

Consultative Document

on the

**National Emergency
Communications Plan**

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Abbreviations

BCP	Business Continuity Plan
CB	Citizen Band
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CW	Continuous Wave
EAS	Emergency Alert System
EOC	Emergency Operations Centre
FTA	Free to Air
FTPAS	Fixed Telephone Privileged Access Scheme
GMDSS	Global Maritime Distress and Safety System
HF	High Frequency
IEWP	International Early Warning Programme
ITU	International Telecommunications Union
LAN	Local-Area Network
LMR	Land Mobile Radio
MTPAS	Mobile Telephone Privileged Access Scheme
NECP	National Emergency Communications Plan
NEOC	National Emergency Operations Centre
NRF	National Response Framework
ODPM	Office of Disaster Preparedness and Management
SOP	Standard Operating Procedures
TATT	Telecommunications Authority of Trinidad and Tobago
TEMA	Tobago Emergency Management Agency

THA	Tobago House of Assembly
TTARL	Trinidad and Tobago Amateur Radio League
TTARS	Trinidad and Tobago Amateur Radio Society
UHF	Ultra High Frequency
UN	United Nations
UNISDR	United Nations International Strategy for Disaster Reduction
USB	Upper Side Band
VHF	Very High Frequency
VoIP	Voice over Internet Protocol
WAN	Wide-Area Network
WMO	World Meteorological Organisation

1. Introduction

1.1 Rationale

- 1.1 Reliable telecommunications are indispensable to the management of any emergency. The Office of Disaster Prevention and Management (ODPM) of the Ministry of National Security along with the Tobago Emergency Management Agency (TEMA) are seeking to establish a National Emergency Communications Plan. The Telecommunications Authority of Trinidad and Tobago (TATT or The Authority) was requested by the ODPM/TEMA to prepare a Draft National Emergency Communications Plan (NECP) to assist the ODPM in conducting their emergency management functions. The request was made on the premise that the Authority has the relevant knowledge and expertise capable of assisting the ODPM/TEMA in the development the NECP.

1.2 Purpose

The National Emergency Communications Plan (NECP) reviews the existing emergency infrastructure and processes; and articulates key steps for upgrading the emergency response machinery, taking account of trends in disaster management and emerging technologies. The Plan outlines emergency communication mechanisms and the roles and responsibilities of responder agencies.

The NECP examines the sustainability of existing land mobile radio systems; recommends the integration of broadband to modernise emergency communications; and addresses the roles of all stakeholders supporting incident communications.

The NECP focusses on the persons, processes, and technology that are critical to efficient emergency communications. The NECP ensures the availability and interoperability of communications to manage emergency response; establish command and control; maintain situational awareness; and function under a common operating communications infrastructure, for a broad range of incidents as defined in the National Response Framework (NRF) (ODPM 2012).

This plan is consistent with the ODPM and TEMA disaster management arrangements and is aligned with:

- The Comprehensive Disaster Management Policy for Trinidad and Tobago, (ODPM 2010).
- The National Response Framework.
- The Caribbean Disaster Emergency Management Agency Emergency Telecommunications Procedures Manual (CDEMA 2005).

1.3 Background

Trinidad and Tobago is a small, twin-island state located within the Atlantic hurricane belt and along the boundary of the Caribbean and South American tectonic plates. The islands are exposed to a wide range of geological and hydro-meteorological hazards, including earthquakes, hurricanes and thunderstorms. (See Annex 1: List of the Hazards). The islands' coastal and offshore industrial infrastructure and sensitive ecological areas are exposed to marine and coastal threats. The industrial off-shore facilities are also vulnerable to technological hazards and security threats.

The Office of Disaster Preparedness and Management (ODPM) is the national disaster management agency for Trinidad and Tobago. Their primary responsibility is the coordination of the country's emergency relief agencies and resources to reduce disaster risk and manage emergency response and recovery. The ODPM draws on the competencies and capabilities of the Defence Force and Protective Services, Government Ministries and Agencies, the Private Sector, Non-Governmental Organisations, Community and Faith Based Organisations, and other key stakeholders to prepare for, mitigate, respond to and recover from disasters.

The disaster management strategy of the ODPM is based on its National Response Framework (NRF). The NRF outlines the governance structure, the concept of operations and the roles and responsibilities of key stakeholders within the country's existing comprehensive disaster management system. The principal actors as identified in the NRF are the ODPM, Central Government, several Ministries, Municipal Corporations, Governmental Agencies, the Tobago House of Assembly, non-governmental organisations and the private sector.

The Tobago House of Assembly is responsible for the administration of Tobago. Disaster Management is the remit of the Tobago Emergency Management Agency (TEMA) which is an agency of the THA. TEMA coordinates a network of agencies and individuals within the island of Tobago in times of disaster. In carrying out its mandate, TEMA works in close collaboration with the ODPM. Should TEMA become overwhelmed in an emergency, the ODPM will provide its full support to TEMA and vice versa.

Emergency response personnel from various agencies such as the Defence Force, the Police Services, Fire Services, and Regional Corporations respond to incidents of different scales and

magnitudes on a regular basis. Their ability to respond in real time is essential to establishing command and control of an emergency or disaster, maintaining situational awareness; and responding effectively to a broad range of incidents.

An emergency situation may escalate into a disaster, either due to its very nature, or as a consequence of an insufficient response to the initial event. The magnitude of the event will require resource mobilization on a regional or even international scale. Communication related to a disaster includes activities well beyond an alert requesting emergency response, which is normally made through available telecommunications. It involves communication within each responder agency and among all responder agencies at the disaster site. Additionally, it also allows all responder agencies at the disaster site to communicate with other organisations outside of the affected area.

Alerts and updates regarding impending disasters which may impact the public are disseminated via the Free to Air (FTA) radio and television broadcast stations, subscription television broadcasting services, social media and public telecommunications networks. Some industrial estates use a local warning system to alert nearby communities in the event of an industrial incident. Flood alerts are deployed in at least two municipalities—the Diego Martin and Tunapuna-Piarco Regional Corporations. The early warning systems used by the ODPM and TEMA are:

- Radio and TV broadcasting networks—wired and wireless
- Short Messaging Systems on Telecommunications Networks
- Voice Over Internet Protocol (VOIP)
- Web Emergency Operations Center (Web EOC)
- Facsimile
- Virtual Vision App (Internet)

The failure of telecommunications and broadcasting infrastructure following natural or man-made disasters can seriously hamper relief operations. When telecommunications infrastructure is damaged, network connectivity is disrupted or networks become congested: Response and recovery efforts are delayed and there is difficulty coordinating efforts, all of which affect the quality and timeliness of relief services. When broadcast transmitting infrastructure is damaged the disaster management agencies are severely handicapped in communicating alerts and updates to the public.

Internationally, emergency telecommunications and broadcasting facilities are constantly upgraded to employ new technologies and or retrofitted to ensure resilience. A review of our existing facilities reveals that there is a need to upgrade to more robust and resilient technologies and equipment, and in some cases to add new emergency communications systems.

1.4 Objectives

The National Emergency Communications Plan:

- Upgrades the existing land mobile radio communications system, enabling all emergency responders to communicate and share information on a reliable and flexible system across all agencies in the event of a threat or hazard, as needed and when authorised.
- Identifies a contingency system which allows emergency response agencies to maintain communications in the event of damage to or destruction of their primary communications infrastructure.
- Develops a resilient system for public notification, alerts and warnings.
- Establishes systems and processes for the restoration of basic telecommunication services (voice and data) within 72 hours in affected areas.
- Proposes appropriate upgrades for the reporting of local emergencies by the public to include voice, video and data messages.
- Establishes a contingency emergency communications system for contacting regional and international agencies.

1.5 Regulatory Framework

The Authority is governed by the following provisions of the Telecommunications Act Chap. 47:31 (“the Act”) in regulating telecommunications and broadcasting operators in relation to disaster communications:

Section 84 of the Act

- (1) *Where a state of emergency has been declared, the President may, on the advice of the Minister of National Security—*
 - (a) *authorise the taking of possession and control by the Government of any telecommunications equipment, installation, service, apparatus or station to be used—*
 - (i) *for Government service;*
 - (ii) *for such ordinary service as the Minister of National Security may determine; or*

(b) *direct or authorise the control of the transmission and reception of messages in any manner as he may direct.*

(2) *The Government shall, excluding loss of profit, compensate reasonably the owner or controller of any installation, service, apparatus or station, the possession or control of which was assumed under subsection (1).*

(3) *Where an agreement cannot be reached between the parties concerned with respect to the amount of the compensation paid, the matter shall be referred to an arbitrator agreed to by both parties whose decision shall be binding on all the parties.*

(4) *Each service provider may, during a period of emergency in which normal telecommunication installations are disrupted as a result of a hurricane, flood, earthquake or any other disaster, use his service, apparatus or station for emergency communications and in a manner other than that specified in the concession or in the regulations governing the relevant service, apparatus or station.*

(5) *Emergency use permitted under this section shall be discontinued when normal telecommunication facilities are again available or when such special use of the installation, service, apparatus or station is terminated by the President."*

The applicable concession conditions are:

A34. *The concessionaire shall ensure that in respect of any public telephone service which it provides, it shall:*

- a. *facilitate user contact ;*
- b. *forward user calling line identifiers and where possible with associated subscriber address information; and*
- c. *if required to do so and upon the giving of reasonable prior notice in writing, forward, where possible, user geographic location within one hundred (100) metres of the position of the user at the time of the communication;*

to police, fire, ambulance, and any other national emergency services which the Minister may from time to time designate for the purpose of notifying them of any emergency at any time and without charge.

Use by Government

- D30. The concessionaire shall, on a free-of-charge basis up to a limit of fourteen (14) hours per calendar week, and thereafter at an agreed rate not to exceed eighty-seven and one-half percent (87.5%) of the concessionaire's regular commercial rate for similar broadcast transmissions, transmit any programme, announcement, information or other material which the Government may require to be transmitted as a matter of public interest, during the concessionaire's ordinary business hours, or at any hour to be selected by agreement with the Government. Such material shall, up to a limit of one hour per day, be transmitted without accompanying advertisement.*
- D31. Pursuant to condition D30, the Government may reasonably declare any matter or event to be of public interest and require the concessionaire to broadcast such matter or event, but the Government shall, in deciding the actual time of transmission and length of broadcast, consult with the concessionaire with a view to causing the least possible disruption to the normal commercial operations of the concessionaire.*
- D32. The transmission time allocated to the Government may be varied on the giving of twenty-four (24) hours notice to the concessionaire, except that, in the case of an emergency, such notice period shall be waived.*

And, applicable Licence conditions as specified in the Act are:

National Security

- A41. The Licensee shall, as required pursuant to any applicable law cooperate with the relevant Government, statutory body or official agency in all ways in matters of law enforcement, public emergency or national security.*
- A42. Pursuant to section 84 of the Act and without prejudice to the generality of the foregoing the Licensee shall make available its radiocommunication service and radiotransmitting equipment to the Government.*

1.6 Review Cycle

This Plan will be reviewed annually and after any major disaster or planned disaster management drill by the ODPM/TEMA. The Plan will be modified as required and in consultation with stakeholders to ensure that any gaps or weaknesses are resolved.

Questions or concerns regarding the maintenance of this document may be directed to either the ODPM or TATT.

1.7 The Consultation Process

The Telecommunications Authority of Trinidad and Tobago (TATT) has consulted with the ODPM and TEMA in the development of this Plan. TATT has considered the views and opinions of its stakeholders in the preparation of this Plan. The Plan has been forwarded to the ODPM/TEMA for consultation with their stakeholders and finalisation thereafter. TATT will assist ODPM/TEMA in its consultation process.

The ODPM/TEMA will seek the views of the general public and other stakeholders regarding this document in accordance with its Procedures for Consultation. Comments may be submitted on the prescribed comment's form annexed to this document as Annex III. The document will be revised taking account of the comments and recommendations made during the consultation process.

The document will be made available for a first round of public consultation for a period of three months. After reviewing public and stakeholder comments, the ODPM/TEMA will issue a revised document for a second round of public consultation for another four-week period. Comments received from the second round of consultation shall be reviewed and the final document shall be published thereafter.

2 Communications Infrastructure

2.1 Existing Primary Communication Systems

Both the ODPM and TEMA use the public telecommunications networks for their daily operations including emergency preparedness. Additionally, they also share a talk group on the Ministry of National Security wide area network (WAN) and can communicate with other partner responder agencies on this WAN.

The ODPM owns and operates two (2) VHF national land mobile radio (LMR) networks and one High Frequency (HF) radio station in Trinidad, while TEMA owns and operates one (1) VHF land mobile radio network and one HF radio station in Tobago. Additionally, both the ODPM and TEMA have a range of secondary communications systems, augmenting the primary communication systems, which may be used as contingency systems where the primary system fails. The secondary systems are explained in section 2.2. Both the primary and secondary communications systems used by ODPM and TEMA are listed in Annex II.

Responder agencies such as the Defence Force, Police Service, Fire Service and Regional Corporations all operate LMR networks which they use to conduct their individual operational activities. In the event of an emergency, which requires the activation of the National Emergency Operations Centre (NEOC), responder agencies would setup stations at the NEOC to establish and maintain communications between the agency and the ODPM. TEMA establishes a similar arrangement at their EOC.

Therefore, the NEOC/EOC consists of a conglomeration of various LMR systems assembled in a common room. Most responders are unable to communicate across agencies because they operate on private systems limited to their internal use. Since there is no exchange across these private communications systems communication across agencies is restricted.

The municipalities, along with some government agencies including TEMA, have LMR radios programmed to operate on the ODPM LMR system and hence can communicate with the NEOC at the ODPM under the control of a network controller. Similarly, TEMA can communicate with first responders on the island of Tobago on the TEMA LMR.

The ODPM and TEMA networks are tested daily and maintained to ensure they are functional on a 24/7 basis. Notwithstanding the networks being functional, their coverage is limited by geographical and propagation constraints and therefore some areas of the country cannot be accessed by these networks.

2.2 Upgraded Primary Communication Systems

LMR technology has progressed over time from conventional analogue voice service to complex systems incorporating digital and trunking features. These enhancements have improved the security, reliability, and functionality of voice communications. In order to satisfy the demands for voice, video and data communication, local agencies need to rely on a hybrid approach, using both commercial and private networks comprised of landline, terrestrial wireless and satellite communications.

The ITU, 2013 recommends the use of:

Voice communications as the most suitable mode for the real-time transmission of short messages. Its applications in disaster communications include point-to-point wired field telephone links; Very High Frequency (VHF) and Ultra High Frequency (UHF) hand-held or mobile transceivers (LMR systems); and satellite phones. It also includes public address systems and broadcasts via radio.

2.2.1 Digital Land Mobile Radio System

There is clearly a need for an improved communications system to facilitate interoperability among all responder agencies. The primary communications system shall consist of a resilient modern digital LMR network which shall enable all agencies to communicate with each other and also with the ODPM and TEMA. It shall support time-sensitive, lifesaving tasks, including rapid voice call-setup, group calling capabilities, high-quality audio, and guaranteed priority access to the end-user.

Recognising that radio systems support lifesaving operations, the networks shall be designed to achieve a high level of reliability and be able operate efficiently in harsh natural and man-made environments . They shall be high capacity networks designed with redundant systems and be capable of providing wide area coverage. The networks shall be installed on secured and resilient infrastructure facilities providing coverage across the nation.

Emergency response agencies shall update or develop new strategic plans to evaluate current emergency communications capabilities, and address gaps by deploying of new technologies e.g. broadband, Next Generation 999/911 and social media.

Statement 1: Digital Land Mobile Radio System

- (a) A resilient modern digital Land Mobile Radio (LMR) system shall be implemented by the appropriate agency responsible for national disaster management.
- (b) To achieve full interoperability, all responder agencies shall use this new LMR system for emergency communications amongst each other and with ODPM and TEMA.
- (c) Emergency support agencies, including responder agencies, shall upgrade their existing internal communications systems to facilitate advanced emergency communications technologies which add useful communications tools.

2.2.2 National Emergency Operations Centre (NEOC)

Currently, the ODPM operates a National Emergency Operations Centre (NEOC) which is located at Pineapple Drive, Mausica. In the event of a disaster, coordinators of responder agencies assemble at the National Emergency Operations Centre (NEOC). These coordinators communicate with their respective agencies on their LMR networks. ODPM and TEMA communicate with their responder agencies on the ODPM and TEMA LMR networks respectively.

It can get very noisy at the NEOC because it is a hub of frantic activity, this makes for unclear, difficult communication. A secure, soundproof Communications Centre, equipped with back-up power, food and water for seven days, shall be established adjacent to the NEOC. The Communications Centre shall accommodate operators from responder agencies and their radio equipment. It shall be structurally sound and secure to protect its occupants; communications equipment; and systems from threats and hazards.

The Communications Centre shall ensure that agencies are provided adequate space and power for operating their radios. Additionally, agencies would be responsible for the setup and dismantling of their work station before and after an emergency. The radios must be installed and not cause interference to any other radio. Considering that several operators will be sharing space in the Communications Centre all operators must use headphones and keep noise levels to a minimum.

Statement 2: National Emergency Operations Centre

A secure, soundproof Communications Centre shall be established at the National Emergency Operations Centre (NEOC), equipped with back-up power, food and water for seven (7) days; and designed to accommodate the operators from support agencies and their radio communications equipment.

2.2.3 Stand-by Emergency Repeater Station

Considering that the current LMR system is at risk of structural damage during a disaster, the ODPM and TEMA shall each acquire and maintain a fully functional, standby transportable VHF repeater station which can be easily deployed to any suitable location, and activated in the event that the existing VHF network repeater stations become inoperable.

The transportable stations shall be tested every month to ensure proper operation. The stations shall be equipped with adequate reserve fuel and standby power for self-sufficient operation for at least seven (7) days. The results of the tests and maintenance checks shall be entered in the station log book.

Statement 3: Stand-by Emergency Repeater Stations

ODPM and TEMA shall acquire and maintain fully functional, standby transportable VHF emergency repeater stations which may be deployed to suitable operating locations in the event that the existing LMR stations become inoperable.

2.2.4 The Emergency Directory

The ODPM and TEMA shall maintain a directory of the contact information, including phone numbers, fax numbers and email addresses, of all the persons and agencies involved in disaster planning, mitigation, and response and relief operations in Trinidad and Tobago. The directory shall reflect separate listings for Trinidad and for Tobago to facilitate easy reference and use. This directory will be known as the **Emergency Directory** and shall be updated continuously to ensure currency. Copies of the Emergency Directory shall be kept at the NEOC and at the Communications Centre in Trinidad, and at the EOC in Tobago.

Statement 4: The Emergency Directory

The ODPM and TEMA shall maintain an *Emergency Directory* which shall be kept in the NEOC and in the Communications Centre in Trinidad and in the EOC in Tobago. This directory shall contain all contact information for persons and agencies responsible for disaster relief.

2.2.5 Wide Area Network

Internationally, emergency responder agencies such as FEMA in the USA, the Canadian Public Safety Operations Organisation in Canada and the Emergency Response and Recovery Unit of the UK are upgrading their communications infrastructure to enable real time voice, video and data transmissions. They are increasingly augmenting their Land Mobile Radio capabilities with commercial broadband services for disaster planning and preparation and, in some cases, procuring private broadband local area networks (LAN) with faster data capabilities. This allows for transmission of voice, video and data in real time over their private LANs.

Although commercial broadband networks do not necessarily meet public safety requirements for critical voice communications, they can provide a range of data capabilities that enhance operational efficiency. Internationally, LMR systems used for critical voice communications remain an integral component of the emergency management; however, emergency responder agencies are using more mobile data services and applications to share information and augment their voice capabilities. The increasing availability of data and information essential to emergency operations and related technologies has enabled more efficient and effective communication and data sharing.

Broadband networks, particularly a nationwide Public Safety Broadband Network (PSBN), can transform the current methods of communications by emergency responders who currently use individual parallel networks to communicate with their respective staff. This is achieved by providing a single network which facilitates simultaneous situational awareness and allows information sharing across responders. Moreover, a nationwide PSBN will offer emergency responder agencies the additional benefit of real time data sharing which is not readily available on present commercial systems. Additionally, a nationwide PSBN provides coverage to geographic areas that are currently underserved.

A nationwide Public Safety Broadband Wide Area Network (WAN) shall be established, integrating new technology into emergency communications operations. The move toward wireless broadband infrastructure will provide the means to transfer large amounts of data almost anywhere, at any time, at much faster rates than those currently available. This high-bandwidth connectivity will facilitate easy exchange of media-rich information for emergency response and recovery.

The WAN shall enable access to the internet which can provide support for operations both in the field and at head offices. The power of the Internet, specifically its web-based information services and the integration of wireless (including satellite-based) technologies and high-speed capability on wire connections, will be leveraged to provide disaster managers with access to a large repository of information. In the context of emergency communications, personnel at the site of an event have, first and foremost, the task to save lives. Access to reliable and timely

emergency communications will greatly enhance incident management, and emergency responders in the field will not be merely reporting on the incident but will have access to resources which may enable them to take action to save lives.

Statement 5: Wide Area Network

The ODPM shall establish a Nationwide Secured Public Safety Broadband Wide Area Network (WAN) for Trinidad and Tobago. This WAN will allow for the transfer of large amounts of data almost anywhere at any time. The high-bandwidth connectivity will support software applications for roving emergency responders so that they may easily exchange real-time voice, video and data for emergency response and recovery.

2.2.6 Maritime Emergencies

Trinidad and Tobago has numerous coastal installations as well as several offshore industrial installations. The islands also have a vibrant fishing industry. There are two (2) Coast Stations in Trinidad (Trinidad and Tobago Coast Guard at Staubles Bay, and North Post at Diego Martin) and one (1) in Tobago at Scarborough. Additionally, there are several Limited Coast Stations around the coastline which provide a VHF communications link between vessels and the coast stations

The Trinidad and Tobago Coast Guard has responsibility for maritime search and rescue for the southern Caribbean. Vessels operating or passing through the region maintain communications with our coast stations on frequencies allocated by the Radio Regulations (ITU 2015).

Statement 6: Maritime Emergencies

ODPM and TEMA shall maintain marine VHF radios at their Communication Centres, and monitor the designated Global Maritime Distress and Safety System (GMDSS) channels 16 and 70 continuously.

2.3 Existing Secondary Communication Systems

The ODPM and TEMA utilise several secondary communications systems which are used either to supplement the primary communications systems or as contingency emergency communications systems. The major secondary communication systems include Amateur Radio, Citizens Band Radio and Inmarsat Broadband Global Area Network (BGAN) and Iridium satellite

phones. The numbers of the satellite phones are listed in *The Emergency Directory*. The secondary communications systems are listed in Annex III.

2.4 Proposed Use of Secondary Communication Systems

There is the likelihood that primary communication systems may become inoperable due to overload or infrastructural damage. The secondary communication systems can then be used for primary communication purposes and shall be operated in accordance with the guidelines outlined in the following subsections.

2.4.1 Amateur Radio

The Communications Centre is equipped with a complete Amateur Radio Station including antennas and feeders for use by licensed radio amateurs. These licensed operators may be employees or members of the Trinidad and Tobago Amateur Radio Society (TTARS) and the Trinidad and Tobago Amateur Radio League, (TTARL) or a licensed volunteer. The contact telephone numbers for these persons and organisations are recorded in *The Emergency Directory*.

A 6m/2m/70cm transceiver and a 4m transceiver with power supplies are located in the Communications Centre and the radio instruction manuals are kept on the shelf beside the radios. There are also two 6m/2m/70cm handheld radios, with manuals, spare batteries, battery chargers and other accessories and one 2m/70cm handheld radio with manual and battery charger.

Only licensed radio amateurs may operate these radios. Unlicensed personnel at the Communications Centre may operate the radio under the direct supervision of a licence-holder. The stations shall be operated in accordance with appendix 3 of the CDEMA's Emergency Telecommunications Procedures Manual. Trinidad and Tobago has agreed to adopt CDEMA's Guideline for the use of the frequencies for emergency communications by Amateurs (see Table 1).

No group or individual amateur operator enjoys exclusive right to any frequency. All licensed amateurs must recognise that in the event of an emergency, the frequencies will be used strictly for emergency communications. Amateur operators engaged in non-emergency communications, maybe requested to shift their operation to another frequency.

Table 1: Amateur Radio Emergency Frequencies

Band	Frequency / MHz	Mode	Notes
80 metres	3.616 3.815	USB	Night time operation
40 metres	7.170 7.220 7.450 7.850	USB	Daytime operation
20 metres	14.303 14.313 14.283 14.130 14.050	USB USB USB USB CW	Caribbean US Connection (CARIBUS Connection)
6 metres	10.100 10.115	LSB	None
2 metres	147.800 R _{Rx} 147.200 R _{Tx}	FM	None

Statement 7: Secondary Communications – Amateur Radio

In the event that Amateur Radio is to be used as secondary emergency communications to supplement the primary communications system, amateur radio operators shall operate on frequencies listed in Table 1.

2.4.2 Citizen Band Radio

Citizen Band (CB) radio operators play a very important role in reporting to the Communications Centre on the status of damage experienced by communities. They are located across the country and can serve as a valuable link between the NEOC and communities which may become inaccessible after a disaster. The Communications Centre shall maintain a fully operational CB station complete with antenna. During emergency situations, channel 9 shall be used for contacting the Communications Centre under the control of an emergency coordinator. Use of channel 9 by CB operators for non-emergency purposes is prohibited.

Statement 8: Secondary Communications – Citizen Band Radio

Citizen Band (CB) Radios shall operate on channel 9 under the control of a coordinator in the event that CB radios are to be used as secondary emergency communications to supplement the primary communications systems.

3 Contingency Communication Systems

Emergency communication systems are susceptible to various risks such as infrastructural damage or congestion during a disaster. It is necessary to establish protection schemes for the relevant communications systems and also to have contingencies in case the main communication system becomes inoperable. Both the primary and secondary communications systems of the ODPM and TEMA use the public telecommunications networks (both wired and wireless) to conduct their daily operations in non-emergency conditions.

The availability of these systems is a function of their reliability and its ability to cope with congestion (resulting from excessive demand). The fixed line telephone system can easily become overloaded. The mobile phone networks are even more prone to overloading than the fixed line network. It therefore becomes critical to constantly upgrade the existing contingency plan.

Contingency arrangements for both primary and secondary systems in Trinidad and Tobago are summarised in Table 2.

The components of the primary and secondary communication systems to be included in the contingency plan are:

- ODPM/TEMA staff telephone contacts - The extension numbers and locations of all staff shall be listed in *The Emergency Directory*.
- Direct Lines - All direct lines and the service providers at the NEOC/EOC (one of these may be used for a fax) shall be listed in *The Emergency Directory*. The wall jacks shall be labelled with the phone number and the service provider (the wall jacks are also marked with a red disc).
- Email - internal and external communication to ODPM shall follow the format using either the firstinitial&lastname@mns.gov.tt to individuals, or to the generic publicinfo.odpm@gmail.com address.
- Contingency Email – In the event that the NEOC/EOC corporate email services are unavailable, an alternate e-mail address (odpmdailyreports@gov.tt) shall be activated. Instructions for the use of this account shall be kept at the NEOC/EOC.
- Emergency Mobile Telephones - This plan recommends that the ODPM/TEMA acquire five (5) MTPAS protected mobile phones fitted with special SIM cards that allow the phones to roam on the strongest available mobile phone network. These phones shall be used only by emergency coordinators and shall be kept at the NEOC/EOC and checked daily to ensure that they are charged and fully functional.

Fixed and mobile phones are the first choice for emergency communications by both managers and the public. The public telecommunications network can easily become overloaded and eventually disrupted in disaster situations. Telecommunications service providers have established protection schemes for select fixed and mobile connections. These selected phones will be afforded priority access in cases of overloading, and will also be restored, on a priority basis, if the network fails as follows:

- The fixed telephone lines of both the ODPM and TEMA shall be included in the Fixed Telephone Privileged Access Scheme (FTPAS) of the service providers. FTPAS refers to the current system for prioritising identified landline telephones.
- Mobile Telephones used by both the ODPM and TEMA shall be included in the Mobile Telephones Privileged Access Scheme (MTPAS). The system for prioritising mobile telephones by the service providers, MTPAS, allows for identified key response personnel to be issued protected SIM cards. These response personnel shall be identified and recorded in *The Emergency Directory* noting the current holder's name, job title, phone number/network and his/her responsibility.

Table 2: Existing Systems, Risks, Protection and Contingency

Existing Primary and Secondary Communication System	Risks	Protection Scheme	Fall Back or System Contingency
Fixed line phone system	Overload	FTPAS	Mobile phone
Fixed line phone system	Network failure	None	Land Mobile Radio Satellite phone Mobile phone
Mobile phone system	Overload	MTPAS	Fixed line phone
Mobile phone system	Network failure	None	Fixed line phone Land Mobile Radio Satellite phone
Fax facilities	Network failure	None	E-mail Alternative e-mail
Amateur band radio	–	None	This is the system contingency
Citizen Band Radio	–	None	This is the system contingency
VOIP	–	None	This is the system contingency
Satellite phones	–	None	This is the system contingency
Land mobile radio	–	None	This is the system contingency
All systems	–	As above	Messengers

Table 3: Proposed Communications Systems

Proposed Secondary Communication System	Risks	Protection Scheme	Fall Back or System Contingency
Digital Land Mobile Radio System	Network failure	Resilient design	None
Wide Area Network	Network failure	Resilient design	None
Emergency Transportable VHF repeater	Limited access to roads	N/A	None
Two-way communications system between ODPM /TEMA and Media	System failure	Resilient design to be self-sufficient for 7 days	None
Emergency Alert System	System Failure	Resilient design to be self-sufficient for 7 days	Two-way communications system between ODPM /TEMA and Media
H.F. Sub Regional Communications System	System Failure	N/A	None

Statement 9: Contingency Systems

The ODPM and TEMA shall employ a contingency system in accordance with Tables 2 and 3 of Section 3.

4 Public Notifications and Warnings

Resilient public alert and warning tools are essential to saving lives and protecting property during emergencies. The United Nations International Strategy for Disaster Reduction (UNISDR) in January 2000, initiated the development of an International Early Warning Programme (IEWP) which aims to build disaster-resilient communities. The IEWP stresses the importance of Disaster Risk Reduction as an integral component of sustainable development. The goal of the programme is reducing human and economic loss and damage to the environment due to hazards. The IEWP was formerly launched at the World Conference on Disaster Reduction (WCDR) in January 2005.

The primary objective of alerts and warnings is to communicate potential threat and safety-related information to advise and protect the public. Prior to anticipated incidents (e.g., hurricanes, severe storms, or floods), the government may issue alerts and warnings such as evacuation notices or other information to help the public prepare. Following an incident, the exchange of time-sensitive information on response and recovery-related services from government agencies to the general public is vital. Early warning systems are now widely recognised as worthwhile and a necessary investment to help save lives

Trinidad and Tobago is at risk to various hazards such as hurricanes, floods, earthquakes and industrial emergencies (Annex I). In the current NFR, the ODPM and TEMA issue public alerts, warnings, and incident-related information which they receive primarily from the government agencies responsible for monitoring and tracking these hazards (Meteorological Services, Seismic Research Centre, UWI, Police, Fire Services, etc.). The messages are sent by the ODPM and TEMA directly to the media and broadcasting networks for public broadcast. These messages are also sent by facsimile to responder agencies, private sector entities, and non-governmental organisations through the public telecommunications service companies.

The ODPM has an agreement with Columbus Communications Trinidad Limited (i.e. FLOW) to provide alerts to its subscribers. Alerts are broadcast on a ticker tape running at the bottom of the screen. This ticker tape contains a short message or prompts users to view channel 868 for full details. The ODPM and TEMA shall establish similar arrangements with all subscription television broadcasting service providers.

The ODPM has engaged both mobile telecommunications providers via a Memorandum of Understanding (MOU) to broadcast emergency information via SMS to mobile handsets. These broadcasts can target the public in specific geographical locations or be sent island wide. Additionally, both ODPM and TEMA may use social media to relay information to the public.

In the event that the ODPM's information sharing becomes overwhelming, Government Information Services Limited (GISL) will provide support to the ODPM in providing public alerts and updates and monitoring feedback from the public.

The major industrial estates at Point Lisas and Point Fortin, and the PETROTRIN Refinery maintain a siren and voice system for alerting the neighbouring communities in the event of industrial emergencies. Some municipalities with major river systems, such as Diego Martin and Tunapuna-Piarco, have installed and do maintain flood warning.

Considering the critical need to relay time-sensitive information about response and recovery services to the general public both during and after a disaster, the NECP requires:

1. All concessionaires of national 'Free to Air' radio and television broadcasting services to:
 - Conduct an annual risk analysis of their critical facilities, in accordance with the company's established internal audit procedures, and take measures to reduce their network vulnerability.
 - Create a Disaster Plan which addresses, among other issues, operational continuity and methods for maintaining basic services during a disaster.
2. That TATT, the ODPM and TEMA, identify two national (2) radios and TV broadcast networks with the most extensive coverage across the nation and equipped with resilient transmitter facilities at multiple locations and one minor territorial radio station in Tobago.
3. That the ODPM and TEMA enter into arrangements with the concessionaires to make more resilient their stations and transmission infrastructure i.e. to be hurricane and earthquake resistant and self-sufficient for seven (7) days.
4. That the ODPM and TEMA establish a redundant, dedicated hurricane-resistant two-way communications system between the stations identified in (2) above and the NEOC and EOC for the relay of alerts, warnings and relief information for broadcast to the public.
5. That this system shall be:
 - Designed to withstand category 3 hurricane force winds
 - Equipped to operate on standby power and fuel for a period of seven (7) days
 - Deployed at strategic locations to enable access by all parties
 - Equipped with a base station only (no portable radios shall be used on this network), connected to an emergency power supply, and secured at the premises of all the participating organisations
 - Designed with resilient repeater stations to ensure reliable two-way communications
 - Inspected daily and tested at least once a week to ensure operability of the all the equipment. The results of the tests and any other related remarks shall be

entered in a log placed next to the stations. Any faults or maintenance required shall be attended to immediately and entered in the log.

Statement 10: Public Notifications and Warnings

(a) Telecommunications service providers, subscription television networks, 'Free to Air' radio television broadcasters shall upgrade their facilities so that they are resilient to natural disasters; and adopt improved technologies to facilitate efficient public notifications and warnings.

(b) TATT, the ODPM, TEMA and broadcasters shall determine the appropriate standards necessary for the maintenance and upgrade of these facilities and shall be guided by the conditions listed in Section 4 of the NECP.

(c) All subscription television broadcasting services shall provide emergency alerts to their subscribers via a ticker tape shown at the bottom of the viewing screen.

4.1 Emergency Alert System (EAS)

Following the launch of the IEWP in 2005, several countries in our region and around the world developed and implemented national Emergency Alert Systems (EAS) as an important tool in their early warning programme: The World Meteorological Organisation (WMO) and the ITU developed the Common Alerting Protocol (CAP) in 2007. CAP is an international standard format for alerting and public warning. It is designed for all hazards and for use by all media, ranging from sirens to cell phones, faxes, radio television, and various digital communications networks based on the internet. It is used by all emergency managers in various countries, including the US, Canada, Mexico and numerous Central and South American countries. CAP is the recommended standard employed by countries that developed Emergency Alert Systems (EAS).

The EAS provides an added tool to the suite of available emergency communication systems. This tool provides emergency managers with a mode of direct access to radio and television broadcast networks and operators, as well as other broadcast media. It is a national public and warning scheme which allows state officials to address the public during national emergencies over television and radio broadcast networks and wired and wireless cable television systems. The EAS allows broadcasters to send emergency information quickly and automatically through a method of automatic interruption of regular programming.

The EAS consists of a low powered transmitter located at the emergency manager's office and is linked to receivers located at the broadcast facilities. These receivers can be automatically patched into the broadcast's main transmitters, if and when necessary. The emergency

managers are responsible for the content and the activation and deactivation of the EAS. The broadcaster facilitates the process by allowing the EAS access to the main transmitters, in accordance with a prearranged procedure.

TATT, the ODPM and TEMA, in consultation with the Broadcasting Sector, shall develop an Emergency Alert System for Trinidad and Tobago which will operate in accordance with the provisions of the Telecommunications Act Chap. 47:31 (“the Act”) Section 84 (1-5) and concession conditions D30,D31 and licence condition A41 and A42.

The EAS shall clearly identify the specific roles and responsibilities of TATT, the ODPM and TEMA and the Broadcasters. It shall be appended to the NECP in the review cycle. The ODPM shall establish the EAS within the first year after the publication of the NECP. The ODPM shall be responsible for the content, activation and deactivation of the EAS and periodic system tests.

TATT in consultation with the Broadcasting Sector, the ODPM and TEMA shall develop:

- Technical standards for the EAS equipment, in accordance with industry best practices
- Procedures for the installation and maintenance of the EAS equipment
- Rules and regulations for activation, operation and deactivation of the EAS equipment
- Protocols for testing of the EAS, and establish a test schedule and a reporting mechanism for test results and addressing operational issues.

The broadcasters shall be responsible for facilitating the live broadcast transmission of the emergency alerts by allowing the broadcast interface equipment to access their main transmitters according to prearranged conditions. Additionally, they shall be responsible for ensuring that the EAS equipment at their facilities is always in good operating condition.

Statement 11: Emergency Alert System

TATT in conjunction with ODPM and the Broadcasting Sector shall implement an EAS for Trinidad and Tobago.

5 Public Information Exchange

Telecommunications infrastructure is critical to emergency preparedness, public health and economic well-being. Telecommunications technological developments have given the general public (including the corporate community) the ability to remain in contact with one another, manage finances, share information from anywhere in the world all at any time, and more.

The unavailability of telecommunication services can impact public safety and security, disrupt security and response services, and have disastrous economic consequences. The telecommunications industry is a critical national infrastructure and therefore requires priority restoration post emergency.

The public telecommunications networks provide the necessary wired (i.e. fixed line) and wireless (i.e. mobile and fixed wireless access) telecommunications services to both emergency responders and the general public. Typically a public network is designed to allow about 5-10% of the subscribers to call and receive calls at the same time (International Telecommunications Union (Telecommunications Development Bureau) 2013). However, in emergencies more people make calls and tend to talk longer resulting in jamming, blocking or congestion of the network. This may escalate into a telecommunications emergency.

Individuals often provide situational awareness to their family members and communities during incidents. This function is primarily supported by commercial networks, including the increased use of social media during emergencies. This function also applies to communications and information sharing from and between private sector entities that support government response, including utilities and critical infrastructure operators that share information on the availability of their services and resources.

It is necessary that our telecommunications infrastructure be able to withstand hurricane and flooding to enable our citizens to maintain basic communications during all phases of an emergency.

Recognising that the public telecommunications networks are used for voice, video, and data services (including internet access), prudent risk management of these facilities can reduce the impact of disasters by limiting the disruption to daily life and by allowing families to stay in contact with loved ones. The inability to communicate with family members and the uncertainty that arises is but one telling way in which disasters can cause panic and anxiety.

The public telecommunication service providers shall ensure that their Business Continuity Plan (BCP) supports the NECP in accordance with the conditions of the Telecommunications Act Chap. 47:31 ("the Act") Section 84 (1-5) and licence condition A41. The service provider shall

conduct an annual risk analysis of their critical telecommunication facilities and take measures to reduce their network vulnerability.

The BCP shall include strategies for operating during and recovery from an emergency. The BCP shall clearly outline the mechanisms for service restoration to subscribers. Additionally, timeframes for service restoration to key public services, such as hospitals/health centres and Automated Teller Machines (ATM) should also be included in the BCP.

At a minimum, both voice and data services on mobile networks shall be prioritised for restoration within 48 hours¹ after a disaster for sites which are accessible and has not suffered severe structural damages (e.g. damage to antennas and tower).

Mobile networks shall maintain at least two (2) cells on wheels (COWs), one in Trinidad and one in Tobago, to be reserved for emergency relief operations. These COWs may be deployed to severely affected communities which may have lost their normal telecommunications services. Emergency responders providing rescue and relief services in these affected areas shall be allowed priority access to the telecommunications facilities.

Central to ensuring the effectiveness of the NECP, Telecommunications Service Providers shall submit a report of their risk analysis and mitigation/retrofitting procedures to the ODPM and copied to TATT by 30th May annually.

The ODPM and TEMA shall convene a meeting with TATT and the Telecommunications Service Providers on or before 31st January annually to verify the list of telephone numbers identified for FTPAS and MTPAS.

Statement 12: Public Information Exchange

The public telecommunications service providers shall develop a Business Continuity Plan which must include a disaster recovery plan to restore in a prioritized manner:

(i) Both voice and data services on a public mobile telecommunications network shall be prioritised for restoration within 48 hours after a disaster, for sites which are accessible and has not suffered severe structural damages.

¹ Adapted from Draft Telecommunications (Consumer) (Quality of Service) Regulations, 2015: Indicator 1.4 (Fault Repair Time) – Immediate Standard for Mobile Telecommunications

(ii) Cellular Mobile Operators shall maintain at least two (2) transportable cells on wheels (COW) which shall be deployed with at least one in Trinidad and one in Tobago: These are to be reserved for emergency relief operations.

6 Reporting of Local Emergencies

Members of the public are usually the first to report local emergencies when seeking assistance. Reports are usually made by phone calls and social media to the following agencies:

- Police Service Rapid Response Unit at 999/911
- Fire Services at 990
- Ambulance at 311 and 811
- Tobago Emergency Relief at 211
- ODPM Customer Care Centre at 511

In addition, amateur radio and CB operators communicate emergency events. They can be important conduits for relaying information to response agencies when other forms of communications have failed or have been disrupted. Some non-governmental and private sector entities support this function by providing situational awareness of an incident to assist the government with response and recovery (e.g., utilities reporting on the status of service outages).

Upgrades to these public service emergency communications components enhance the flow of information and communications among government agencies, the private sector, and the public, and in some cases, with entities from neighbouring countries. Ideally, wireless broadband networks and applications will greatly enhance incident operations as they become more widely adopted by emergency responders.

In addition to the benefits of this increased flow of communications and information, there are potential communications challenges for the emergency response community. While improvements in the quantity, quality, frequency, timeliness, and type of information available to responders can enhance information sharing and communications during operations, responders can also muddle or make less accurate the information if the flow is not interoperable, properly secured, and managed so that the right information gets to the right people, at the right time. This reinforces the need for joint decision-making, planning, and investment to coordinate mutually-supportive strategies to deploy Next Generation E999/911 Rapid Response, the Nationwide Public Safety Broadband Network, nationwide public alerting systems, and other major capabilities across the nation.

The upgrade of our public service reporting systems to Next Generation Systems such as Next Generation E999/911 Rapid Response will enhance the capabilities of current networks, allowing the public to transmit pictures, videos, and text messages that will provide additional situational awareness to dispatchers and emergency responders.

6.1 Text to E999 Rapid Response Unit

Current trends in mobile wireless usage show the continued evolution from a predominantly voice-driven medium of communication to more text and data transmissions. The ability to direct text messages to the E999 Rapid Response Unit by sending a text to the phone number 999 will provide an alternative means of emergency communication for the general public. Text-to-E999 provides an essential service to members of the public with hearing impairments or speech impediments and also play a crucial role in protecting life and property in situations where making a voice call would be dangerous, impractical, or impossible.

In the event that the text message to number 999 fails, then text messaging providers shall send an automatic delivery failure message that will advise the sender that the message failed and that the sender needs to contact emergency services by another means, such as making a voice call (for persons who are able to do so) or using a telecommunications relay service (for persons with speech impediments).

Statement 13: Reporting of local emergencies

Local emergencies are reported by members of the public using the existing responder agencies such as the police service and fire services etc. Public service reporting systems such as E999/911, 990, 311/811, 511 and 211, shall be upgraded to Next Generation Systems which can allow for real-time transfer of voice, video and data.

Telecommunication Service Providers shall:

- (a) Prioritise all calls to emergency services on its network, within 24 hours following a disaster.

- (b) Implement the Text to E999 Rapid Response Unit service at least six (6) months subsequent to the commencement of implementing the Statements of the NECP.

7 Implementation, Monitoring and Evaluation of the Plan

The ODPM and TEMA are responsible for the implementation and maintenance of this Plan. The Plan shall be reviewed every year, and/or after each emergency/disaster, or at the discretion of the ODPM and TEMA to ensure that it caters for changes in technology and to arising functional demands.

At the time of a disaster event, and following an evaluation of the scale of the event, the ODPM may appoint a person with the responsibility to activate and coordinate the emergency communications processes in accordance with the proposed Standard Operating Procedures (SOP) which shall be developed by the ODPM, TEMA and TATT and be annexed to the Emergency Directory. The SOP shall be attached to the NECP upon review in accordance with Section 1.3.

The ODPM, TEMA and TATT shall jointly review the performance of the emergency communication systems and the SOP following an emergency. Inefficiencies and failures of the emergency communication systems shall be analysed and revised to prevent reoccurrence. In addition, the ODPM and TEMA shall consult with TATT to ensure that the EAS rules and regulations are reviewed taking account of new, improved technologies.

TATT in conjunction with the ODPM and TEMA shall monitor developments in the field of emergency communication and updates from the ITU and other telecommunication agencies, with a view to revising the Plan taking account of emerging technologies and changing best practices.

Statement 14: Development of the SOP, Implementation, Monitoring and Evaluation of the NECP

- (a) The ODPM and TEMA shall develop Standard Operating Procedures (SOP) for the activation and operation of the NECP.
- (b) The ODPM, TEMA and TATT will jointly review the performance of the NECP and the SOP following an emergency.
- (c) The ODPM, TEMA and TATT shall review and revise the rules and regulations of the EAS, in accordance with developments in emergency communications.
- (d) The Government of Trinidad and Tobago shall support the activities of the NECP for its efficient execution.

8 Regional Emergency Communications and International Conventions and Assistance

The UN General Assembly, through its resolution GA 56/195, adopted an International Strategy for Disaster Reduction, UNISDR, 1999. The UNISDR secretariat was tasked with the implementation of the International Strategy for Disaster Reduction. Its mandate was expanded in 2001 to ensure coordination and synergy among disaster risk reduction activities of the United Nations system and regional organisations; and alignment of socio-economic and humanitarian initiatives with disaster risk reduction plans. The UNISDR coordinates several initiatives across the world, building the resilience of nations and communities to disasters.

At the regional level, the Caribbean Disaster Emergency Management Agency (CDEMA) has led the development and implementation of the CARICOM strategic programme for Comprehensive Disaster Management (CDM), which includes coordinating regional response and guiding disaster risk management strategies. Trinidad and Tobago has developed its Comprehensive Disaster Management Framework (2010) in accordance with the CDM. Under the CDEMA agreement, Trinidad and Tobago has been tasked with the responsibility for assisting Grenada, Guyana and Suriname, in the event that their communications infrastructure is rendered inoperable.

HF radio stations are established in Trinidad, Grenada and Guyana on the regionally allocated emergency HF frequency of 7.850 MHz (Upper Side Band (USB)) and 7.453 MHz (USB). These stations shall be adequately equipped with reserve antennas and power necessary for at least seven (7) days. The stations shall be tested at least once a week to ensure that they are functioning properly. During the hurricane season when there is heightened activity in the region, the stations shall be tested daily. HF emergency stations are best managed and operated by experienced amateur radio operators who operate HF equipment regularly. Emergency administrators in Trinidad and Tobago, Guyana and Grenada are advised to consider experienced amateur radio operators when selecting operators for their HF stations.

Statement 15: Regional Emergencies

High Frequency (HF) radio stations installed in Trinidad, Grenada and Guyana shall conduct emergency communications on the regionally allocated emergency HF frequency of 7.850 MHz (USB) and 7.453 MHz (USB).

The stations shall be tested at least once a week during non-hurricane season and daily during the hurricane season to ensure that they are functioning properly.

8.1 Tampere Convention

The Tampere Convention (1998) is a multilateral treaty governing the provision and availability of communications equipment during disaster relief operations, particularly as it relates to the transport of radio and related equipment across international boundaries. It was ratified at the first Intergovernmental Conference on Emergency Telecommunications (ICET-98) in Tampere, Finland, in 1998, and went into effect on 8 January 2005.

Trinidad and Tobago is a signatory to the convention. The Convention allows for international aid agencies such as the Red Cross, and ITU, to import radio equipment into the country, for assisting in the aftermath of a disaster. Prior arrangements need to be established with Customs and Excise Division and TATT for the importation and operation of the transmitting equipment in accordance with the Convention.

8.2 Participation at International Disaster Fora

The Government of Trinidad and Tobago shall monitor and participate in activities of the international and regional institutions responsible for disaster planning and preparedness. Some of these institutions include UNISDR, ITU and the World Meteorological Organization (WMO). This is necessary to ensure that our emergency telecommunications systems employ the best available technologies, adhere to industry best practice and that our policies are aligned with international policies and conventions to which we are signatories.

Statement 16: International Conventions

The Government of Trinidad and Tobago shall ratify the Tampere Convention.

The Government of Trinidad and Tobago shall monitor and participate in activities of the international and regional institutions responsible for disaster planning and preparedness.

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Annex I: Major hazards which may affect Trinidad and Tobago

- Man made
- Marine
- Aeronautical
- Flooding
- Tornadoes
- Drought
- Fires
- Mud volcanoes
- Hurricanes and Tropical Storms
- Tsunamis and other Coastal Hazards
- Industrial hazards (such as chemical leaks/spills and explosions)
- Biological hazards (such as H1N1 pandemic)
- Other threats, such as civil unrest, terrorism and cyber-attacks.
- Earthquake
- Landslide

Annex II: Primary and Secondary Communications Systems

ODPM Communications Systems

NO.	MODE	PURPOSE/ USE	FUNCTION	GROUP
1.	UHF Radios (MNS Trunking)	Internal and MNS Inter-agency Communications	Primary	RADIO
2.	VHF Radios (Analogue)	Inter-agency Network Communications	Primary	
3.	HF Radios	Local and Regional Communications	Secondary	
4.	Marine Radios	Monitoring of Marine Traffic	Secondary	
5.	Air Band Radios	Monitoring of Air Traffic	Secondary	
6.	TSTT PBX	Communicate with both Internal and External Stakeholders and customers.	Primary	ICT
7.	TSTT Mobile Telephone services	Communicate with both Internal and External Stakeholders and customers.	Primary	
8.	Digicel Mobile Telephone services	Communicate with both Internal and External Stakeholders and customers.	Secondary	
9.	C&W Communications	Communicate with both Internal and External Stakeholders and customers.	Secondary	
10.	MNS VoIP	Communicate External Stakeholders.	Secondary	
11.	TSTT Metro E Fiber	Internet Connectivity	Primary (Load balanced)	
12.	C&W Metro E Fiber	Internet Connectivity	Primary (Load balanced)	
13.	Digicel Metro E Fiber	Internet Connectivity	Primary (Load balanced)	
14.	BGAN Satellite terminals	Emergency Internet connectivity (data and voice).	Secondary	

NO.	MODE	PURPOSE/ USE	FUNCTION	GROUP
15.	Mobile Satellite Phones	Communicate with both Internal and External Stakeholders	Secondary	
16.	Disaster Ready App	Alert Notification for Internal & External Stakeholders	Primary	
17.	Emergency Short Messaging Service – TSTT and Digicel	Alert Notification for Internal & External Stakeholders	Primary	VISUAL
18.	C&W Communications Television notifications	Alert Notification for External Stakeholders	Primary	
19.	Web EOC	Management of the agency resources and incident. Email Notifications are included	Primary	
20.	Facsimile TSTT	Alert Notification for External Stakeholders	Primary	
21.	Air – to – Ground Video Feed (SSAFC/ NOC)	Security Monitoring and Aerial Reconnaissance	Secondary	

TEMA Communications Systems

NO.	MODE	PURPOSE/ USE	FUNCTION	Group
1.	VHF Radios (Conventional)	Inter-agency Network Communications	Primary	Radio
2.	VHF Radios (Trunk)	Inter-agency Network Communications	Secondary	
3.	HF Radios	Local and Regional Communications	Secondary	
4.	Marine Radios	Monitoring of Marine Traffic	Primary	
5.	Air Band Radios	Monitoring of Air Traffic	Secondary	
6.	Citizen Band Radios	Communications with Citizen Band	Secondary	

		Operators		
7.	Early Warning System	Public Mass Notification	Primary	
8.	TSTT PBX	Communicate with both Internal and External Stakeholders and customers.	Primary	ICT
9.	Digicel Fixers	Communicate with both Internal and External Stakeholders and customers.	Primary	
10.	TSTT Metro E Fiber	Internet Connectivity	Primary	
11	Green Dot Broadband	Internet Connectivity	Primary	
12	Satellite (Fixed)	Emergency Internet connectivity (data, video and voice).	Secondary	Visual
13	Voice Over Internet Protocol (VIOP) Phone	Inter- agency Communications	Secondary	
14	Mission Mode	Alert Notification for Internal & External Stakeholders	Primary	
15	Virtual Vision App.	Mass Notification, Incident Reporting and Crowd Sourcing	Primary	
16	Web EOC	Management of the agency resources and incident.	Primary	Visual
17	TSTT Mass Messaging System	Public Notification	Primary	
18	EM2000	Incident Management.	Secondary	
19	CCTV Network	Security Management and Visual Monitoring	Primary	
20	Air – to – Ground Video Feed (SSAFC/ NOC)	Security Monitoring and Aerial Reconnaissance	Secondary	