants without delay. The plan should consider the potential for larger numbers than arrived from Cuba in the mid-1990s. (2.36)

### Structures and Organisation

15. The DMCRT recommends that consideration be given to adoption of the proposed/revised organizational chart attached at Annex B (3.4)
16. The National Hazard Management Executive (NHME) should meet on at least a quarterly basis in the short to medium term. (3.5)
17. The DMCRT has some concerns that the formal interface with the private sector that was in evidence during and immediately after Ivan is not now so apparent in current planning documents. Consideration should be given to the formation of a group or Committee to meet formally with leaders of the main groupings within the private sector and leading voluntary organisations. (3.7)
18. The DMCRT found instances of departments and organizations being represented on more than one committee. Whilst this may prove unavoidable for planning purposes, this could prove unwieldy under emergency conditions. Further streamlining of the Emergency Response structure is strongly recommended. (3.8)
19. It is recommended that the recruitment process for the 8 vacant positions be started immediately. It is for consideration that experienced members of the public service could be seconded on short term contracts to HMCI to ensure that the new agency gets quickly into its stride. It is further recommended that consideration be given to inviting the Private Sector to nominate a suitably trained and skilled person to fill one of the Deputy Director positions on a secondment basis. (3.11)
20. To be effective, there needs to be a clear articulation and understanding of the new structure. In particular, explanations must be given as to how roles and responsibilities under the old NHC will integrate and merge with the new system. A strong PR/marketing campaign is recommended for the HMCI. (3.15)

21. With the hurricane season only four months away, it is recommended that early prioritisation is given to ensuring preparations under the guidance of the new HMCI system. (3.16)
22. DMCRT recommends that HMCI should prepare a yearly work programme complete with delivery dates and specific performance indicators. Individual work programmes should be introduced for each of the Deputy Directors. Similarly, terms of references should be prepared for each of the National Hazard Management Council new Sub-Committees. Each Sub-Committee, as they become functional, should decide their own prioritised work programmes under HMCI direction and guidance. (3.18)
23. HMCI to establish formal links be with the Chamber of Commerce and other leading groups who could provide a conduit through to their members and the Community at large. (3.20)

#### Legislation and Emergency Powers

24. It is recommended that the Governor always has a drafted proclamation available to enact the Emergency Powers law. (3.21)
25. It is strongly recommended that Director HMCI engages with the Attorney Generals Chambers to provide the detailed instructions required as a matter of urgency so as to ensure that appropriate legislation is enacted before the beginning of the 2007 Hurricane Season (3.24)
26. It is recommended that the Bill includes provision for the regular updating of National Plans (all hazard) and policies. Consideration should be given to the inclusion of a yearly HMCI performance report. (3.25)

#### Plans and Resources

27. It is essential that the HMCI requests and retains copies of all hazard/disaster management plans and that the plans are updated annually (4.2)
28. The DMCRT recommends that HMCI regularly up-dates and maintains the web site and gives it more robust marketing so that members of the Community use it automatically as their first point of contact for disaster information. (4.3)
29. The DMCRT recommends that the development of a National Disaster Plan should be made an early priority for the new HMCI. (4.6)
30. The DMCRT recommends that the Governor considers the requirement for a Major Incident Plan to provide an agreed framework for inter-agency co-operation. (4.8)
31. The DMCRT recommends that clarification is given to the respective roles of lead responders and HMCI to avoid the potential for confusion or inter-agency rivalry. (4.9)

32. Articulation of the role of the HMCI vis a vis the NHP is recommended, as well as testing the plan well in advance of the upcoming hurricane season. (4.12)
33. DMCRT recommends that HMCI should give priority to the investigation and development of hazard specific plans to cover earthquake, tsunami, large scale evacuations (especially aimed at tourists) and cruise ships. (4.15)
34. For sector plans (e.g. health, shelter, continuity) the DMCRT strongly recommends articulation of the planning approach and formats to be used. Whilst the scope of disaster planning is expanded, it is vital that the effectiveness of hurricane preparations is not compromised. (4.19)
35. The role of the Director in the new NHMC should be made apparent. The role of the new council in relation to the proposed operations team (when under emergency conditions) should be defined. (4.21)
36. The separation and delineation of responsibilities in the EOC between the Chief Secretary and the Deputy Chief Secretary is not fully articulated at present. Greater clarity is required, not only for the response to hurricanes, but also for all other hazards. Such clarity should be provided, and duties and responsibilities practised before the new hurricane season (4.22).
37. It is recommended that the Chief Secretary assumes responsibility for the overall direction and response to all hazards under the direction of HE The Governor, and for this to be make clear in all relevant plans and documents. (4.23)
38. The role of the Director of HMCI will also need to be clarified in respect of the EOC. It would appear logical to the DMCRT that the Director should assume the role of the Director of the EOC when activated. (4.24)
39. On island evacuation procedures have been assisted with the preparation, by Lands and Survey, of flood area inundation maps. With the new TAOS/GIS system, scheduled to be fully functional in June 2007, CIG has the potential to produce risk maps for each district in the Cayman Islands, including the extent of flooding in the worst case scenario. It is recommended that these new techniques should be used to determine which districts should be evacuated and which shelters should be opened. (4.26)
40. All the major agencies (Airport Authorities, Cayman Airways, Police, Immigration, Customs, HMCI, etc) will need to be involved in drawing up necessary evacuation plans. It is recommended that such a plan be given a high priority and be in place before the next hurricane season. (4.28)
41. Evacuation plans may be hampered by insufficient public awareness, particularly amongst tourists. NHC will only consider advising persons to leave the islands 48 hours in advance of a hurricane. It is recommended that Cayman moves to a 72 hour evacuation planning timescale which is in line with many other Caribbean countries. (4.30)

42. Shelter capacity. It is recommended that the Government should open a dialogue with the private sector, including with the major hotels, to identify any spare capacity that may exist which could be used on a payment basis in the event of a shortfall in Government shelter places. (4.35)
43. Health Disaster Plans could place further emphasis on utilising private sector medical resources.(4.37)
44. Medivac arrangements are typically for a small number of persons. These should be extended to cater for other serious scenarios (e.g. air crash) (4.37)
45. There was some confusion why a separate committee had been established for H5N1. Although PAHO clearly saw this as an opportunity to establish influenza planning, consideration should be given to streamlining committees together (4.37)
46. A proposed MoU between CIG and the Red Cross is still to be signed, and the DMCRT recommends that this should be re-visited.(4.39)
47. The findings of the National Assessment of Living Conditions should be used to inform relief distribution plans (and those for risk reduction). (4.40)
48. The Cayman Red Cross Branch is part of an important and influential international organisation with world-wide relief capability and capacity, and the DMCRT recommends that HMCI should consider all means for harnessing their potential in Cayman. (4.41)
49. The DMCRT feels compelled to recommend that a further attempt be made to explain the types and scope of assistance that an OT could expect to receive from the UK. (4.44)
50. DMCRT recommends HMCI places an officer (allocated the role of public awareness in the strategy document) within the Joint Communication Services Committee (JCSC) to offer technical advice guidance to ensure consistent messages.(4.45)
51. Radio coverage is partial on Cayman Brac. A further repeater to be considered. HAM radio equipment and antennae should be repaired and maintained. More satellite communications systems are recommended (4.50)
52. There has been no training or practice of a multi agency response to a major incident on Cayman Brac. It is recommended (4.50)
53. The DMCRT recommends that consideration be given to extending greater autonomy for local decisions to the Sister Islands Emergency Committee (4.50)
54. The Cayman Brac Emergency Committee would prefer the plan to provide for persons to be evacuated from Little Cayman to be brought initially to Cayman Brac, where they could subsequently be air lifted by larger aircraft to Grand Cayman or direct to Miami. The DMCRT sees merit in the proposal and recommends that it is explored further. (4.50)

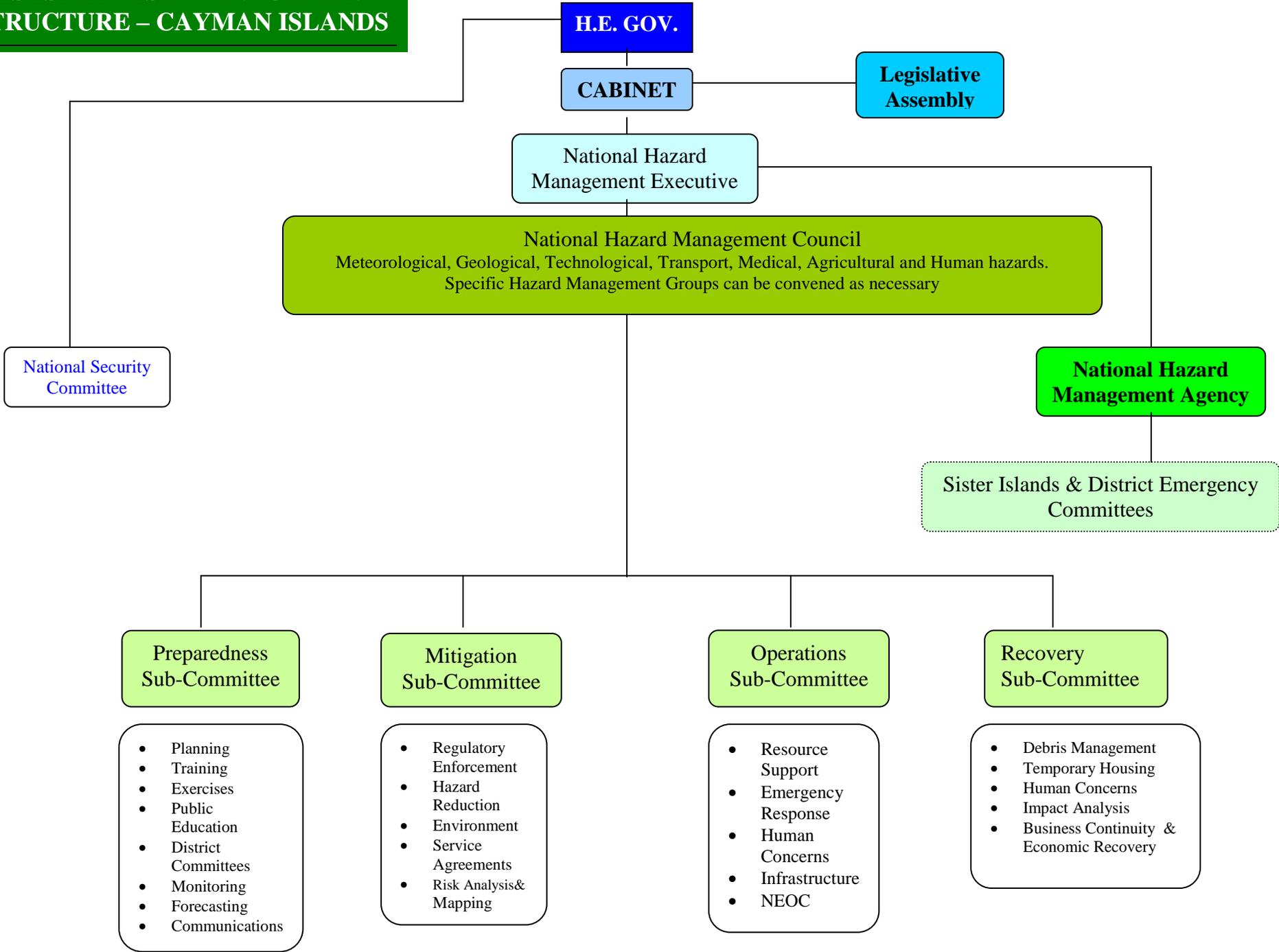
55. It is recommended that the Recovery Sub-Committee to the proposed new National Hazard Management Council should finalise its working and operating procedures as a priority. (4.52)
56. Lands and Survey are keenly looking forward to HMCI involvement to promote the GIS system and advance its application to development and risk reduction planning. Lands and Survey would like to volunteer a member of staff to work in the EOC when activated to assist with hazard maps, etc. The DMCRT recommend that this be pursued. (4.53)
57. It was suggested to DMCRT that the CIG should establish a dedicated contingency fund with a contribution of 1% of Government revenue per year. This merits serious consideration. (4.65)
58. Staff must develop a detailed knowledge of the new communication systems, including satellite internet and video-conferencing, to enable them use under emergency conditions.(4.66)
59. Consideration should be given to transferring planning responsibilities for a variety of issues/hazards previously addressed by NHC to HMCI (4.71)
60. It is noted that the Collector of Customs, Chief Immigration and Commissioner of Corrections & Rehabilitation/Director of Prisons do not appear in the proposed membership of the HMCI and it is recommended that this be rectified. (4.73)
61. All agencies have specific disaster, crisis, operational and business continuity plans. However the implementation of these plans needs to be exercised both individually and collectively to ensure effective delivery of the territories emergency and security response. It is recommended that there is at least one individual and collective exercise per year (4.75).

#### Disaster Management Exercise

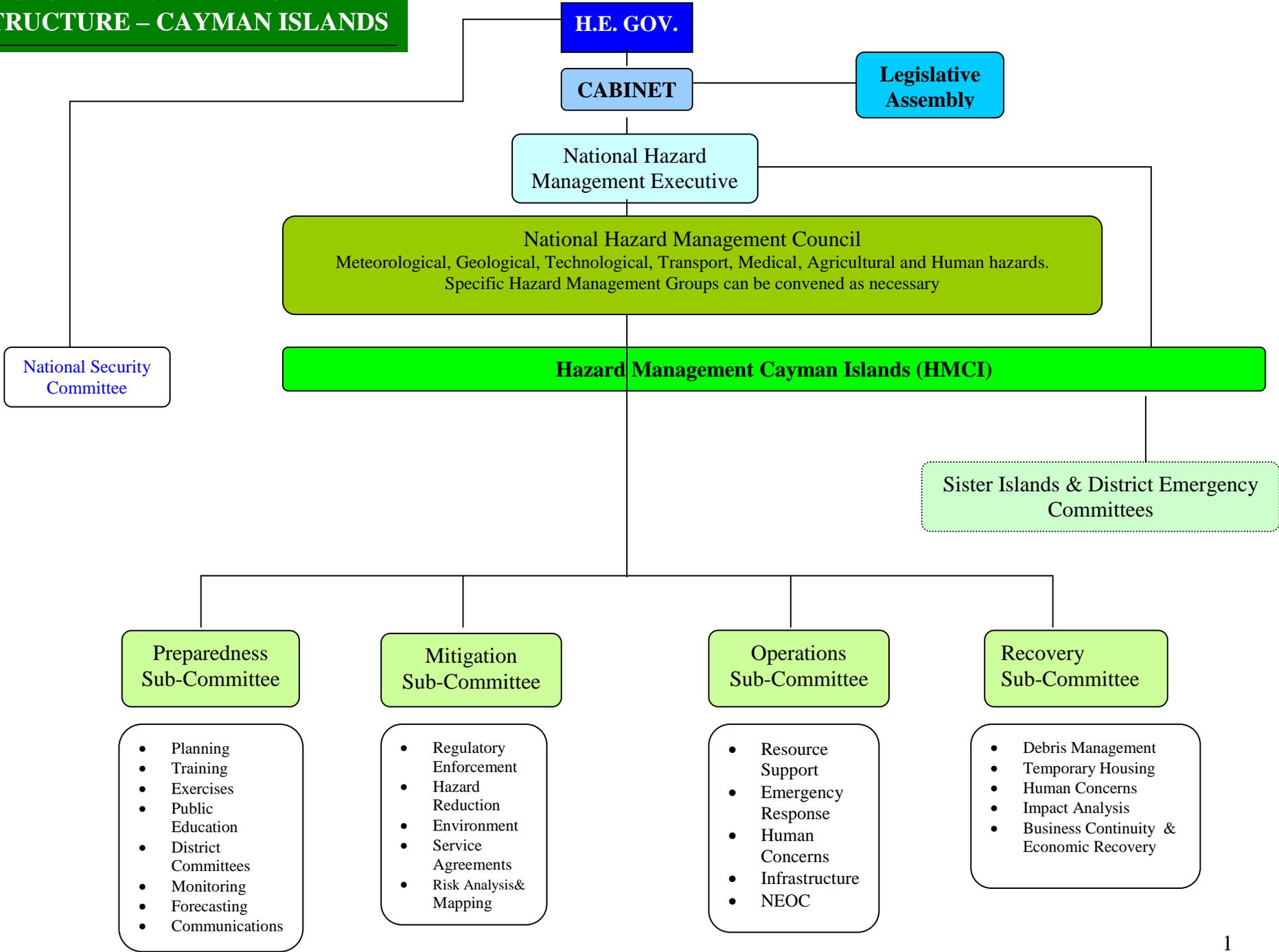
62. At the exercise debrief all of the agencies called for additional training and regular joint major incident exercises. To address these recognised requirements the DMCRT recommends the creation of a joint emergency services major incident training team responsible for addressing the identified training and agency role/responsibility awareness issues, and for planning and organising major incident exercises. (5.13)
63. The following areas were identified as requiring specific attention by the participating services:
  - Initial Scene Assessment (CHALET - Casualties/Hazards/Access/Location/Emergency/Type/Safety);
  - First responders initial first aid capability and capacity;
  - Location and establishment of Triage Points;

- Location and establishment of body-holding area and temporary mortuary facility;
- Location and establishment of a Joint Emergency Services Control Centre (JESCC) at the incident;
- Implementation of Command and Control Structure – Gold/Silver/Bronze;
- Clear identification of Commanders and Control personnel by wearing of appropriately worded reflective tabards;
- Command communications between emergency agencies using agreed multi-channel hand-held radios and protocols;
- Individual emergency service communications using agreed multi-channel hand-held radios and protocols;
- Location and establishment of Scene Access Control Centre
- Establishment of a traffic cordon;
- Location of inner and outer cordons;
- Location and establishment of cordon access points;
- Location and establishment of Rendezvous Point (RVP);
- Location and establishment of a Marshalling Area;
- Location and establishment of Casualty Bureau/Family Liaison;
- Location and establishment of relatives and friends reception areas;
- Crowd Control;
- Location and establishment of Media/Press Centre working to agreed media/press strategy.

**Annex A:  
DISASTER RISK MANAGEMENT  
STRUCTURE – CAYMAN ISLANDS**



**Annex B  
DISASTER RISK MANAGEMENT  
STRUCTURE – CAYMAN ISLANDS**



**2006 APPROVED LIST OF CLASS 'A' HURRICANE SHELTERS - GRAND CAYMAN  
PLUS PROJECTED FUTURE CAPACITY  
(CLASS 'A' BUILDINGS SUITABLE FOR SHELTER DURING A STORM)**

	BUILDING LOCATION / NAME	EXISTING CAPACITY 2006	ESTIMATED FUTURE CAPACITY (2010)
1	G.T.- John Gray High School - Assembly Hall	265	265
2	G.T.- George Hicks High School - Multipurpose Hall	375	
3	G.T.- Primary School Assembly Hall	160	160
4	G.T.- Community College Hall	500	500
5	G.T.- Red Cross Building	95	95
6	Prospect.- New Primary School (EMC)	1,135	1,135
New	Owen Roberts Airport New Terminal		6,000
	New G.T. High School		750
	TOTAL GEORGE TOWN:	2,530	8,905
7	W.B.- Primary School (Part Classrooms)	135	135
8	W.B.- Primary School Assembly Hall	335	335
9	W.B.-Health Centre (EMC only - not for general public)	90	90
New	New WB High School		750
	New WB John Grey Memorial Church Hall		325
	TOTAL WEST BAY:	560	1,635
10	E.E.- Primary School (Part)	265	265
11	E.E.- Civic Center (EMC)	240	240
12	E.E.- Gun Bay Community Hall	65	65
New	New EE Primary School Hall		170
	TOTAL EAST END:	570	740
13	N.S.- Civic Centre (EMC)	185	185
	TOTAL NORTH SIDE:	185	185
14	Bkrs.- Community Hall	40	40
	TOTAL BREAKERS:	40	40
15	B.T.- Primary School multipurpose hall (EMC)	80	80
New	New Bodden Town Civic Centre / Primary School Hall		250
	New Farnk Sound High School		750
	New BT Church of God Church Hall		540
	TOTAL BODDEN TOWN:	80	1,620
16	Sav.- Primary School Assembly Hall (EMC)	135	135
	TOTAL SAVANNAH:	135	135
	<b>GRAND TOTAL:</b>	<b>4,100</b>	<b>13,260</b>
Notes:			

1. For 3 new high schools assumed 50% of capacity for public shelter. Balance not included above for education staff/families
2. ORIA has been included as public shelter space as it's 6,000+ est. capacity would not all be required for tourists??
3. This listing is for Public Hurricane shelters and does not include for buildings such as the new gov. office project which will shelter Staff and families but not the general public.

(24th. April 06 update)

## **ANNEX D**

### **DISASTER MANAGEMENT: HMG'S RESPONSE: OVERSEAS TERRITORIES**

#### **Following a disaster in an Overseas Territory the following action would be taken/considered by HMG in London**

##### **Depending on forecast strength and track of storm:**

- FCO's OTs Disaster Management Oversight Committee (DMOC) and, as necessary, a Whitehall DMOC (FCO, MOD, DFID) would meet to ensure a rapid and effective response and cross-departmental cooperation.
- The OTD Operations Room/Consular Crisis Management Centre would be activated and staffed 24/7. It would work in consultation with Press Office, Consular Directorate and the London Office of the OT Government (where there is a London representative).
- Provide the Governor's Office with a weather forecast (track and intensity predictions) from the UK Meteorological Office.
- OTs Law Enforcement Adviser, DFID's Disaster Management Adviser and as required OTDs Disaster Management Adviser to reinforce the Governor's Office. Other DS officers (from London, other OT Governors' Offices or Diplomatic Posts in the Americas) would also deploy to the Territory as required.
- Other OTs put on standby for call-down of OTs police reinforcements, according to terms of proposed MOU.
- Consular Rapid Deployment team (London and/or North American Team) put on standby.
- Subject to this being deemed a humanitarian priority DFID Humanitarian Adviser(s) in Caribbean region put on standby, and regional humanitarian supplies (Miami) prepared for despatch.
- APT(N) will shadow the storm track.
- Governor to consult Governor Bermuda about possible use of Bermuda Regiment

##### **Immediate Aftermath**

Depending on the gravity of the situation.

- Police reinforcements from OTs and, if necessary, UK MOD police, would arrive as quickly as transport conditions allow.
- APT(N) would arrive as quickly as possible and provide assistance as required.
- Consular Rapid Deployment Team would be despatched depending on the severity of the disaster.
- OTD Operations Room/Consular Crisis Unit would continue to coordinate London response
- Governor's Office would be strengthened with additional staff from London and/or the region, as needed

- Subject to this being deemed a humanitarian priority DFID expert(s) would arrive, conduct humanitarian assessment and may offer support (if requested) to territory staff managing response efforts (eg relief procurement and distribution)
- DFID humanitarian experts would liaise with and assist the coordination of any response from the international agencies (eg the UN system, International Federation of Red Cross Societies, European Commission Humanitarian Office)
- OTD to liaise with Governor Bermuda over provision of Bermuda Regiment

### **Recovery Phase**

OT Government would be responsible for the recovery plan. But subject to severity of the situation UKG assistance could include:

- Longer term police/law enforcement reinforcements.
- Technical support in conducting economic impact assessment and in securing assistance from international organisations (eg EU).
- Provide or arrange for technical assistance to address identified needs subject to the Territories capabilities and local affordability. This may include technical assistance to objectively determine such needs.
- Consider other support.