



Telecommunications Authority of Trinidad and Tobago

Consultative Document

on the

National Emergency Communications Plan

(Second Round)

(Version 0.2)

SIGNATURE PAGE

Repealing clause: There is no existing *National Emergency Communications Plan*.

Effective clause: The *National Emergency Communications Plan* becomes effective from the date when it is approved and signed by the duly authorised officers.

Proposed review date: This *National Emergency Communications Plan* shall be reviewed every two years or as is deemed necessary in response to changes in the environment.

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Table of Contents

1	Introduction.....	8
1.1	Rationale	8
1.2	Purpose.....	8
1.3	Roles and Responsibilities the ODPM, TATT and TEMA.....	9
1.4	Background.....	10
1.5	Scope	12
1.6	Review Cycle	13
1.7	Consultation Process.....	13
1.8	Other Relevant Documentation	13
1.9	Definitions	15
1.10	Description of the Phases of Disaster Management.....	17
2	Legal and Regulatory Framework to Support Emergency Telecommunications/ICT Services	18
2.1	Relevant Legislation.....	18
2.2	Treaties and International Agreements.....	20
2.2.1	<i>Tampere Convention</i>	<i>21</i>
2.2.2	<i>The Parish Hall Declaration on Information and Communications Technologies (ICTs) for Resilience in the Caribbean</i>	<i>22</i>
2.2.3	<i>Participation at International Disaster Fora</i>	<i>22</i>
3	Implementation, Monitoring and Evaluation of the NECP.....	23
4	Mitigation Phase.....	24
4.1	Hazards Likely to Affect the Country	24
4.2	Existing Primary Communications Systems	28
4.2.1	<i>National Emergency Operations Centre (NEOC).....</i>	<i>30</i>
4.2.2	<i>The Emergency Directory.....</i>	<i>31</i>
4.2.3	<i>Wide Area Network (WAN).....</i>	<i>31</i>
4.2.4	<i>Maritime Emergencies.....</i>	<i>33</i>
5	Existing Secondary Communications Systems	33

5.1	Proposed Use of Secondary Communications Systems	34
5.1.1	<i>Amateur Radio.....</i>	<i>34</i>
5.1.2	<i>Citizen Band (CB) Radio</i>	<i>35</i>
5.2	The Need for Upgraded Primary Communications Systems	36
5.2.1	<i>Upgraded Digital Land Mobile Radio (LMR) System.....</i>	<i>37</i>
5.2.2	<i>Text to E999 Rapid Response Unit.....</i>	<i>38</i>
5.3	Reducing the Vulnerability and Improving the Resilience of Telecommunications/ICT Networks .	39
6	Preparedness Phase	40
6.1	Standard Operating Procedures (SOPs).....	40
6.2	Risk Analysis and Contingency Plan	41
6.3	Early Warning and Alert Systems	44
6.4	Telecommunications/ICT and Broadcasting to Raise Awareness.....	46
6.5	Cooperation with Different Stakeholders, including Operators and the Private Sector	49
6.6	Training and Exercises.....	52
6.7	Support for Vulnerable Persons	52
7	Response Phase	54
7.1	Communication and Coordination between First Responders and Different Stakeholders	54
7.2	Gathering and Analysis of Data/Information on Immediate Needs of the Population, and Managing the Safe Delivery of the Response	54
7.3	Connecting Families and Friends and the Enabling of Call Centres	56
8	Recovery Phase.....	56
	References	58
Appendix I.	Major Hazards Which May Affect Trinidad and Tobago.....	61
Appendix II.	Maps of Major Hazards which May Affect Trinidad and Tobago	62
Appendix III.	Primary and Secondary Communications Systems.....	73
Appendix IV.	Decisions on Recommendations following the First Consultative Round on the <i>National Emergency Communications Plan</i>	76
Appendix V.	Decisions on Recommendations for the Second Consultative Round	168

Abbreviations

BCP	business continuity plan
BGAN	broadband global area network
CAP	common alerting protocol
CB	citizen band
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	comprehensive disaster management
COW	cell on wheels
CW	continuous wave
DALA	damage and loss assessment
DANA	damage and needs assessment
EAS	emergency alert system
ESF	emergency support function
EOC	emergency operations centre
FRS	Family Radio Service
FTA	free-to-air
FTPAS	fixed telephone privileged access scheme
GMDSS	Global Maritime Distress and Safety System
GORTT	Government of the Republic of Trinidad and Tobago
HF	high frequency
IEWP	International Early Warning Programme
ICT	information and communications technology
IDA	initial damage assessment
ISO	initial situation overview
ITU	International Telecommunication Union
IXP	Internet Exchange Point
LAN	local area network
LMR	land mobile radio
MTL	Massy Technologies Limited

MTPAS	mobile telephone privileged access scheme
M2M	machine-to-machine
NECP	National Emergency Communications Plan
NEOC	national emergency operations centre
NRF	National Response Framework
ODPM	Office of Disaster Preparedness and Management
REACT	Radio Emergency Associated Communications Team
SOP	standard operating procedure
TATT	Telecommunications Authority of Trinidad and Tobago
TEMA	Tobago Emergency Management Agency
THA	Tobago House of Assembly
TSTT	Telecommunications Services of Trinidad and Tobago
TTARL	Trinidad and Tobago Amateur Radio League
TTARS	Trinidad and Tobago Amateur Radio Society
TTCS	Trinidad and Tobago Computer Society
TTDF	Trinidad and Tobago Defence Force
TTFS	Trinidad and Tobago Fire Service
TTIX	Trinidad and Tobago Internet Exchange
TTPS	Trinidad and Tobago Police Force
UHF	ultrahigh 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 Organization

1 Introduction

1.1 Rationale

The Office of Disaster Preparedness and Management (ODPM) of the Ministry of National Security, along with the Tobago Emergency Management Agency (TEMA), is seeking to establish a national emergency communications plan. The Telecommunications Authority of Trinidad and Tobago (TATT) was invited to co-partner in the preparation of the *National Emergency Communications Plan* (NECP).

1.2 Purpose

The NECP reviews the existing emergency telecommunications and information and communications technology (ICT) systems in Trinidad and Tobago and articulates key steps for upgrading the emergency response machinery, taking account of trends in disaster management and emerging technologies. It outlines emergency/disaster telecommunications and ICT systems, the roles and responsibilities of responder agencies and the resultant synergies.

Considering the demand for ICTs during all phases of disasters, it is important that resilience and redundancy be established to ensure continuity of operations in emergency/disaster communications management. Responders need to be assured of the resilience and redundancy of their ICT systems. It is also important to establish processes to facilitate the rapid restoration of connectivity after an emergency/disaster.

In addition, data collected following emergency/disaster events on the use and performance of ICT networks and applications contribute to technological development towards improving disaster preparedness plans and processes.

The NECP assesses the sustainability of existing land mobile radiocommunications systems, recommends the integration of broadband capabilities to modernise emergency/disaster communications, and addresses the roles of all stakeholders supporting communication during the response and recovery phases.

The plan focusses on the persons, processes and technologies that are critical to efficient emergency/disaster telecommunications and ICT systems. It ensures the availability and interoperability of communications to manage emergency/disaster response and recovery; 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).

1.3 Roles and Responsibilities the ODPM, TATT and TEMA

The ODPM is the national disaster management agency for Trinidad and Tobago. Its primary responsibility is the coordination of the country's emergency relief agencies and resources to reduce disaster risk and manage emergency response and recovery. Disaster management in Tobago is the remit of TEMA, which is an agency of the Tobago House of Assembly (THA). TEMA coordinates a network of agencies and individuals in Tobago in times of disaster. TATT is the regulator for the telecommunications and broadcasting sectors of Trinidad and Tobago and, as such, develops policies, frameworks and guidelines for the industry. The roles and responsibilities as they relate to the NECP are outlined in table 1:

Table 1. Roles and responsibilities of the ODPM, TATT and TEMA

ODPM	TATT	TEMA
The focal point of the GORTT for disaster risk	Preparation and maintenance of the NECP	The primary coordinating agency of first responders and support agencies on the island of Tobago
Fulfil the role of the National Disaster Office (NDO), which includes the emergency communications coordinator	Establish and ensure compliance by network operators with the regulatory framework to adhere to the policy statements of the NECP	Fulfil the role of the backup/secondary coordination centre for the National Disaster Office (NDO)
Serve as a redundant NEOC for TEMA	Provide technical guidance and expertise relating to telecommunications and broadcasting	Serve as a redundant NEOC for the ODPM
Provide technical expertise with respect to the execution of disaster risk reduction and disaster risk management	Provide guidance to agencies that utilise communications equipment in the provision of humanitarian aid	Provide technical expertise with respect to the execution of disaster risk reductions and disaster risk management

1.4 Background

The Republic of 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 appendix I: Major Hazards which May Affect Trinidad and Tobago.) The islands' coastal and offshore industrial infrastructure and sensitive ecological areas are exposed to marine and coastal threats. The industrial offshore facilities are also vulnerable to technological hazards and security threats.

During the period 2014–2019, the International Telecommunication Union's Telecommunication Development Sector (ITU-D) Study Group 2 conducted extensive studies on the utilisation of telecommunications/ICTs for disaster preparedness, mitigation and response.

The ITU-D, at its Global Forum on Emergency Telecommunications held from 6th to 8th March 2019, published for consultation its *Global Guidelines to Develop National Emergency Telecommunications Plans*. The final version of the guidelines were published in January 2020 and adopted in the drafting of this NECP.

The ODPM draws on the competencies and capabilities of the Trinidad and Tobago Defence Force (TTDF), Trinidad and Tobago Fire Service (TTFS), Trinidad and Tobago Police Service (TTPS), government ministries and agencies, the private sector, non-governmental organisations (NGOs), community and faith-based organisations and other key stakeholders, to help the country prepare for, mitigate, respond to and recover from the effects of emergencies/disasters.

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 identified in the NRF are the ODPM, central government, ministries, municipal corporations, governmental agencies, the THA, NGOs and the private sector.

The ODPM, TEMA and the disaster management units (DMUs) of the municipal corporations in Trinidad manage, advise and lead a network of public sector agencies and individuals in the country in times of emergency/disaster. In accordance with their mandates, TEMA and the DMUs are expected to work in close collaboration with the

ODPM. Should the capacity of TEMA or the DMUs become overwhelmed in a national emergency or localised disaster, the ODPM will provide its full support to them and vice versa.

Emergency/disaster response and recovery personnel from various agencies, such as the TTDF, TTFS, TTPS, municipal corporations, and town and borough 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 dealing effectively with a broad range of incidents.

An emergency situation or a hazard impact may escalate into a disaster, either due to its very nature or as a consequence of an inadequate response to the initial event. The magnitude of the event may require resource mobilisation on a sub-regional or even international scale. ICTs related to an emergency/disaster include activities that go well beyond an alert requesting an emergency response, which is normally made through available communications. It also involves communication within each responder agency and among all responder agencies at the disaster site. Additionally, it allows all responder agencies at the disaster site to communicate with organisations outside of the affected area. Alerts and updates regarding impending emergencies/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 platforms 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 public early warning messages issued by the ODPM and TEMA are disseminated via:

1. Radio and TV broadcasting networks – wired and wireless
2. Short Messaging Systems (SMS) over mobile telecommunications networks
3. Voice over Internet Protocol (VOIP) over 4G and 5G networks
4. Web emergency operations centre (Web EOC)
5. Facsimile
6. Mobile messaging apps

Any failure of telecommunications and broadcasting infrastructure following a natural or anthropogenic hazard impact can seriously hamper alert, response and recovery operations. Damage to telecommunications and ICT systems infrastructure affects network connectivity may result in networks becoming congested or total network failure. Response

November 2021 11 TATT 2/3/50

and recovery efforts are delayed and there is difficulty coordinating efforts, all of which affect the quality and timeliness of response/relief services. When broadcast transmitting infrastructure is damaged, the disaster management and authorised alerting agencies are also severely handicapped in communicating alerts and updates to the public.

Internationally, administrations are continuously upgrading their emergency/disaster telecommunications and broadcasting facilities to employ new and/or retrofitted technologies to ensure resilience. A review of existing national infrastructure reveals that there may be a need to upgrade to more robust, resilient technologies or equipment and, in some cases, to add new emergency communications systems.

1.5 Scope

The scope of the NECP is to:

1. identify and facilitate necessary upgrades to the existing land mobile radiocommunications system, enabling all emergency/disaster responders to communicate and share information on a reliable, flexible telecommunications and ICT system across all agencies, in the event of a threat or hazard, as needed and when authorised.
2. identify a contingency system which allows emergency/disaster response agencies to maintain communications in the event of damage to or destruction of their primary telecommunications and ICT systems infrastructure.
3. develop resilient systems for public notifications, alerts and warnings.
4. establish systems and processes for the urgent restoration of basic telecommunications and ICT services (voice and data) in affected areas.
5. propose appropriate upgrades for the reporting of local emergencies/disasters by the public, to include voice, video and data messages.
6. establish a contingency emergency/disaster communications system for contacting regional and international agencies.
7. identify how to include the assistance of amateur operators during emergency events.

1.6 Review Cycle

This plan shall be reviewed annually or after any emergency/disaster or planned emergency/disaster management exercise by the ODPM/TEMA to determine whether any revisions to the plan are necessary. Information collected on the disaster and the impact of a disaster on ICT networks shall be analysed and the relevant ICT systems retrofitted or upgraded to ensure resilience.

The NECP shall be modified as required and in consultation with relevant stakeholders to ensure that any gaps or weaknesses are resolved, strengths are maintained, and opportunities and threats are adequately addressed.

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

1.7 Consultation Process

The first version of the NECP was drafted jointly by representatives of the ODPM, TATT and TEMA. The views and opinions of key stakeholders were considered in preparing that draft, which was then issued for consultation with the general public and other stakeholders.

Comments and recommendations were received on the prescribed form and are included in appendix IV. Subsequent to the receipt of the comments and recommendations, the ITU published its first *Draft Guidelines for the National Emergency Telecommunication Plans*, for consultation in March 2019. The final document was published in December 2019. Based on the new ITU guidelines, the NECP was further revised and reviewed by a committee comprising representatives from various key stakeholders, taking into account the comments and recommendations received during the consultation.

The ODPM/TEMA will make available the revised NECP for a second round of public consultation for a period of three months. TATT, on behalf of the ODPM/TEMA, will manage the consultation on any subsequent revision of that document based on comments and recommendations received from the second round of consultation. The NECP will then be finalised for publication and consideration by the ODPM and TEMA.

1.8 Other Relevant Documentation

Other relevant policies, plans and regulations, currently in effect, to be read with this Framework, include:

1. *Regional Emergency Communications Plan*. Caribbean Disaster and Emergency Management Agency. 2005
2. *Handbook of Disaster Communications*. International Telecommunication Union (Telecommunication Development Bureau). 2013
3. The Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations. International Telecommunication Union. 2016.
4. *Global Guidelines for National Emergency Telecommunications Plans*. International Telecommunication Union. 2019.
5. Parish Hall Declaration on Information and Communications Technologies (ICT) Resilience in the Caribbean. Multi-stakeholder. 2018.
6. *Draft Disaster/Emergency Standard Operating Procedures and Contingency Plan*. NEMA Ministry of National Security. 2000.
7. *Standard on Continuity, Emergency, and Crisis Management*. NFPA 1600. 2019. National Fire Protection Association 1600.
8. 22301:2019, Security and resilience – Business continuity management systems – Requirements. International Organization for Standardization ISO 22301. 2019. ISO Geneva: ISO.
9. 22313:2020, Security and resilience - Business continuity management systems - Guidance on the use of ISO 22301. International Organization for Standardization ISO 22313. 2020. ISO Geneva: ISO.
10. *Regional Comprehensive Disaster Management (CDM) Strategy and Planning Framework 2014-2024 Draft*. Caribbean Disaster and Emergency Management Agency. 2005.
11. *Comprehensive Disaster Management Policy Trinidad and Tobago*. Office of Disaster Preparedness and Management (ODPM). 2010.
12. *National Shelter Management Policy Version 2*. Trinidad and Tobago. Office of Disaster Preparedness and Management (ODPM). 2012.

13. *The National Response Framework*. Trinidad and Tobago. Office of Disaster Preparedness and Management (ODPM). 2010.
14. *Draft Disaster/Emergency Standard Operating Procedures and Contingency*. NEMA and the Ministry of National Security. 2000. <http://www.odpm.gov.tt>.
15. *Crisis Communications Guidelines and Response Plan*. The Government of the Republic of Trinidad and Tobago. 2011.
16. *Authorisation Framework for Citizen Band Radiocommunications Devices*. Telecommunications authority of Trinidad and Tobago. 2019
17. *Authorisation Framework for Amateur Radio Service*. Telecommunications authority of Trinidad and Tobago. 2021
18. *Technical Standards for Public Fixed Telecommunications Networks*. Telecommunications Authority of Trinidad and Tobago. 2020
19. *Broadcasting Technical Quality of Service Standards: Subscription and Free-to-Air Television Broadcasting Services in Trinidad and Tobago*. Telecommunications Authority of Trinidad and Tobago. 2019

1.9 Definitions

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Disasters are often described as the result of the combination of the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injury, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation (UNISDR, 2009).

Early warning system: The set of capacities needed to generate and disseminate timely and meaningful warning information, to enable individuals, communities and organisations

threatened by a hazard to prepare and act appropriately and in sufficient time to reduce the possibility of harm or loss. This definition encompasses the range of factors necessary to achieve effective responses to warnings. A people-centred early warning system necessarily comprises four key elements: knowledge of the risks; monitoring, analysis and forecasting of the hazards; communication or dissemination of alerts and warnings; and local capabilities to respond to the warnings received. The expression “end-to-end warning system” is also used, to emphasise that warning systems need to span all steps, from hazard detection through to community response (UNISDR 2009).

Emergency: A threatening condition that requires urgent action (UNISDR 2009)

Hazard: A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts; property damage; loss of livelihoods and services; social and economic disruption; or environmental damage. The hazards of concern to disaster risk reduction, as stated in footnote 3 of the Hyogo Framework, are “... hazards of natural origin and related environmental and technological hazards and risks”. Such hazards arise from a variety of geological, meteorological, hydrological, oceanic, biological, and technological sources, sometimes occurring in combination. In technical settings, hazards are described quantitatively by the likely frequency of occurrence of different intensities for different areas, as determined from historical data or scientific analysis (UNISDR 2009).

Risk: The combination of the probability of an event and its negative consequences (UNISDR 2009). This definition closely follows the definition in the ISO/IEC Guide 73. The word “risk” has two distinctive connotations. In popular usage, the emphasis is usually placed on the concept of chance or possibility, such as “the risk of an accident”, whereas in technical settings, the emphasis is usually placed on the consequences in terms of “potential losses” for some particular cause, place and period. It can be noted that people do not necessarily share the same perceptions of the significance and underlying causes of different risks (UNISDR 2009).

Risk assessment: A methodology to determine the nature and extent of risk, by analysing potential hazards and evaluating existing conditions of vulnerability that, together, could harm exposed people, property, services, livelihoods and the environment on which they depend. Risk assessments (and associated risk mapping) include a review of the technical characteristics of hazards, such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability, including the physical, social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities with respect to likely risk scenarios. This series of activities is sometimes known as a risk analysis process (UNISDR 2009).

Vulnerability: The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards (ITU Guidelines for National Emergency Telecommunication Plans 2019). There are many aspects of vulnerability, arising from various physical, social, economic and environmental factors. Examples include poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management. Vulnerability varies significantly within a community and over time. This definition identifies vulnerability as a characteristic of the element of interest (community, system or asset) which is independent of its exposure. However, in common use, the word is often used more broadly to include the element's exposure.

1.10 Description of the Phases of Disaster Management

The NECP is intended to describe how telecommunications/ICT infrastructure will be utilised through the four phases of a disaster or emergency, as follows (ITU Guidelines for National Emergency Telecommunication Plans 2019):

1. Disaster mitigation phase: aims to minimise the adverse impacts of hazardous events by establishing a hazard profile for the country, to determine where the country is most vulnerable
2. Preparedness phase: consists of detailed plans, procedures and protocols for the coordination and communication of the agencies involved in emergency management
3. Response phase: the phase in which the plans and procedures developed in the preparedness phase are executed
4. Recovery phase: the phase where aid is provided to return the affected community to the normal levels of safety and functionality

2 Legal and Regulatory Framework to Support Emergency Telecommunications/ICT Services

2 Relevant Legislation

In regulating telecommunications and broadcasting operators in relation to disaster communications, TATT is governed by the following provisions of the Telecommunications Act, Chap. 47:31 (the Act):

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—

Authorise the taking of possession and control by the Government of any telecommunications equipment, installation, service, apparatus or station to be used—

for Government service;

for such ordinary service as the Minister of National Security may determine; or

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 in relation to public emergency telecommunications services 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) meters 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.

Concession Condition 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”.

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 radiocommunications service and radiotransmitting equipment to the Government”.

2.2 Treaties and International Agreements

The UN General Assembly, through its resolution GA 56/195, adopted an International Strategy for Disaster Reduction (UNISDR) in 1999. The UNISDR secretariat was tasked with the implementation of the strategy. Its mandate was expanded in 2001, to ensure coordination and synergy among the 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 the regional response and guiding disaster risk-management strategies. Trinidad and Tobago has developed its *Comprehensive Disaster Management Framework* (2010), in accordance with the CARICOM CDM programme. Under the CDEMA agreement, Trinidad and Tobago has also been tasked with the responsibility of assisting Grenada, Guyana and Suriname in the event that their communications infrastructure is rendered inoperable.

High frequency (HF) radio stations have been established in Grenada, Guyana and Trinidad on the regionally allocated emergency HF of 7.850 MHz and 7.453 MHz upper side bands. These stations shall be adequately equipped with reserve antennas and the power necessary for at least seven days. The stations shall be tested at least once a week during non-hurricane season and daily during the hurricane season, to ensure 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 Grenada, Guyana and Trinidad and Tobago are advised to consider experienced amateur radio operators when selecting operators for their HF stations.

The results of the tests and maintenance checks shall be entered in the station's logbook. Additionally, a monthly record or a cumulative quarterly record (with graphical display) should be sent to the custodians of the NECP.

All faults shall be recorded and reported to management. Procedures and time frames for the resolution of all faults, including the re-certification process to regain operability, shall be identified. Fault management and resolution shall be detailed in the standard operating procedures (SOPs).

National Emergency Communications Plan: Statement on the Use of Regionally Allocated Frequencies

1. High frequency (HF) stations installed in Trinidad and Tobago shall conduct emergency communications by appropriately qualified and experienced operators, on the regionally allocated emergency HF of 7.850 MHz and 7.453 MHz upper side bands.

2.2.1 Tampere Convention

The Tampere Convention (1998) is a multilateral treaty governing the provision and availability of communications equipment during disaster relief operations, particularly 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 January 8, 2005.

The Government of the Republic of Trinidad and Tobago (GORTT) is a signatory to the Convention. The Convention allows for international aid agencies such as the Red Cross, as well as the ITU, to import radio equipment into countries to assist 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.

National Emergency Communications Plan: Statement on the Tampere Convention

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

2.2.2 The Parish Hall Declaration on Information and Communications Technologies (ICTs) for Resilience in the Caribbean

The Telecommunication Development Bureau (BDT) of the ITU in collaboration with, and supported by, CDEMA, organised a Multi-stakeholder Forum on the Role of Telecommunications/ICTs for Disaster Management and Risk Reduction for Caribbean Islands, in Roseau, Dominica during the period 4th to 8th December 2018.

The objectives of the workshop were, inter alia, to:

1. stimulate awareness in paving the way for enhancing the use of ICTs for disaster management in the region.
2. address key questions relating to the best use of ICTs for disaster risk reduction and management.
3. facilitate the exchange of experiences and best practices in the use of modern technologies for monitoring and early warning.
4. apprise participants of present ITU emergency telecommunications projects in the region.

The participants at this meeting had the opportunity to debate and adopt strategies showing ICTs support disaster risk reductions and management activities. These findings are to be used in the implementation of the Sendai Framework and the 2030 agenda for sustainable development.

2.2.3 Participation at International Disaster Fora

GORTT shall monitor and participate in the activities of the international and regional institutions responsible for disaster planning and preparedness. Some of these institutions

include the ITU, UNISDR and the World Meteorological Organization (WMO). This is necessary to ensure that our emergency telecommunications/ICT systems employ the best available technologies and adhere to industry best practices, and that our policies are aligned with the international policies and conventions to which we are signatories.

National Emergency Communications Plan: Statement on Participation at International Disaster Fora

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

3 Implementation, Monitoring and Evaluation of the NECP

The ODPM and TEMA are responsible for the implementation and maintenance of the NECP. The plan shall be reviewed every year, and/or after each emergency/disaster, after exercises, or at the discretion of the ODPM and TEMA, to ensure that it caters for developments in technology, processes, institutions, and so forth, and arising functional demands.

At the time of a disaster and following an evaluation of the scale of the event, the ODPM may appoint a person who will be responsible for activating and coordinating the emergency communications processes, in accordance with the proposed SOPs, which shall be developed by the ODPM, TATT and TEMA and annexed to the Emergency Directory. The SOPs shall be attached to the NECP.

The ODPM, TATT and TEMA shall jointly review the performance of the emergency communications systems and the SOPs following an emergency. Inefficiencies and failures of the emergency communications systems shall be analysed and revised to prevent recurrence. In addition, the ODPM and TEMA shall consult with TATT to ensure that the rules and regulations of the emergency alert system (EAS) are reviewed, taking account of new and/or improved technologies.

TATT, in conjunction with the ODPM and TEMA, shall monitor developments in the field of emergency communications and updates from the ITU and other telecommunications

agencies, with a view to revising the NECP, taking account of emerging technologies and changing best practices.

National Emergency Communications Plan: Statements on the Development of the SOPs and Implementation, Monitoring and Evaluation of the NECP

4. The ODPM and TEMA shall develop standard operating procedures (SOPs) for the activation and operation of the NECP.

5. The ODPM, TEMA and TATT will jointly review the performance of the NECP and the SOPs following an emergency.

6. The ODPM, TEMA and TATT shall review and revise the rules and regulations of the EAS, in accordance with developments in emergency communications.

7. The Government of the Republic of Trinidad and Tobago shall support the activities of the NECP for its efficient execution.

4 Mitigation Phase

4.1 Hazards Likely to Affect the Country

Trinidad and Tobago is vulnerable to both natural and anthropogenic hazards. Historical data show that the country, due to our location, has the potential to experience high magnitude natural events such as earthquakes, tropical storms and tsunamis. In more recent times, the most prevalent events have been limited to hydrometeorological events such as flooding, landslides, high-wind events and bush fires. There are also several anthropogenic hazards that regularly affect Trinidad and Tobago.

Figure 1 shows the major hazards affecting the country, which are classified under six categories: environmental, social/organisational, industrial/technological, biological, hydrometeorological and seismic.



Figure 1. List of potential hazards affecting Trinidad and Tobago (MNS/ODPM archives, 2014)

Figure 2 depicts the frequency of occurrence of certain types of hazards during the period 2011 to 2014. The chart also gives an indication that natural hazards have been more prevalent than anthropogenic hazards.

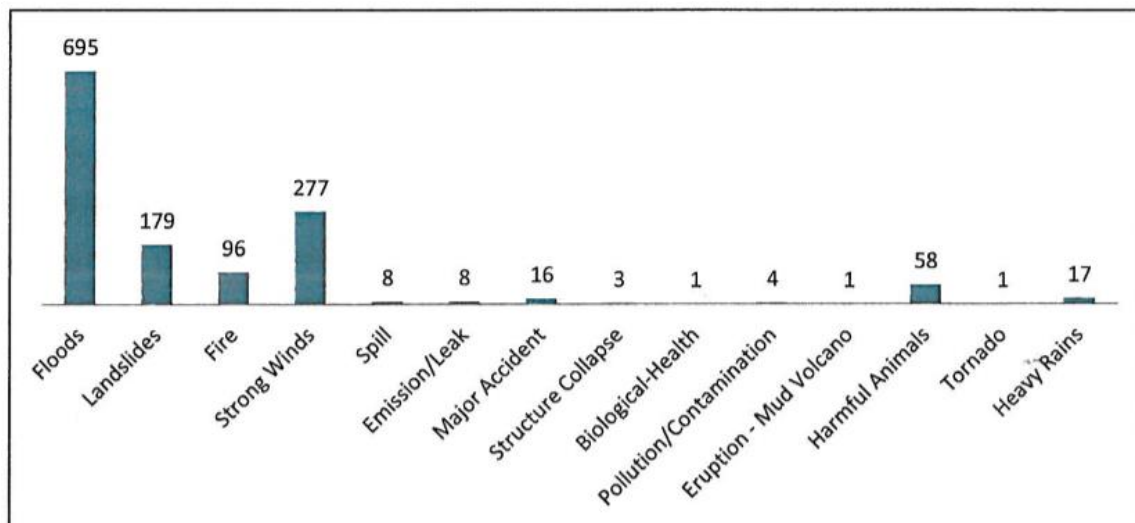


Figure 2. Number of occurrences of hazards over the period 2011–2014 for Trinidad and Tobago (MNS/ODPM archives, 2014)

From the data provided, one can see that the most prevalent hazards in Trinidad and Tobago are floods, landslides, high winds and fires. Figures 3 and 4 are maps of the most prevalent hazards and the level of impact by administrative boundaries for Trinidad and Tobago, respectively.

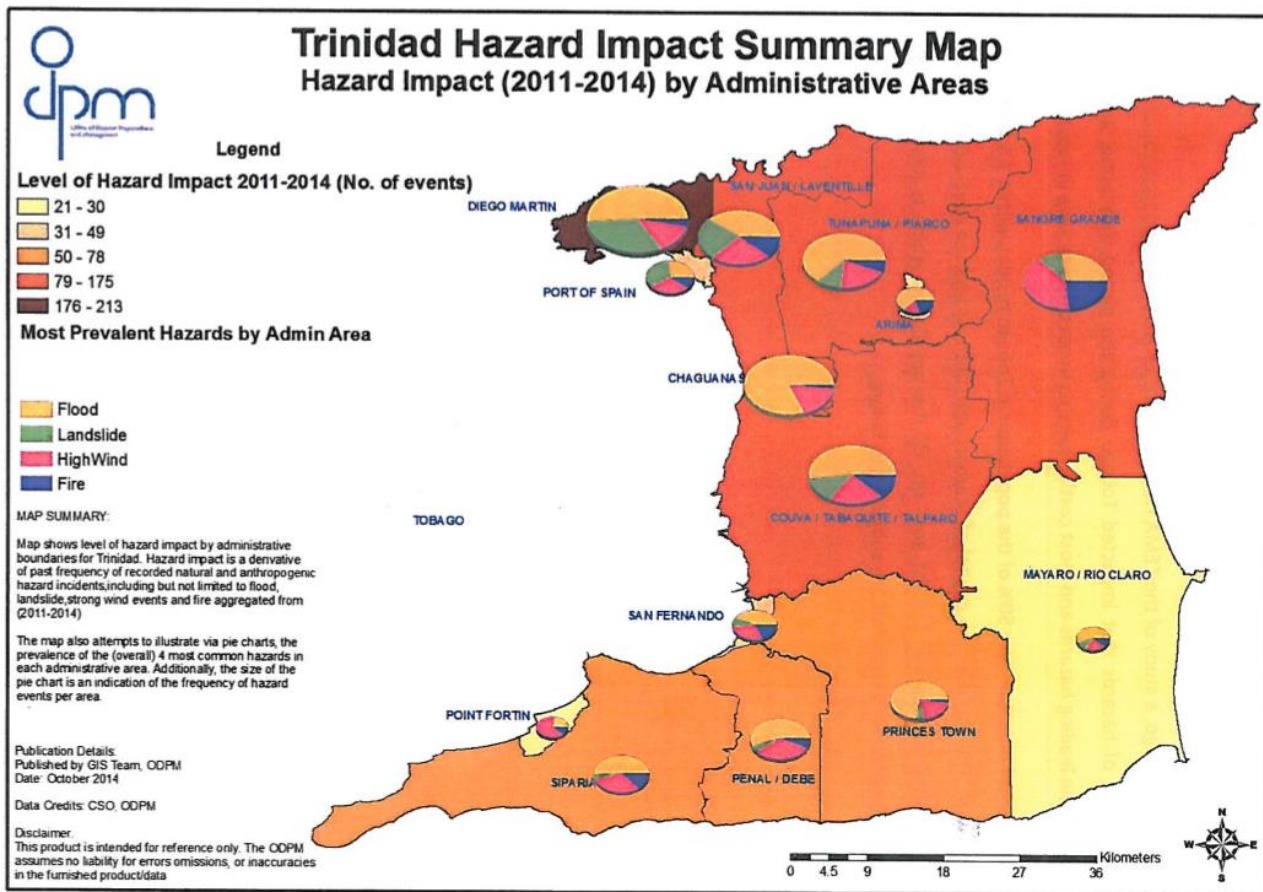


Figure 3. Trinidad hazard impact map for 2011–2014 (MNS/ODPM archives, 2014)

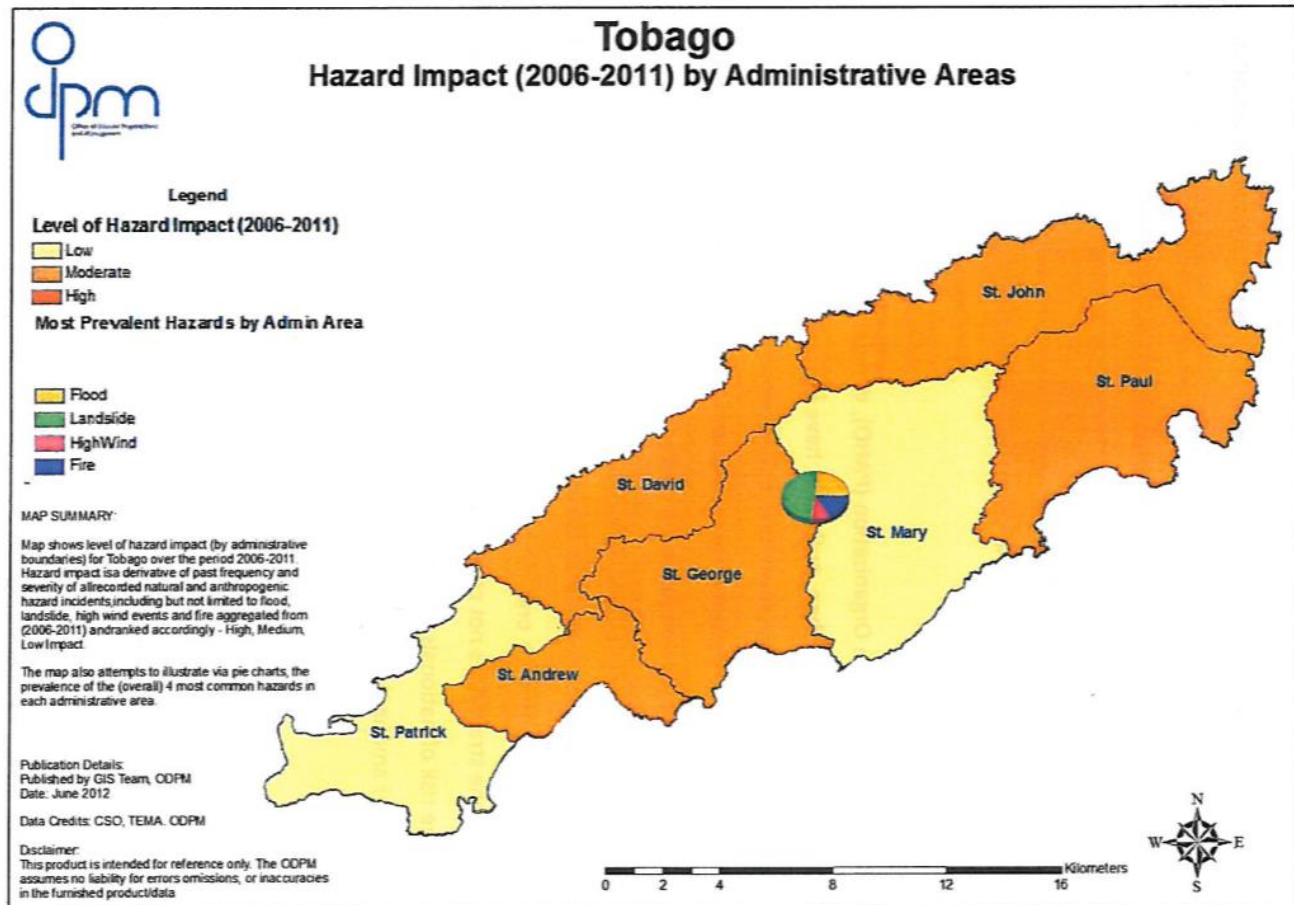


Figure 4. Tobago hazard impact map for 2011–2014 (MNS/ODPM archives 2014)

There are also possible hazards of a more catastrophic nature. These and their associated risks should be identified. The hazards are seismic hazards and hurricanes or tropical cyclones resulting in cyclonic winds, storm surges and flooding. Appendix II provides more details of the likely risks of those hazards occurring in Trinidad and Tobago.

4.2 Existing Primary Communications 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's wide area network (WAN) and can communicate with other partner responders and support agencies authorised to operate on this WAN.

The ODPM owns and operates two very high frequency (VHF) national land mobile radio (LMR) networks and one HF radio station in Trinidad, while TEMA owns and operates one VHF LMR network and one HF radio station in Tobago. Additionally, both the ODPM and TEMA have a range of secondary communications systems which may be used as contingency systems where the primary systems fail. The secondary systems are further explained in section 6.2.2. Both the primary and secondary communications systems used by the ODPM and TEMA are listed in appendix III.

Responder agencies such as the TTDF, TTFS, TTPS and municipal corporations all operate LMR networks which they use in their respective daily operational functions. These networks shall be used by these agencies for emergency/disaster communications, in addition to other operational communications.

In the event of an emergency/disaster which requires the activation of the national emergency operations centre (NEOC), responder agencies shall activate previously configured stations at the communications room of the NEOC, to establish and maintain communications between their agencies and the ODPM. Similar arrangements exist at the TEMA emergency operations centre (EOC).

Consequently, the communications room consists of a conglomeration of various LMR systems assembled in a common location. However, since they operate on disparate private systems restricted to their individual use, responders are unable to communicate across agencies. This limits the communication among the responder agencies who are conducting field operations.

Notwithstanding the above, the municipalities, along with some government agencies including TEMA, use LMR radios programmed to operate on the ODPM VHF LMR network and, hence, can communicate with the NEOC at the ODPM through a network controller. Similarly, TEMA can communicate with first responders in 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. However, although these networks are functional, their coverage is limited by geographical and propagation constraints and, therefore, some areas of the country cannot be accessed by them.

4.2.1 National Emergency Operations Centre (NEOC)

Currently, the ODPM operates an NEOC located at 4a Orange Grove Road, Tacarigua. In the event of a disaster, emergency support personnel from responder agencies assemble at the NEOC. These representatives communicate with their respective agencies on their primary or secondary networks. The ODPM and TEMA communicate with agencies responsible for response and recovery via the most reliable and efficient means available (see appendix III).

The noise level at an NEOC can get very high at times during emergency/disaster management activity. This can make communications chaotic and difficult. The NEOC facilities shall be upgraded to include a secure, soundproof communications room, equipped with backup power, food and water for seven days. The communications room shall continue to accommodate operators from responder agencies and their radio equipment. It shall be structurally sound and secure to protect the occupants, communications equipment and systems from threats and hazards.

The communications room shall ensure that agencies are provided adequate space and power for operating their radios. Additionally, agencies will be responsible for the set up and dismantling of their workstations before and after an emergency. The radios must be properly installed and not cause interference to any other radio or electronic equipment. Considering that several operators will be sharing space in the communications room, all operators must use headphones and keep noise levels to a minimum.

National Emergency Communications Plan: Statement on the National Emergency Operations Centre (NEOC)

8. A secure, soundproof communications room which can withstand Category 5 hurricane force winds and an earthquake magnitude of 7 (Richter scale) shall be established at the NEOC, equipped with backup power, food and water for seven days, and designed to accommodate the operators from responder agencies and their radiocommunications equipment.

4.2.2 The Emergency Directory

The ODPM and TEMA shall maintain a directory, known as the Emergency Directory, containing the contact information, including phone numbers, fax numbers and e-mail addresses, of all persons and their alternates, and all agencies involved in disaster planning and mitigation, and response and relief operations in Trinidad and Tobago. The directory shall have separate listings for Trinidad and for Tobago, to facilitate ease of reference and use. Persons listed in the directory must indicate that they can be contacted at any time, if needed, during an emergency. The directory will be updated quarterly to ensure accuracy. Copies of the Emergency Directory shall be kept at the NEOC, in the communications room in Trinidad, and at the EOC in Tobago.

National Emergency Communications Plan: Statement on the Emergency Directory

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

4.2.3 Wide Area Network (WAN)

Internationally, emergency management agencies, such as the Federal Emergency Management Agency (FEMA) in the USA, the Canadian Public Safety Operations Organisation in Canada and the Emergency Response and Recovery Unit of the UK, are constantly upgrading their communications infrastructure to enable real-time voice, video and data transmissions. Additionally, responder agencies are increasingly augmenting their private LMR capabilities with commercial broadband services, for disaster planning and preparation and, in some cases, procuring private broadband local area networks (LANs) with faster data capabilities. This allows for the 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 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), will transform the current methods of communication by emergency responders who 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 will provide coverage to underserved geographic areas.

A nationwide public safety broadband 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 of saving 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.

National Emergency Communications Plan: Statement on the Wide Area Network (WAN)

10. The Government of the Republic of Trinidad and Tobago (GORTT), via its telecommunications and ICT agencies, shall establish a nationwide secure 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 to easily exchange real-time voice, video and data for emergency response and recovery.

4.2.4 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 coast stations in Trinidad (the Trinidad and Tobago Coast Guard at Staubles Bay, and North Post in Diego Martin) and one in Scarborough, Tobago. Additionally, there are several limited coast stations around the coastline, which provide a VHF communications link between vessels and the stations.

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

National Emergency Communications Plan: Statement on Maritime Emergencies

11. The ODPM and TEMA shall maintain marine VHF radios in their communications rooms and continuously monitor the designated Global Maritime Distress and Safety System (GMDSS) channels 16 and 70.

5 Existing Secondary Communications Systems

The ODPM and TEMA use several secondary communications systems either to supplement the primary communications systems or as contingency emergency communications systems. The major secondary communications systems include amateur radio, citizen band (CB) 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 appendix III.

5.1 Proposed Use of Secondary Communications Systems

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

5.1.1 Amateur Radio

The existing communications room is equipped with a complete amateur radio station comprising HF, VHF and UHF transceivers and antennas. The station will be upgraded to facilitate new modes of communications which are being developed, such as amateur radio broadband connectivity. Operations manuals, spare batteries, battery chargers and other accessories should be kept securely and close to the transceivers.

Only licensed radio amateurs may operate these radios. The licensed operators may be employees or members of REACT, members of the Trinidad and Tobago Amateur Radio Society (TTARS) or the Trinidad and Tobago Amateur Radio League (TTARL), or they may be licensed volunteer operators. The contact telephone numbers for these persons and organisations shall be recorded in the Emergency Directory.

Unlicensed personnel at the communications room may operate the amateur radio equipment, under the direct supervision of a licensed operator. The stations shall be operated in accordance with appendix 3 of CDEMA's Emergency Telecommunications Procedures Manual.

Trinidad and Tobago has agreed to adopt CDEMA's guidelines for the use of the frequencies for emergency communications by amateurs, identified in table 2. In the event of an emergency, all the frequencies outlined in the table will be reserved for emergency communications. Amateur operators shall use these frequencies only for emergency communications.

Table 2. Amateur radio emergency frequencies

Band	Frequency/MHz	Mode	Notes
80 metres	3.616	LSB	Night-time operation
	3.815		
40 metres	7.170	LSB	Daytime operation
	7.220		
	7.450		

	7.850		
20 metres	14.303 14.313 14.283 14.130 14.050	USB USB USB USB CW	Caribbean US Connection (CARIBUS Connection)
30 metres	10.100 10.115	LSB	Day and night
2 metres	147.800 147.200	FM	Day and night

National Emergency Communications Plan: Statement on Secondary Communications – Amateur Radio

12. In the event that amateur radio is to be used as a secondary emergency communications system to supplement the primary communications systems, amateur radio operators shall operate on the frequencies listed in table 2.

5.1.2 Citizen Band (CB) Radio

The ODPM, TEMA and TATT recognise the important role CB radio operators play in providing updates and damage updates to the NEOC. In 2019, TATT published its *Authorisation Framework for Citizen Band Radiocommunications Devices*, which provides the guidelines for authorised use of CB radios in Trinidad and Tobago.

CB operators 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 room is equipped with a fully operational CB station, complete with antennas. During emergency situations, channel 9 shall be used for contacting the communications room, under the control of the emergency coordinator, e.g., the ODPM or TEMA. Use of channel 9 by CB operators for non-emergency purposes shall be prohibited.

National Emergency Communications Plan: Statement on Secondary Communications – Citizen Band Radio

13. Citizen band (CB) radio operators shall operate on channel 9, under the control of the emergency coordinator, in the event that CB radios are to be used as a secondary emergency communications system to supplement the primary communications systems.

5.2 The Need for Upgraded Primary Communications Systems

Timely and effective delivery of information is essential for emergency/disaster management. A wide range of information is required for effective management, including disaster sensing and alerts, damage assessments, shelter locations, logistical and supply chain coordination, emergency medical support, determining the safety and welfare of family and friends, and search and rescue efforts. ICTs are essential tools to support the diverse communications requirements between all responders and/or stakeholders.

All stakeholders shall establish damage mitigation measures to ensure their ICT resilience and redundancy, including organisational planning and policy development, pre-positioning supplies and equipment, training and capacity building, and community outreach and preparedness.

During the initial emergency response period, the demand for real-time communications via, for example, telephones and e-mail increases significantly, as search and rescue operations essential for saving lives are conducted. Additionally, public demand for ICTs also increases exponentially, with many people trying to confirm the safety and security of family, friends, personnel and assets.

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. To satisfy the greater demand for voice, video and data communications, 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 Handbook of Disaster Communications*, 2013 recommends the use of voice communications as the most suitable mode for real-time transmission of short messages. The technologies used in disaster communications include:

1. point-to-point wireless field telephone links.
2. VHF and UHF hand-held or mobile transceivers (LMR systems).
3. satellite phones.

4. public address systems and broadcasts via radio.

To increase the efficiency of the existing disparate voice communications systems presently used by the various responder agencies, all such systems shall be integrated through a console at the communications room of the EOC. This will facilitate, in a timely manner, the communications coordinator's access, from a single location to all responders.

5.2.1 Upgraded Digital Land Mobile Radio (LMR) System

There is a need for an improved communications system to facilitate interoperability among all responder agencies. The primary communications systems shall consist of a resilient, modern, digital LMR network, which shall facilitate coordination across agencies by allowing person-to-person and person-to-group communications. Rather than communicating with individuals via separate calls, it will allow individual users to communicate instantly with multiple individuals located in several geographic locations, thereby enabling 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 radiocommunications systems support lifesaving operations, the networks shall be designed to achieve a high level of reliability and be able to operate efficiently in harsh natural and man-made environments. They shall be high-capacity networks, designed with redundant systems and capable of providing wide area coverage. The networks shall be installed on secure and resilient infrastructure facilities, providing coverage across the nation.

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

National Emergency Communications Plan: Statements on a Digital Land Mobile Radio System

14. A resilient modern digital land mobile radio (LMR) system shall be implemented by the appropriate agency responsible for national disaster management.

15. All responder agencies shall use this new LMR system for emergency communications to achieve full interoperability amongst each other and with the ODPM and TEMA.

16. Emergency support agencies, including responder agencies, shall upgrade their existing internal communications systems to facilitate advanced emergency communications technologies.

5.2.2 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 plays 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 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).

Despite the benefits of this increased flow of communication and information, there are also 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 data/information sharing and communications during operations, responders can also muddle or make less accurate the data/information if the flow is not sufficiently interoperable, properly secured and managed, for the right information to get to the right people at the right time. This reinforces the need for joint decision making, planning and investment, to coordinate mutually supportive strategies for deploying Next Generation E999 Rapid Response, the nationwide public safety broadband network, nationwide public alerting systems, and other major capabilities across the country.

The upgrading of our public service reporting systems to next generation systems such as Next Generation E999 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.

5.3 Reducing the Vulnerability and Improving the Resilience of Telecommunications/ICT Networks

TATT shall establish standards to ensure the resilience of public telecommunications networks and infrastructure, in consultation with the network operators and other stakeholders. Network operators shall comply with all minimum technical standards established by TATT, such as those outlined in the *Technical Standards for Public Fixed Telecommunications Networks* and future standards.

In order to reduce network vulnerabilities, telecommunications network operators shall undertake to conduct risks analyses, develop both a disaster preparedness plan and a business continuity plan (BCP) that are updated regularly and made available to the regulator for review and comments.

All public telecommunications network operators shall ensure that their BCPs are aligned with the NECP, in accordance with the conditions of the Act, section 84 (1–5) and licence condition A41. The network operators shall conduct an annual risk analysis of their critical telecommunications facilities, undertake the necessary retrofitting procedures and measures to reduce their network vulnerability.

The BCP shall include strategies for operating during, and recovery from, an emergency. It shall clearly outline the mechanisms for service restoration to subscribers. Additionally, time frames for service restoration to key public services, such as hospitals/health centres and automated teller machines (ATMs), should be included in the BCP.

The (NFPA 1600 2019) standard has been adopted by the US Department of Homeland Security as a voluntary consensus standard for emergency preparedness. Network operators should also note the (International Organization for Standardization ISO 22301 2019) and (International Organization for Standardization ISO 22313 2020) in the development of their business continuity and disaster recovery policies.

The NECP will not dictate the standard to be adopted by any network provider, as there are many similarities and differences in the standards, which may or may not favour a particular network provider, depending on the organisation's size, budget, infrastructure

and more. Network operators are to determine the appropriate standard for their organisation that meets the minimum requirements identified in the approved NECP.

These plans, at a minimum, shall include, but not be limited to the following major areas:

1. Damage and needs assessment
2. Rebuilding and improving telecommunications/ICT infrastructure
3. Incorporating redundancy into telecommunications/ICT networks
4. Identifying locations in need of recovery assistance
5. Tracking recovery activities
6. Coordinating reconstruction activities

National Emergency Communications Plan: Statement on Vulnerability and Resilience

17. All network operators shall undertake to conduct risks analyses, a disaster preparedness plan and a business continuity plan (BCP) that are updated regularly and made available to TATT by 30th May annually.

6 Preparedness Phase

6.1 Standard Operating Procedures (SOPs)

The SOPs identify the set of step-by-step instructions to be followed by all stakeholders during emergency events. The SOPs will be well written to ensure optimal efficiency and communication, quality output and consistency throughout the entire response phase. The SOPs will be tested regularly and rigorously across various types of emergency responses to ensure the best possible procedures are achieved.

Pursuant to the approval of the NECP, the SOPs shall be prepared by the ODPM and TEMA, in conjunction with TATT and other relevant stakeholders.

6.2 Risk Analysis and Contingency Plan

Emergency communications 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 to have contingencies in case the main communications 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.

Telecommunications availability is a function of system reliability and surge capacity. The fixed line telephone network can become overloaded. The mobile phone networks are even more prone to overloading than the fixed line networks. It, therefore, becomes necessary to have a contingency plan. The present contingency arrangements for both the primary and secondary communications systems in Trinidad and Tobago are summarised in tables 3 and 4, respectively.

Table 3. Existing communications systems, risks, protection and contingency

Existing Primary and Secondary Communications Systems	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	None	Land mobile radio Satellite phone Fixed line phone
Mobile phone system	Network failure	None	Fixed line phone Land mobile radio Satellite phone
Fax facilities	Network failure	None	Email Alternative email
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.
Trunked LMR system	-	None	This is the system contingency.
Volunteer simplex LMR systems	-	None	This is the system contingency.
All systems	— -	As above	Messengers

Table 4. Proposed communications systems, risks, protection and contingency

Proposed Primary and Secondary Communications Systems	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
Two-way communications system between the ODPM/TEMA and the media	System failure	Resilient design to be self-sufficient for 7 days	Messenger
Emergency alert system	System failure	Resilient design to be self-sufficient for 7 days	Two-way communications system between the ODPM/TEMA and the media
HF sub-regional communications system	System failure	N/A	Amateur radio

The following components of these systems are to be included in the contingency plan:

1. The ODPM/TEMA staff telephone contacts: The extension numbers and locations of all staff shall be listed in the Emergency Directory.
2. Direct lines: All direct lines and the names of 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 name and phone number of the service provider. (The wall jacks will also be marked with a red disc.)

3. E-mail: Internal and external communication to the ODPM shall follow the format using either the firstinitial&lastname@mns.gov.tt, to individuals, or to the generic publicinfo.odpm@gmail.com address.
4. Contingency e-mail: In the event that the NEOC/EOC corporate e-mail 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.
5. Emergency mobile telephones: The NECP recommends that the ODPM/TEMA acquire dual SIM mobile phones for use by emergency coordinators.
6. Fixed and mobile phones are the first choice for emergency communications by both emergency/disaster managers and the public. The public telecommunications networks can easily become overloaded and eventually disrupted in disaster situations. Telecommunications service providers have established protection schemes for select fixed and mobile connections. These

select 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:

- a) 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.
- b) The ODPM and TEMA will 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.
- c) Mobile telephones used by both the ODPM and TEMA shall be equipped with dual SIM cards. A record shall be entered in the Emergency Directory, noting the current holder's name, job title, phone numbers/network and his/her responsibility.

National Emergency Communications Plan: Statements on Contingency Systems

18. The ODPM and TEMA shall employ a contingency system in accordance with section 6.2.

19. 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 dual SIM mobile phones.

6.3 Early Warning and Alert Systems

Resilient public alert and warning tools are essential for saving lives and protecting property during emergencies.

In January 2000, the UNISDR initiated the development of an International Early Warning Programme (IEWP) which aims to build disaster-resilient communities. The IEWP emphasises 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 formally launched at the World Conference on Disaster Reduction (WCDR) in January 2005.

Following the launch of the IEWP, several countries in our region and around the world developed and implemented a national EAS, as an important tool in their early warning system. The WMO and ITU developed the common alerting protocol (CAP) in 2007. CAP is an international standard format for alerts and public warnings. 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 emergency managers in several countries, including Canada, Mexico, the US and numerous Central and South American countries. CAP is the recommended standard employed by countries that have developed an EAS.

The EAS is an added tool to the suite of available emergency communications systems. It 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 warning system which allows state officials to address the public during national emergencies, over television, radio broadcast networks and wired/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 broadcast facilities. These receivers can be automatically patched into the broadcaster's main transmitters, if 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.

The ODPM, TATT and TEMA, in consultation with the broadcasting sector, shall develop an EAS for Trinidad and Tobago, which will operate in accordance with the provisions of the Act, section 84 (1–5), concession conditions D30 and D31, and licence conditions A41 and A42.

The EAS shall state the specific roles and responsibilities of the ODPM, TEMA and TATT and the telecommunications and broadcasting sectors and shall be developed subsequent to the NECP. The ODPM shall establish the EAS within the first year of the publication of the NECP, and shall be responsible for its content, activation and deactivation, and periodic systems tests.

The ODPM, TEMA, TATT in consultation with the telecommunications and broadcasting sector, shall develop:

1. technical standards for the EAS equipment, in accordance with industry best practices.
2. procedures for the installation and maintenance of the EAS equipment.
3. rules and regulations for the activation, operation and deactivation of the EAS equipment.
4. protocols for the testing of the EAS, a test schedule and a reporting mechanism for test results and for addressing operational issues.

Telecommunications service providers and broadcasters will facilitate, where applicable, the live broadcast transmission of emergency messages, by allowing the broadcast interface equipment to access the broadcasters' main transmitters, in accordance with prearranged conditions agreed to and accepted by all parties. Additionally, they will be responsible for ensuring that the EAS equipment at their facilities is always in good operating condition.

National Emergency Communications Plan: Statement on the Emergency Alert System (EAS)

20. The ODPM, TEMA and TATT, in consultation with the telecommunications and broadcasting sectors, shall develop and implement an EAS for Trinidad and Tobago.

6.4 Telecommunications/ICT and Broadcasting to Raise Awareness

Trinidad and Tobago is at risk for various hazards such as hurricanes, floods, earthquakes and industrial emergencies (see appendix I). In the current NRF, 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 (Trinidad and Tobago Meteorological Service, Seismic Research Centre, The UWI, the protective 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 primary objective of alerts and warnings is to communicate potential threat and safety-related information, in order 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 public is vital. Early warning systems are now widely recognised as worthwhile and a necessary investment to help save lives.

The ODPM has agreements with certain telecommunications service providers to provide alerts to their 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.

Through a memorandum of understanding (MOU), the ODPM has engaged both mobile telecommunications providers 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 the ODPM and TEMA may use social media to relay information to the public.

Should the ODPM's information sharing become overwhelmed or the NEOC activated at a level two or greater, the Information Task Group (ITG) will support the ODPM by providing public alerts and updates and monitoring feedback from the public.

In the event of industrial emergencies, there are EASs located at the major industrial estates. At the Point Lisas Industrial Estate, an EAS is located on the compound of the Point Lisas Port Development Corporation (PLIPDECO). The EASs located in Point Fortin and Point-a-Pierre are on the compounds of Heritage Petroleum Company Limited (formerly Petrotrin Refinery). They all have a siren and voice system for alerting the neighbouring communities. Some municipalities with major river systems, such as Diego Martin and San Juan/Laventille, have installed and do maintain flood-warning monitors.

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 use of relevant assistive technologies to aid the differently abled members of our society, such as the hearing and speech impaired, shall be employed. Alerts and broadcasts shall be done in both English and Spanish. Alerts on radio and TV shall be preceded by a loud tone, followed by "breaking news", then the message itself, using voice, video and/or ticker tape, in English and Spanish, and accompanied by assistive technologies for reception by the differently abled members of the public.

TATT shall ensure the following:

1. All concessionaires of national FTA radio and television broadcasting services are to:
 - a. 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.
 - b. create a disaster recovery plan and business continuity plan towards maintaining basic services during a disaster.
2. identify two national radio and TV broadcast networks with the most extensive coverage across the nation and equipped with resilient broadcast facilities at multiple locations, and one minor territorial radio station in Tobago.
3. enter into arrangements with the concessionaires to make their stations and transmission infrastructure more resilient, i.e., to be hurricane and earthquake resistant and self-sufficient for seven days.

The ODPM and TEMA shall :

1. 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.
2. ensure that this system is:
 - a. designed to withstand Category 4 hurricane-force winds.
 - b. equipped to operate on standby power and fuel for a period of seven days.
 - c. deployed at strategic locations to enable access by all parties.
 - d. 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.
 - e. designed with resilient repeater stations to ensure reliable two-way communications.
 - f. inspected daily and tested at least once a week to ensure operability of 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 detected or maintenance required shall be attended to immediately and entered in the log.

National Emergency Communications Plan: Statements on Public Notifications and Warnings

21. Telecommunications service providers, subscription television networks and free-to-air radio television broadcasters shall upgrade their facilities so they are resilient to natural disasters, at a minimum, to conform with TATT's Technical Standards for Public Fixed Telecommunications Networks.

22. Telecommunications service providers, subscription television networks and free-to-air radio television broadcasters shall adopt improved technologies to facilitate efficient

public notifications and warnings, in English and Spanish and using assistive technologies to aid the differently abled.

23. TATT shall ensure that all subscription television broadcasting services shall provide emergency alerts to their subscribers via a ticker tape shown at the bottom of the viewing screen.

24. The ODPM, TEMA shall ensure that their communications systems are designed and maintained in conjunction with the conditions listed in section 5 of the NECP.

6.5 Cooperation with Different Stakeholders, including Operators and the Private Sector

During an emergency response, cooperation among the different stakeholders is critical in providing relief. Individuals also often provide situational awareness to their family members, communities and relief agencies during incidents. This activity is primarily supported by communication across commercial networks, particularly through the use of social media during emergencies. This also applies to communication and information sharing from and between private sector entities that support the government's response, including utilities and critical infrastructure operators that share information on the availability of their services and resources.

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

The unavailability of telecommunications services can impact public safety and security, disrupt security and response services and have significant economic consequences. The telecommunications networks are a critical national infrastructure and, therefore, requires priority restoration after an emergency.

The public telecommunications networks provide the necessary wired (i.e., fixed line) and wireless (i.e., mobile and fixed wireless) telecommunications services to both emergency responders and the general public. Typically, a public network is designed to allow about 5%–10% of subscribers to initiate and receive calls at the same time (International November 2021

Telecommunications Union (Telecommunications Development Bureau) 2013). However, in emergencies, more people make calls and tend to talk longer (ITU Guidelines for National Emergency Telecommunication Plans 2019), resulting in jamming, blocking or congestion of the network. This may escalate into a telecommunications emergency.

It should be noted that TTX has established two IXP nodes in Trinidad, one in the south and the other in the north. The importance of having these localised IXP nodes is that, should the country lose international connectivity, communication across popular social media, OTT platforms and underlying infrastructure would still be possible, to communicate vital emergency information to the ODPM, disaster management agencies and other emergency responders.

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 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.

It is also essential that our telecommunications infrastructure be able to withstand hurricanes and flooding, to enable the population to maintain basic communication during all phases of an emergency.

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 have not suffered severe structural damages (e.g., damage to antennas and towers).

Mobile networks shall prioritise resources, e.g., at least two 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.

National Emergency Communications Plan: Statement on the Public Information Exchange

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

25. The public mobile network providers shall develop a disaster recovery plan and a business continuity plan (BCP), to restore service, in a prioritised manner, as follows:

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 have not suffered severe structural damage, for emergency responders and the affected public.

ii. Cellular mobile operators shall maintain prioritised resources, e.g., COWs, which shall be deployed in both Trinidad and Tobago. These are to be immediately available for emergency relief operations.

6.6 Training and Exercises

Training, drills and mock exercises shall be conducted by the ODPM and TEMA during the preparedness phase. The lessons learnt from these exercises shall be implemented to improve the effectiveness of the emergency response during an emergency/disaster event. Details of several training programmes and exercises are identified on the ODPMs website <http://www.odpm.gov.tt/Exercises>.

6.7 Support for Vulnerable Persons

The ODPM and TEMA determine how support will be provided to vulnerable people during an emergency/disaster event. Support can be immediate, short term or long term. The *National Shelter Management Policy* creates a framework for GORTT to ensure accommodation is made for persons temporarily displaced or requiring support during an emergency/disaster event.

The map in figure 5 shows all the emergency shelters throughout Trinidad that persons can visit during an emergency event. This chart is updated regularly and further details can be found on the ODPM website: <http://www.odpm.gov.tt/>. Emergency shelters in Tobago can be found on the TEMA website: <http://www.tema365.com/web/plan-and-prepare/>.

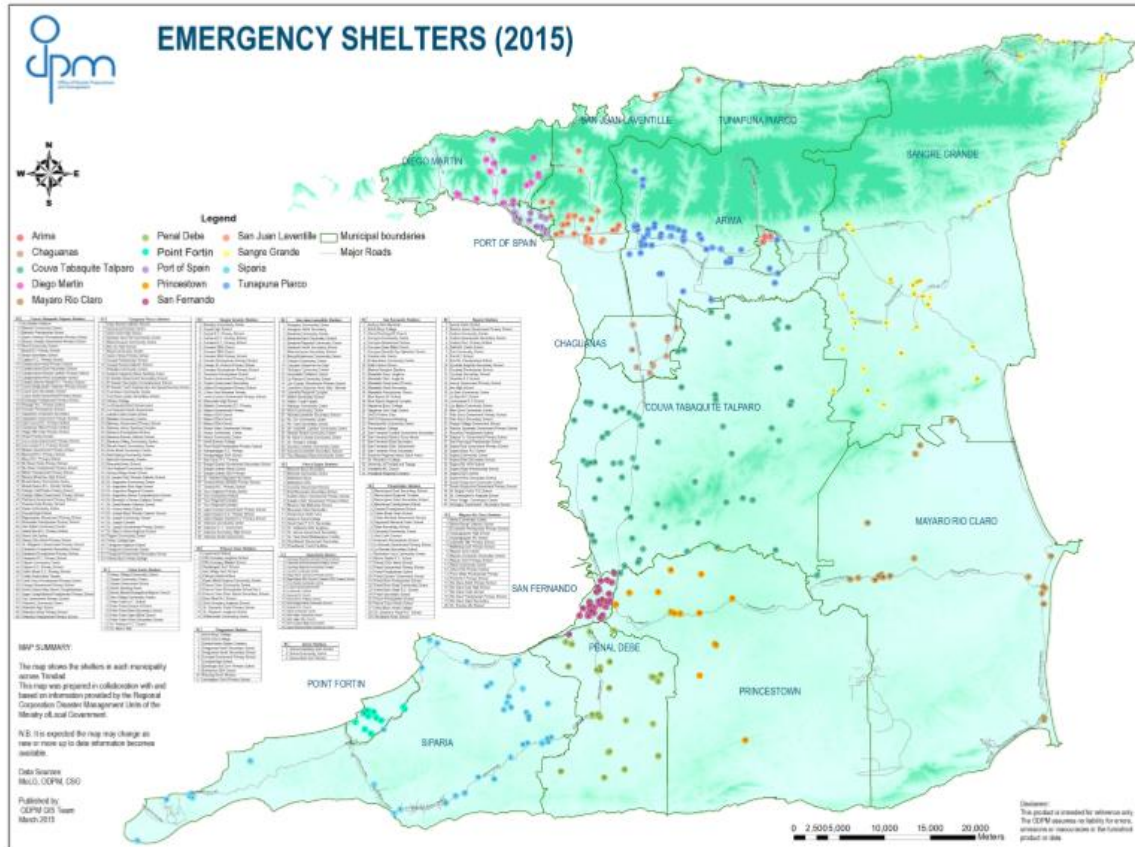


Figure 5. Emergency shelters for Trinidad (ODPM 2015, www.odpm.gov.tt/node/245)

7 Response Phase

7.1 Communication and Coordination between First Responders and Different Stakeholders

The National Response Framework (NRF) (Office of Disaster Preparedness and Management (ODPM) 2010) outlines the overarching goals, objectives and principles that identify and enable all the response partners in Trinidad and Tobago. The NRF ensures a unified and integrated national response to any level of disaster or emergency.

This is achieved through the five key principles identified in the framework:

1. Engaged partnership: a key feature of this is ongoing communication among leaders at all levels, accompanied by integrated planning, resource identification, training and simulation exercises.
2. Tiered response: ability to respond to all levels of incidents
3. Ensuring scalable, flexible and adaptable operational capabilities
4. Unified effort through unified command: this is achieved via the incident command centre, with partnering agencies working together as a team to attain a successful response.
5. Readiness to act, through the SOP, at all levels across the spectrum of society (individuals, households, communities, institutions, regional corporations and the ODPM).

The NRF categorically 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.

7.2 Gathering and Analysis of Data/Information on Immediate Needs of the Population, and Managing the Safe Delivery of the Response

This is achieved through the initial situation overview (ISO) conducted by the ODPM as part of the initial assessment immediately after a disaster or emergency event.

The ISO is undertaken immediately after an incident, to obtain a broad picture of the extent of damage caused by the impact. It is typically conducted and submitted within the first eight hours after the event and focuses on issues such as casualties, displacement of the population and damage to lifelines and critical facilities. It is largely based on observations reported by key organisations and officials, through general reconnaissance rather than detailed field assessment.

The ISO involves observations from aircraft, satellite photographs and various other reports. The information from the ISO allows national/local officials to determine the immediate actions necessary to respond to the disaster.

Following an event, the ODPM receives an ISO from the following sources:

1. General public
2. Disaster management units of the municipal corporations
3. Special Anti-Crime Unit of Trinidad and Tobago (SAUTT)
4. Trinidad and Tobago Police Service
5. Trinidad and Tobago Fire Service
6. Amateur radio operators
7. Community councillors

Within a couple of hours to two days, depending on the severity of the impact, more detailed damage assessments are submitted by the following entities:

1. Ministry of Rural Development and Local Government
2. Ministry of Social Development and Family Services
3. Trinidad and Tobago Defence Force

During the response phase in the days following, further data is collected and fed upward regularly, as per the SOPs, to the ODPM. The information gathered aids in the immediate response and in the future development of policies and procedures through the lessons learnt. It also informs vital amendments to business continuity and disaster recovery plans for the country.

7.3 Connecting Families and Friends and the Enabling of Call Centres

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:

1. Police Service Rapid Response Unit at 999
2. Fire Service at 990
3. Ambulance at 311 and 811
4. Tobago Emergency Relief at 211
5. 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 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., public utilities reporting on the status of service outages).

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

8 Recovery Phase

As indicated in section 6, during the response phase of an emergency event, the ODPM outlines its immediate response through the ISO.

This is followed by the recovery phase which commences with the initial damage assessment (IDA). During this phase the immediate assessment of the physical and functional conditions of the affected locations are ascertained for consideration in the immediate response.

The damage assessment and needs analysis (DANA) is then conducted, which consists of information gathering over days to months following the event, to determine the longer term needs of the affected areas.

The damage and loss assessment (DALA) is also conducted, which provides damage and loss data, which are analysed to improve future recovery and response efforts.

All data collected during the recovery phase are collated and submitted to the ODPM who coordinates with the response agencies following an emergency/disaster event. Damage assessment data relating to telecommunications and broadcasting networks, infrastructure and facilities should be made available to TATT, who will seek to ensure the expedient restoration of services across the affected areas.

Similar risk assessments and data gathering should be conducted by network operators to guide the development of, and amendments to, their business continuity and disaster recovery plans, as delineated by the ITU (ITU Guidelines for National Emergency Telecommunication Plans 2019).

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Appendix I. Major Hazards Which May Affect Trinidad and Tobago

- Anthropogenic or human induced
- 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 COVID-19)
- Other threats, such as civil unrest, terrorism and cyber attacks
- Earthquakes
- Landslides

Appendix II. Maps of Major Hazards which May Affect Trinidad and Tobago

Seismic Hazards

Hazard maps at the country level for different return periods and spectral ordinates were obtained. The maps for two seismic events, presented in figures 6 and 7, show the peak ground acceleration and for 0.2 seconds for a 475-year return period, respectively.

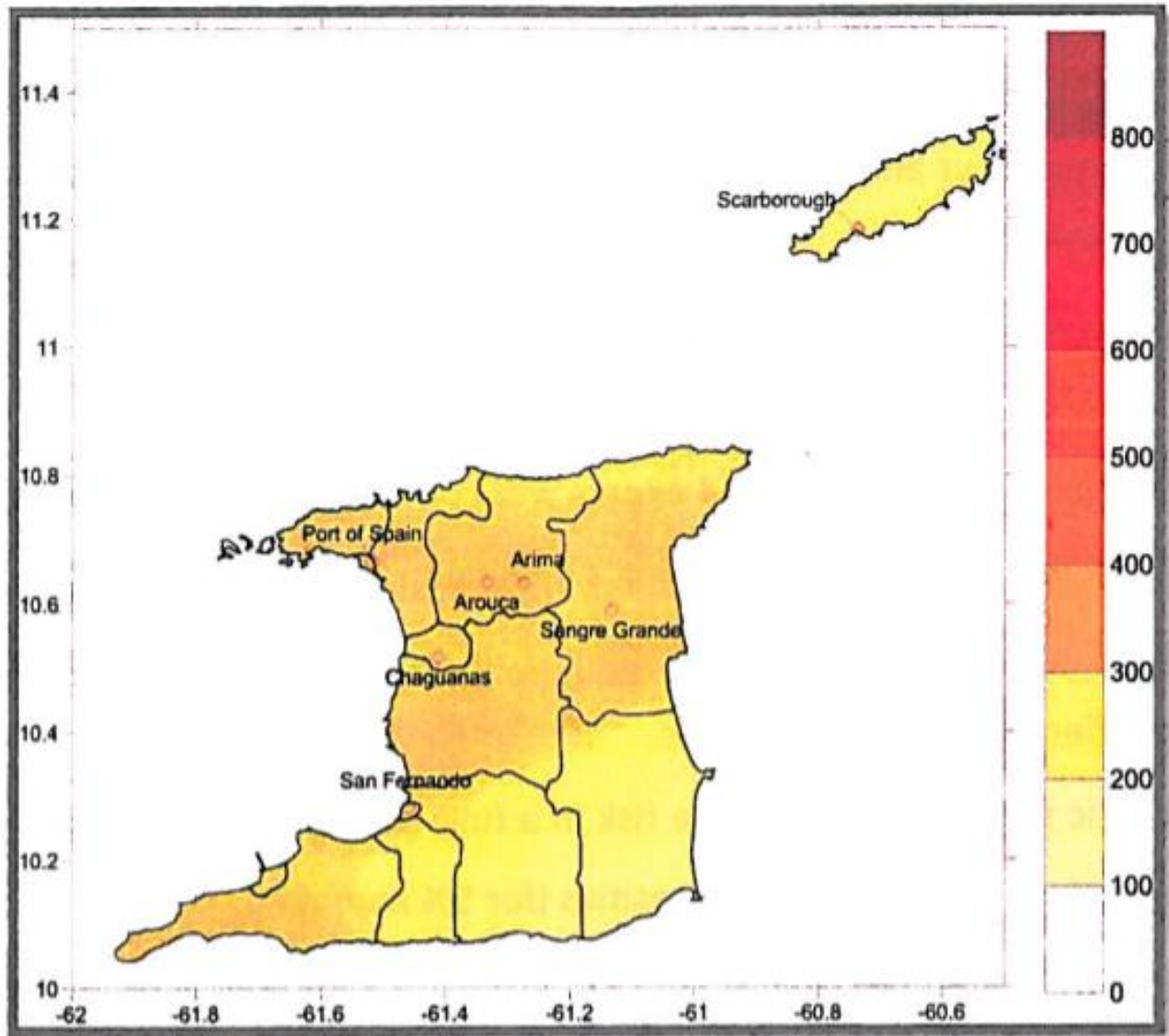


Figure 6. Peak ground acceleration for a return period of 475 years (cm/s²)
(GORTT/ODPM/IDB-CIMNE 2013)

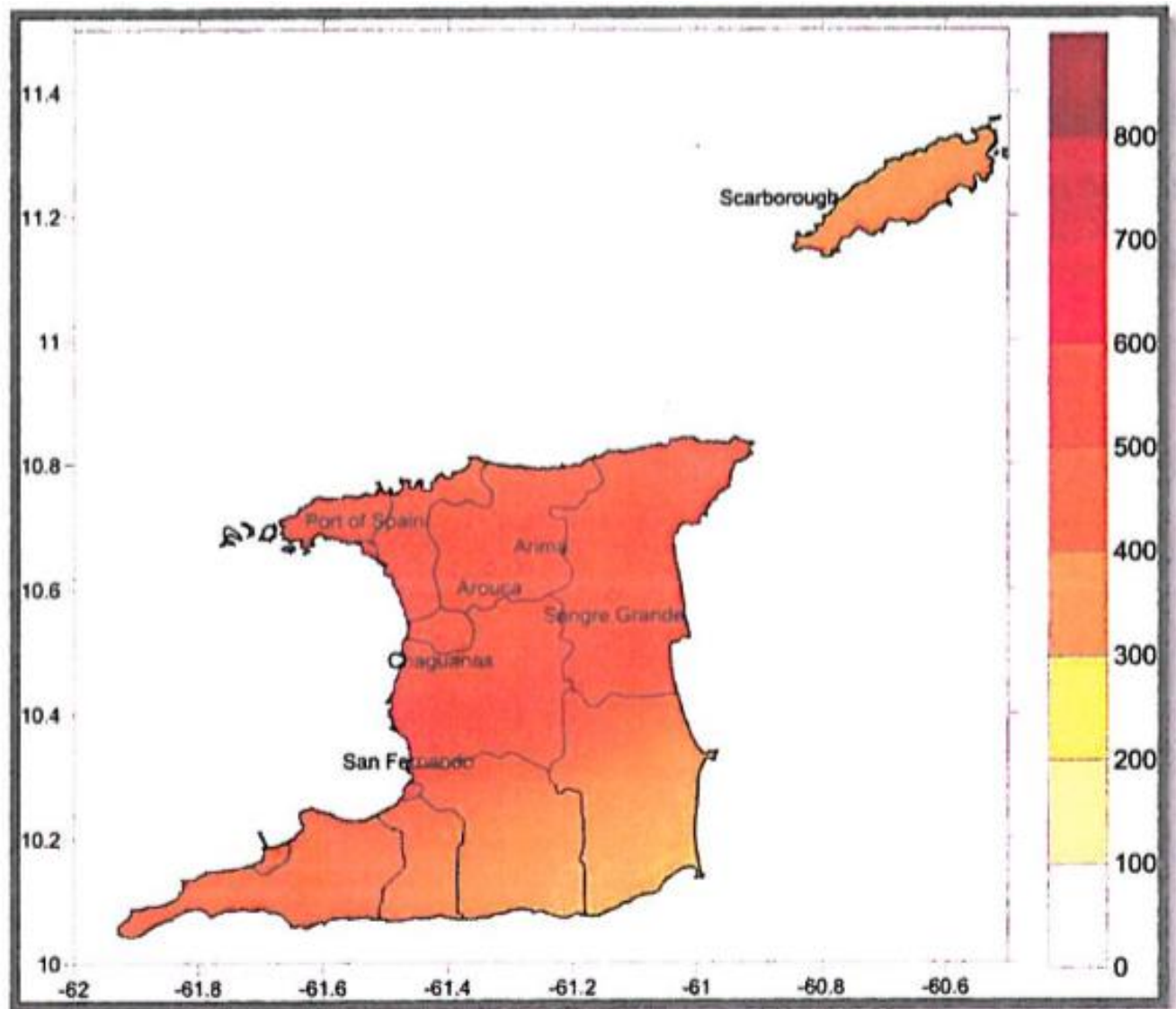


Figure 7. 0.2 sec for a 475-year return period (GORTT/ODPM/IDB-CIMNE 2013)

Tropical Storms/Hurricane Hazards

Trinidad and Tobago is at high risk from severe tropical cyclones such as hurricanes, which are considered an extreme catastrophic event that can generate very destructive disasters. The figures below show hazard maps for cyclonic winds (figure 8), storm surges (figure 9), cyclonic rainfall flooding (figure 10) and flooding/landslides (figure 11).

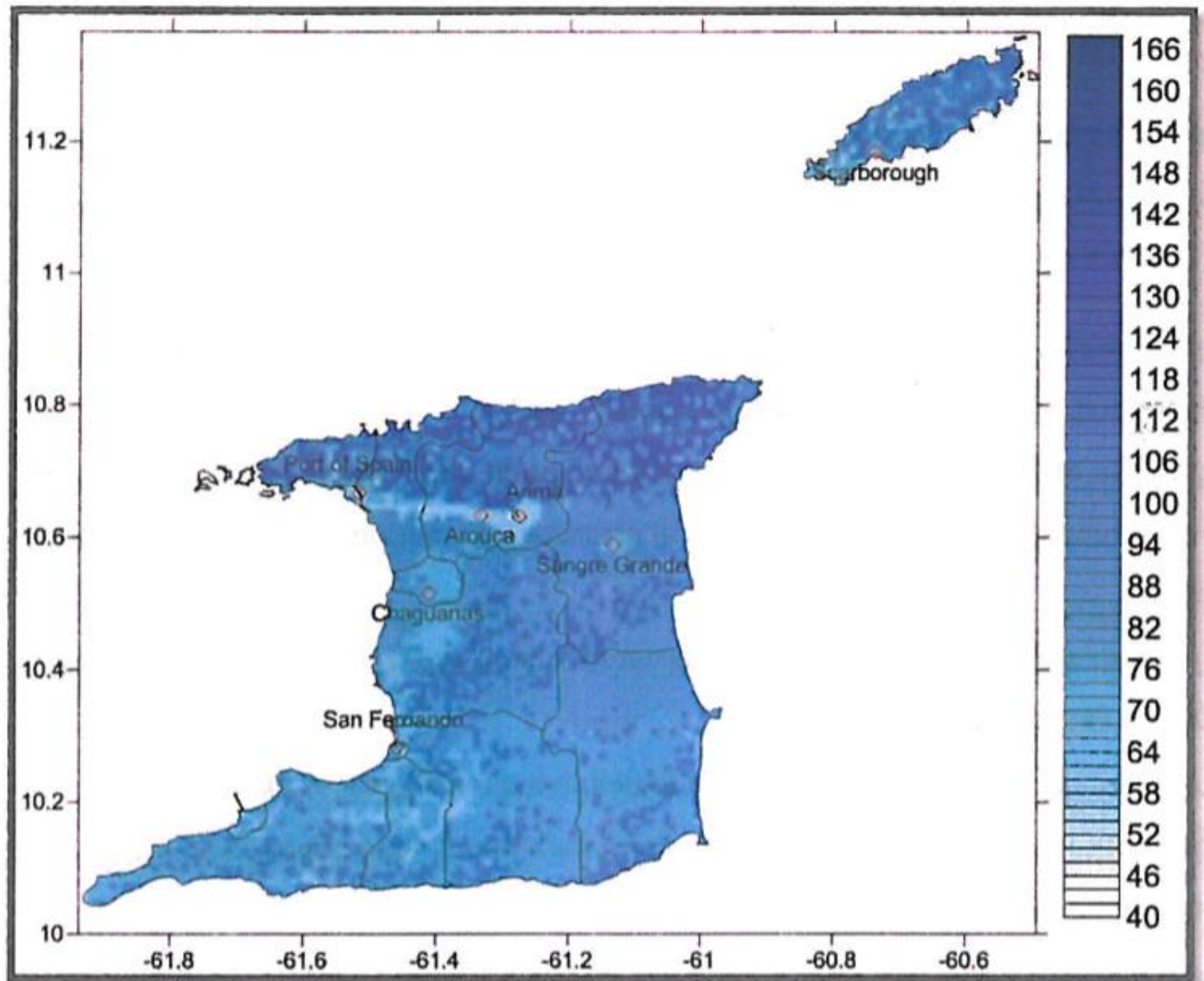


Figure 8: Cyclonic winds hazard map (wind speed km/h for 5 second gusts), 50-year return period (GORTT/ODPM/IDB-CIMNE 2013)

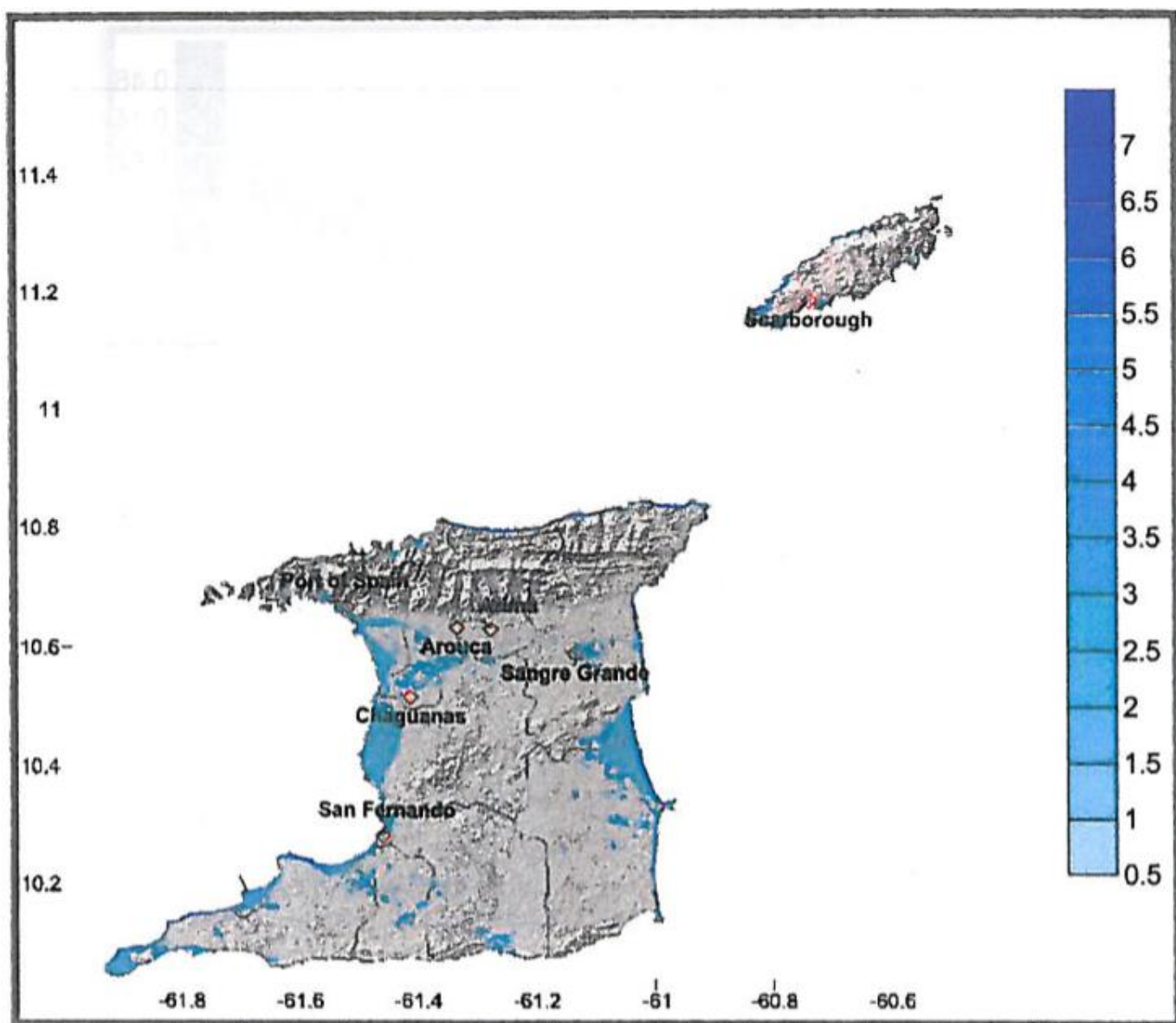


Figure 9. Storm surge hazard map for Trinidad and Tobago, 50-year return period (GORTT/ODPM/IDB-CIMNE 2013)

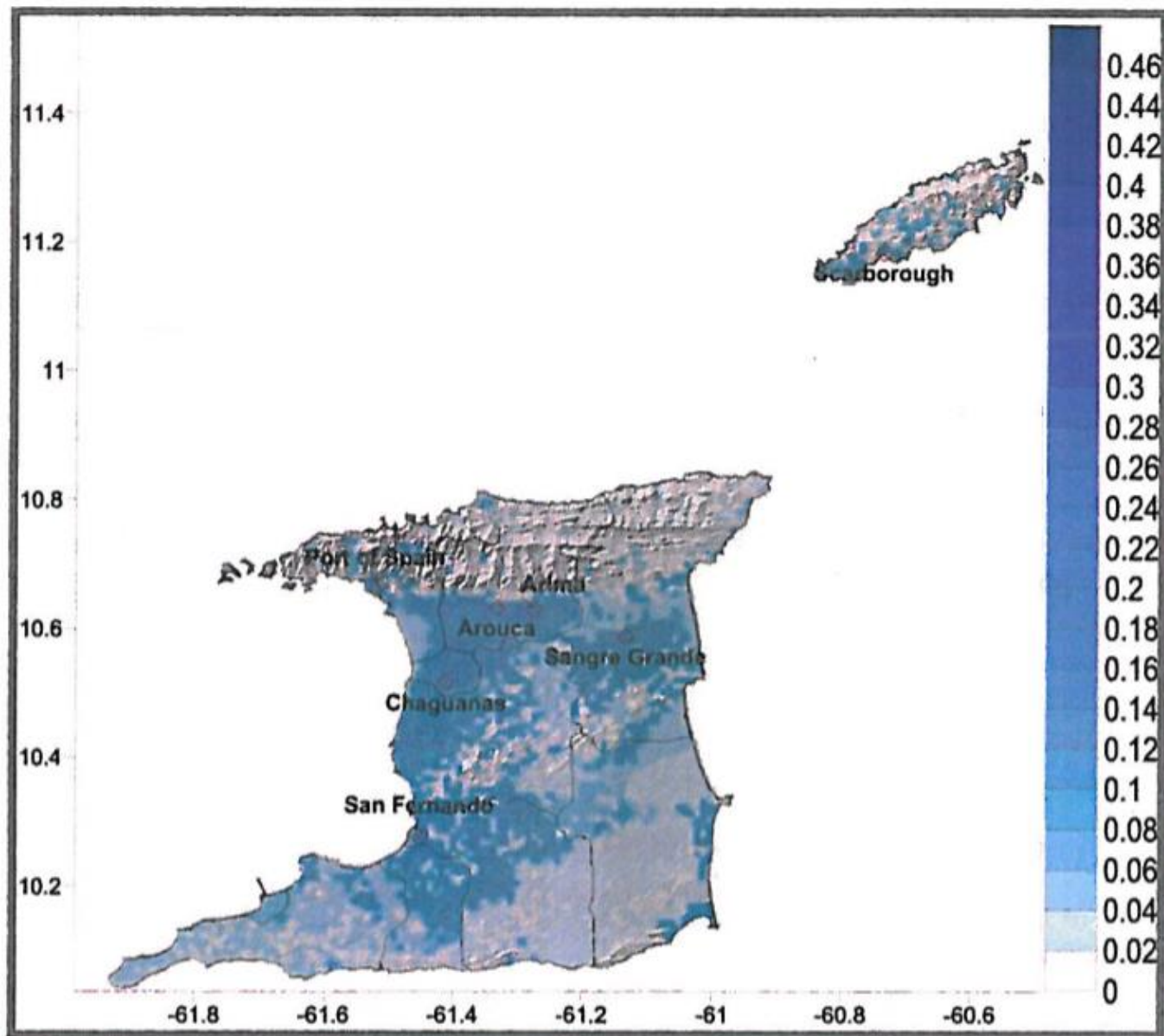


Figure 10. Cyclonic rainfall flooding map for intermediate moisture soil condition, 50-year return period (GORTT/ODPM/IDB-CIMNE 2013)

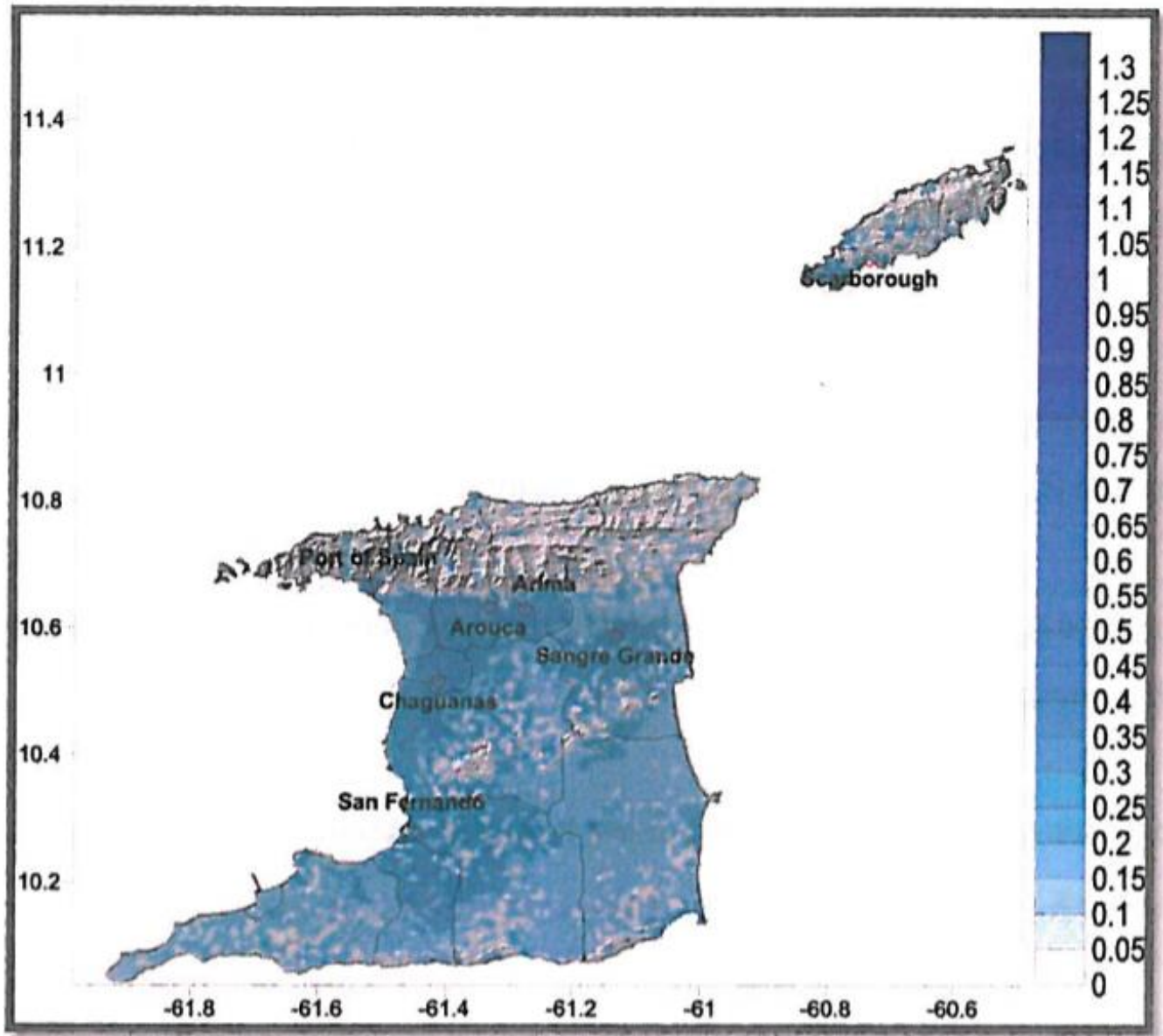
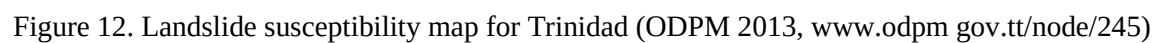


Figure 11. Non-cyclonic rainfall flooding map for intermediate moisture soil condition, 50-year return period (GORTT/ODPM/IDB-CIMNE 2013)

TATT 2/3/50



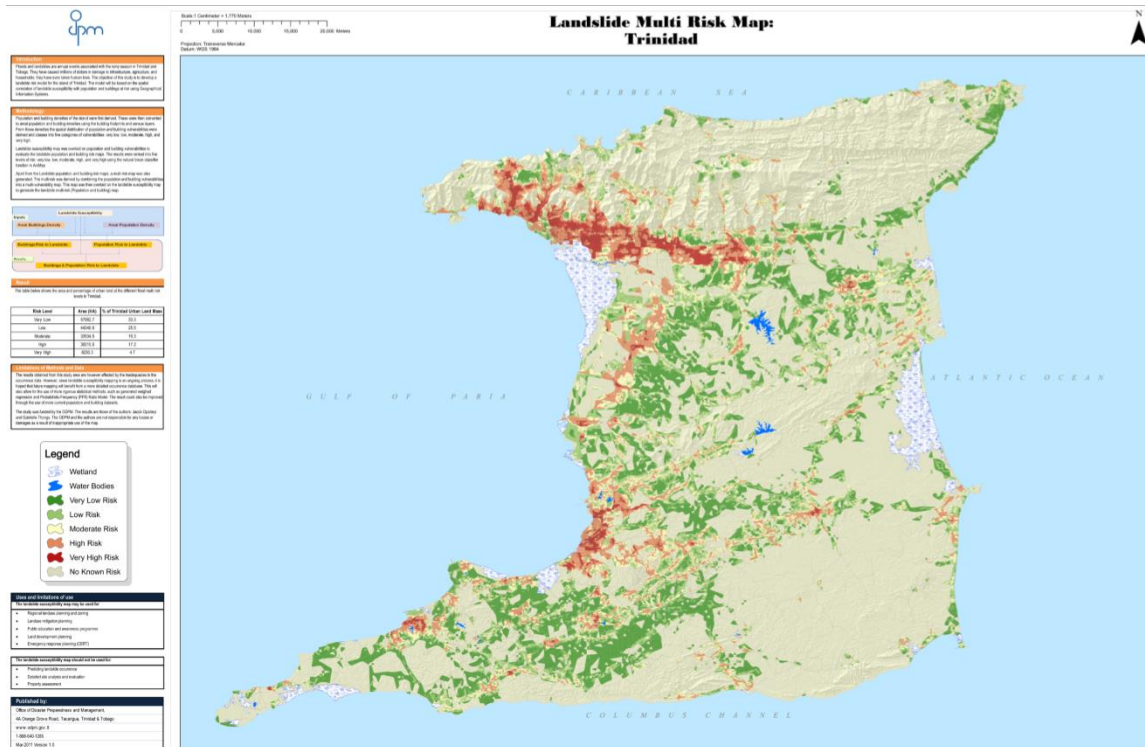


Figure 13. Landslide multi-risk map for Trinidad (ODPM 2013, www.odpm.gov.tt/node/245)



Figure 14. Multi-risk map for Tobago (TEMA)

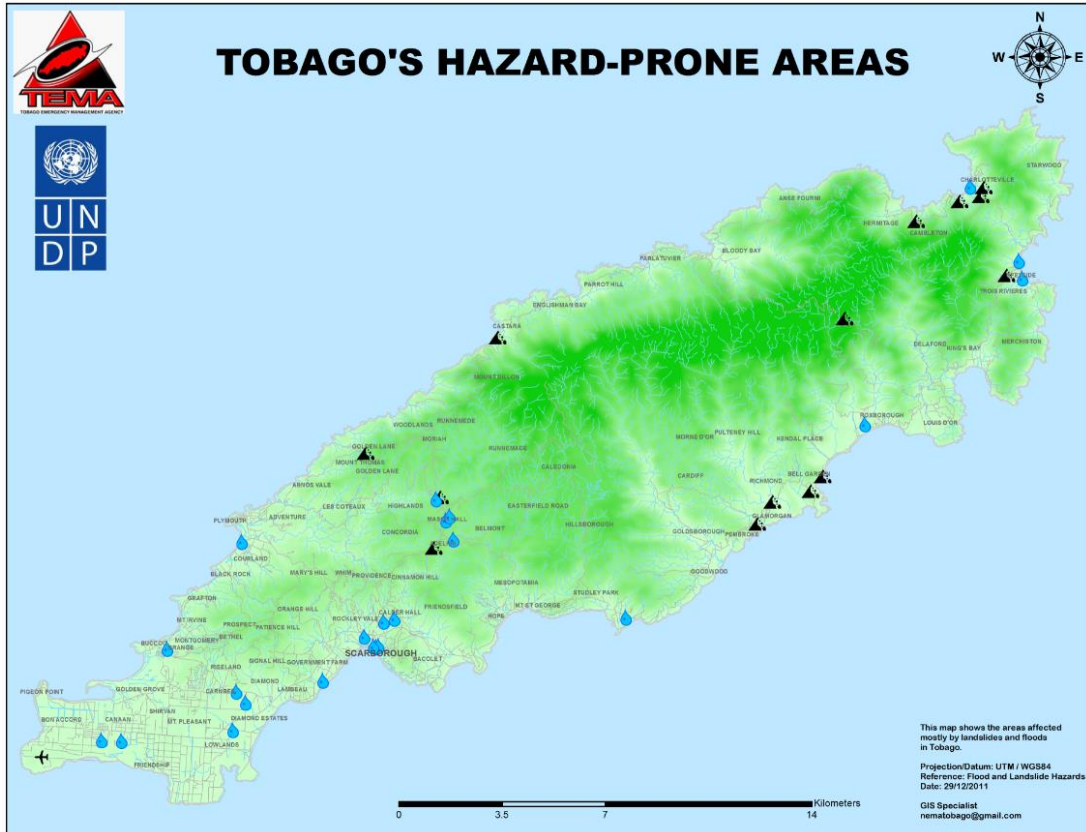


Figure 15. Multi-risk (landslides and floods) map for Tobago (TEMA)

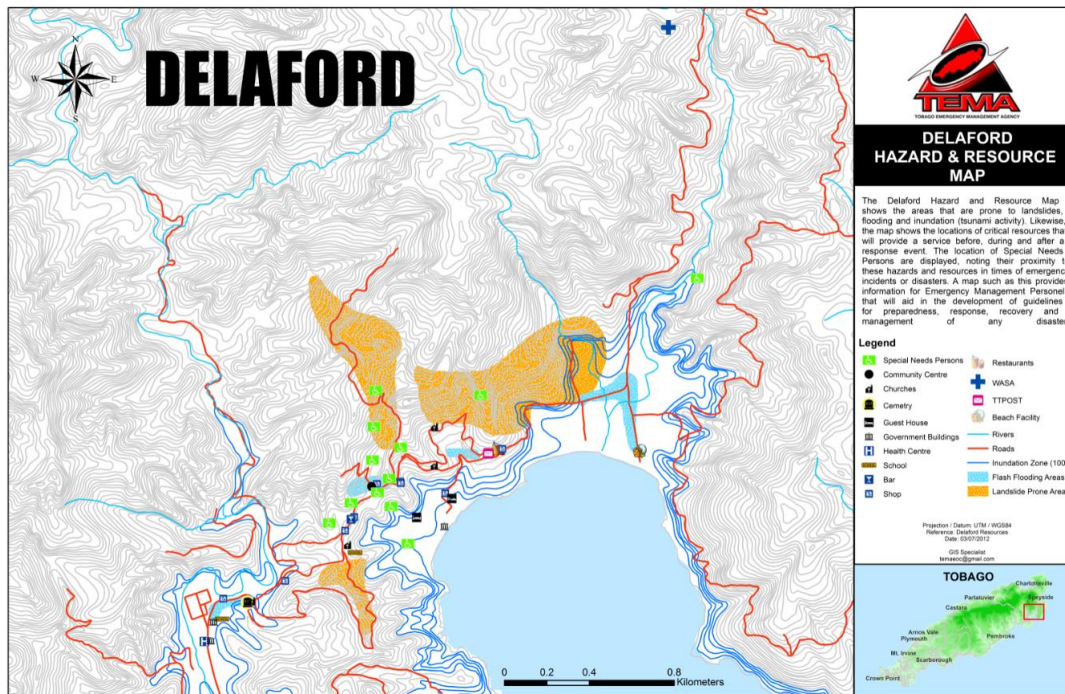


Figure 16. Multi-risk (landslides, floods and tsunamis) map for Delaford, Tobago (TEMA)

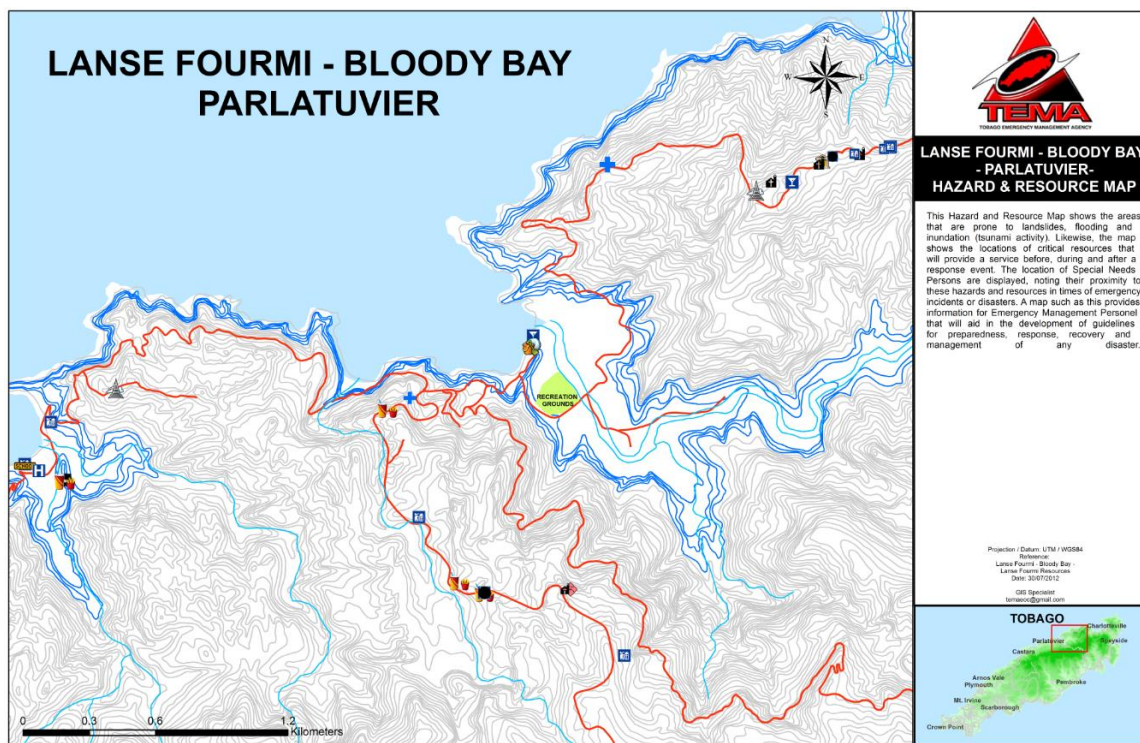


Figure 17. Multi-risk (landslides, floods and tsunamis) map for Lanse Fourmi/Bloody Bay/Parlatuvier, Tobago (TEMA)

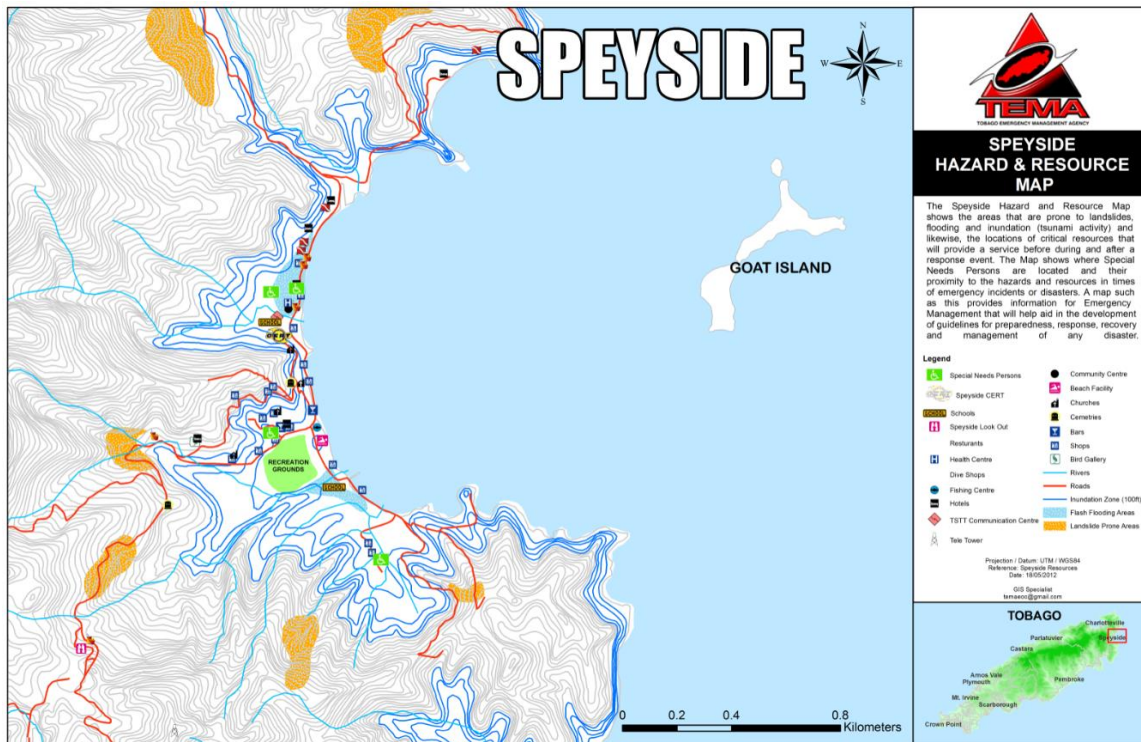


Figure 17. Multi-risk (landslides, floods and tsunamis) map for Speyside, Tobago (TEMA)

Appendix III. Primary and Secondary Communications Systems

Table 4. 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	VHF radios (analogue)	Local government regional corporations (internal and external)	Primary	
4	HF radios	Local and municipal communications	Secondary	
5.	Marine radios	Monitoring of marine traffic	Secondary	
6.	REACT radio systems	Emergency response communication	Secondary	
7.	Air band radios	Monitoring of air traffic	Secondary	
8.	TSTT PBX	Communicate with both internal and external stakeholders and customers	Primary	ICT
9.	TSTT mobile telephone services	Communicate with both internal and external stakeholders and customers	Primary	
10.	Digicel mobile telephone services	Communicate with both internal and external stakeholders and customers	Secondary	
11.	C&W Communications	Communicate with both internal and external stakeholders and customers	Secondary	
12.	MNS VoIP	Communicate with external stakeholders	Secondary	
13.	TSTT Metro E Fibre	Internet connectivity	Primary (load balanced)	
14.	C&W Metro E fibre	Internet connectivity	Primary (load balanced)	
15.	Digicel Metro E fibre	Internet connectivity	Primary (load balanced)	
16.	BGAN satellite terminals	Emergency Internet connectivity (data and voice)	Secondary	
17.	Mobile satellite phones	Communicate with both internal and external stakeholders	Secondary	
18.	Disaster-ready apps	Alert notification for internal and external stakeholders	Primary	VISUAL
19.	Emergency Short Messaging Service – TSTT and Digicel	Alert notification for internal and external stakeholders	Primary	
20.	C&W Communications television notifications	Alert notification for external stakeholders	Primary	

NO.	MODE	PURPOSE/ USE	FUNCTION	GROUP
21.	Web EOC	Management of agency resources and incident. Email notifications are included.	Primary	
22.	Facsimile TSTT	Alert notification for external stakeholders	Primary	
23.	Air-to-ground video feed (SSAFC/ NOC)	Security monitoring and aerial reconnaissance	Secondary	

Table 5. 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	Communication with citizen band operators	Secondary	
7.	Early warning systems	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 fibre	Internet connectivity	Primary	
11	Green Dot broadband	Internet connectivity	Primary	
12	Satellite (fixed)	Emergency Internet connectivity (data, video and voice)	Secondary	
13	Voice over Internet Protocol (VoIP) phone	Inter-agency communications	Secondary	
14	Mission mode	Alert notification for internal and external stakeholders	Primary	
15	Virtual Vision app	Mass notification, incident reporting and crowd sourcing	Primary	

NO.	MODE	PURPOSE/ USE	FUNCTION	Group
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	

Appendix IV. Decisions on Recommendations following the First Consultative Round on the *National Emergency Communications Plan*

The following summarises the comments and recommendations received from stakeholders in the first consultative round on the *National Emergency Communications Plan* (NECP) and the decisions made by the ODPM/TEMA/TATT, to be incorporated in the revised consultative document, where applicable.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
1	Maintenance History	Kereen McPherson	Another column for ‘Reason for Change’ can be included.	Include column to the left of ‘Change Details’ column	Your comments and recommendations made during this consultation process are welcomed. The column “Change Details” both identifies the change and includes the reason/s for change, where applicable. Hence,

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					a separate column for “Reason for Change” is not required. Details of the changes to the document are also identified in section 1.7, Consultation Process.
2	General	Kereen McPherson	Some terms are not universally known. For example, ‘concessionaire’. Trinidad and Tobago may not always have a male President. Therefore, consideration should be given to a neutral reference when the Act is being revised.	Include a section with definitions.	TATT agrees. A section for definitions will be included. With respect to your comment on a gender-neutral reference for the President of the Republic in the Telecommunications Act, Chap. 47:31 (the Act), please note that, in

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					law, a masculine word refers to both male and female.
3	General	TSTT	We would like to see more focus placed on using technologies to aid the differently abled members of our society i.e. the hearing and speech impaired etc. There is some reference under 6.1 to text E999 rapid response however this only addresses one aspect of this. Additional communications broadcasts incorporating English/Spanish sign language videos on topics such as preparedness and response need to be in place.	The use of "smart devices" such as computers/tabs/smart phones/closed caption capable devices/ mobile TV, electronic notepads just to name a few can play a key role in facilitating communication pre and post a disaster.	The document was amended to expand on the use of digital devices both before and after a disaster. Section 4 describes the existing and proposed systems to facilitate the use of digital devices. Also, system and communications aids designed for differently abled persons will be included in the revised NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			Terms were used loosely throughout the document for Telecommunication, Infrastructure and Communication Plan etc.	Practical scenarios needed to increase relevance to enable us to provide more meaningful comments.	The comment on language has been considered and will be discussed further when the NECP is to be implemented. The document was revised significantly based on the ITU guidelines, which also address practical scenarios (see section 6.6).
4	General Introductory Comment	TTPBA	Arising out of the meeting of Friday 15th September at the offices of TATT, relative to the Draft National Emergency Communications Plan here are our comments.		The comments and recommendations made by the Trinidad & Tobago Publishers & Broadcasters Association (TTPBA) in this consultation process are welcomed.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
5	General Comments: Control/Adm inistration	TTPBA	It would help enormously if the plan included a chart of the system administration showing who reports to whom and how they communicate. This may require more than one chart and surely must include a chart of the administration of the ODPM itself. This will help all to understand the total system if even they are only a small part of the system. If an example could be given that would also help: an earthquake shuts down Cedros at night. Who in Cedros is responsible for contacting the		Following the approval of the NECP, the ODPM, TEMA and TATT will prepare the standard operating procedure (SOP) to address the communications protocol during an emergency event. Section 6.6 speaks to the development of the SOP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			ODPM, and how is contact made if there is a loss of formal communication systems?		
6	General Comments: Communication System Diagram	TTPBA	The diagram of the communications system(s) will allow for an examination of the communication system to determine whether that system will service the administration system for which it was designed. Details are necessary if there is to be a careful examination of the system configuration. Again, the Cedros earthquake: who will call ODPM from Cedros and how does the call get from Cedros to the ODPM. Is it direct or		The communications protocol being referred to is not part of the NECP. The communications protocol and system will form part of the ODPM's National Response Framework (NRF). The NRF is currently being revised and will address this comment when it is approved.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			through a repeater? And if the latter, where is the repeater located? Now ask yourself: the same emergency takes place in Matelot. How do they get in touch with the ODPM if all formal communications systems are down? How are all the security services connected when all formal services are down? How, as an example do the ODPM talk to the police or fire services? Is that a face to face communication at ODPM headquarters and will the representatives of the security services and utilities able to get		

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			to Mausica in a serious emergency? There may have to be several diagrams to show the details of each system and then one overarching diagram to show how all the systems interconnect. It might help us understand the systems if repeater locations and frequencies are included: F1, F2 etc. As an example of what we mean we include a drawing and notes of a simple system suggested to		

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			the ODPM back in 2006. This system is no longer relevant and may never have been. It is included here for the sole purpose of indicating what we mean by a diagram of the system.		
7	General Comments: Broadcasting Matters	TTPBA	Broadcasters would like details of what exactly is expected of them in an emergency. We are told that information about Trinidad & Tobago's weather can only come from the MET office. How to interpret this? A storm is 300 miles away from Trinidad & Tobago; can a broadcaster say when this storm might reach us or must he wait		The NECP is a high-level policy document that addresses major decisions. The role of broadcasters and other stakeholders in the response to an emergency event will be outlined in the SOP. Section 6.6 addresses the development of an SOP by the ODPM and TEMA.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			for an advisory from the MET office. If the latter, then the radio broadcaster simply reads out over the air what the MET office has advised, nothing more. What about the local TV broadcaster? Can he show a map with the path of the storm if that map originates outside of Trinidad & Tobago? There is a recommendation that the ODPM take over (capture) the broadcast transmitters in order to funnel information from the ODPM directly to the public. Details of this still to be worked out; this for both radio and		This SOP will address the role of the crisis communications plan. The present broadcasting networks shall be upgraded to facilitate an emergency alert system (EAS), as reflected in section 6.3 of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			television but in the latter case only for audio. What then does the broadcaster do if he is only to read out MET advisories and the ODPM have priority access to the transmitters? The public want news 24/7 in an emergency. Are MET and the ODPM set up to provide news 24/7 with the broadcaster acting as a mere conduit? What is left for the broadcaster: advice to the public on precautions that the public can take or will the ODPM is supplying this advice?		

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			The behaviour of the American broadcasters before, during and after Irma, gives example of what the public want and expect from the Trinidad & Tobago broadcasters. Can the local broadcasters do what they did, having regard to local regulations? The broadcasters are happy to learn that there will be a dedicated radio link between the ODPM and the broadcaster, details of which will come later. We would like to be clear if this is the radio link being used to capture broadcast transmitters or will there also be a separate link		

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			to broadcast newsrooms and, if the latter, is it two way, which we suspect it will have to be. Remember it is to the broadcasters that the public will turn for news before, after and during an emergency.		
8	General Comments: Morne Bleu, NOC Dundonald Street, Sustainability	TTPBA	Why is the TSTT site at Morne Bleu not a part of the Communications Plan? There is a massive tower on the site, electrical power from mains and generator, and the site is fenced with security 24/7. It might be the repeater site with the best coverage and that coverage will include Tobago, Grenada and the North coast of Trinidad. The		The Authority notes that detailed suggestions such as this one will not form part of the NECP. Consideration will be given to exploring the possibility of accessing the Morne Bleu facilities, as part of the ODPM's existing and proposed communications systems (see section 5). This consideration will include any necessary propagation studies.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			Morne Bleu does not ‘see’ the North West peninsula but it will almost certainly ‘see’ Mt. Catherine (the military communications site) and Cumberland Hill. It is clearly visible from Maracas Bay, Blanchisseuse and Brasso Seco. To confirm all of this let TATT do an RF propagation study (they have the software) which will show just what is the reach of this site. There is also anecdotal evidence that from this site, connection is also possible with Suriname.		

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			There is a need for the ODPM to own a low-powered broadcast radio that can be used after a local emergency. The recent Toco/Matelot emergency will illustrate what we mean. Local emergencies require local radio that can deal exclusively with the emergency. These are low cost portable radio stations that will operate from a very small generator or from the cigarette lighter of a vehicle. NOC Dundonald Street: We are advised that at this location there exists the greatest concentration of information pertaining to national security and a		The present broadcasting networks shall be upgraded to facilitate an EAS, as reflected in section 6.3. Owning and operating a low-powered broadcast radio will be considered by the ODPM in the future, subsequent to the conduct of a feasibility study. This was not included in the NECP at this time. The ODPM is currently part of the NOC.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			communication system that services the entire island; if that is correct how does the NOC fit into disaster planning?		The details of its operation are confidential since it deals with national security issues.
10	General Comments: Sustainability	TTPBA	No comment has been made about sustainability; this we are advised will come at a meeting later this month.		To ensure sustainability of the NECP, the document will be tabled for review annually and after any major disaster, in accordance with section 3. The review will also assess the sustainability of the plan.
11	General Comments: Call Centres	TTPBA	Looking at the preparations in Florida for Irma, you see that every County has an emergency call centre manned by several people. The purpose of this call		The ODPM is aware of the system referred to by the TTPBA and wishes to confirm that there is a similar structure employed within Trinidad and Tobago.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			centre is to receive calls for help and to despatch help be it Police, Fire Services or Council crews. The question is, is there an equivalent in Trinidad & Tobago? One would think that these call centres should be at the Regional Corporations but...		However, in Trinidad and Tobago the regional corporations are responders and, as such, would not be best suited to house a call centre. The call centre is operated by the ODPM.
12	General Comments: Cumberland Hill	TTPBA	The broadcasters have repeatedly petitioned the authorities to repair the roadway going to Cumberland Hill, which is in a state of near collapse. We point this out because, if access cannot be had to Cumberland Hill, much of the		TATT has convened a multistakeholder committee to address the rehabilitation and maintenance of critical communications sites such as Cumberland Hill.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			warnings to the public in a national emergency will not happen.		Work is currently underway to repair the access road to Cumberland Hill.
13	Abbreviations	REACT		REACT suggests the inclusion of REACT, the abbreviation for Radio Emergency Associated Communications Team	This recommendation was accepted and the list of abbreviations in the document has been amended to include REACT.
14	Purpose	TTCS	The TTCS notes that the plan primarily addresses internal/private communications within the ODPM and between the ODPM and First responders. Communication with the public seems to be quite limited, in our opinion.	The recommendations below are focused on the main issues that the TTCS believes are necessary and critical to protecting life in case of a National Emergency.	The comments and recommendations made by TTCS during this consultation process are welcomed. Consideration was given to more modern modes of communication, such as social media.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					Amendments were made and are reflected in section 7.3.
15	Purpose	REACT	Radio Emergency Associated Communications Team (REACT), a voluntary, registered non-profit, communications organization, takes the opportunity to congratulate TATT, ODPM, TEMA and other stakeholders on the development of the National Emergency Communications Plan (NECP).	REACT recommends an explicit statement indicating that the Incident Command System (ICS) is adopted for use by the various agencies involved in the plan. REACT was unable to access the Caribbean Disaster Emergency Management Agency Telecommunications	Incident Command System (ICS): This system was adopted by the ODPM, which is currently reviewing its NRF that will serve as the authoritative document in which it outlines the process to nationalise the system across all agencies.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			REACT has been operating in Trinidad and Tobago for over 50-years and having been part of disaster preparedness and emergency management during this time, welcomes the opportunity to comment on the NECP. REACT will adjust its own plans and standard operating procedures for emergency communications to be in alignment with the NECP.	Procedures Manual and requests an electronic copy.	Whether the ICS forms part of the NECP will be considered at the next review. These documents are only available to disaster management agencies. However, the ODPM shall investigate making these documents available to the public.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
16	Background	Kereen McPherson	Flood alerts should be developed in other municipalities. For example, San Juan that has the San Juan River.	Collaborate with agencies such as the Water Resources Agency to develop such an early warning system. Recent research did not reveal more than checks being made via monitoring the water level in two parts of the San Juan River. This information is not widely disseminated to warn residents.	Comments and recommendations made in this consultation process are welcomed. The San Juan River project was installed but is currently not operational. However, other corporations, like the Diego Martin Regional Corporation, have installed alerting systems for rivers. It is anticipated that, in addition to the Water Resources Agency's system, other corporations will be installing similar systems to alert

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					when there are changes in river levels.
17	Background	REACT		REACT suggests including the organization REACT, via its network and wide reach, as one of the options to be exercised in the early warning system.	This recommendation will be addressed. The Trinidad & Tobago Meteorological Service (Met Office) will be requested to include REACT in their group fax by the end of 2021. Early warning notices are generated by legally authorised agencies, such as the ODPM, TEMA and Met Office, and

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					disseminated to the public via their websites and social media feeds.
18	Objectives	TTCS	The current digital society, in which we live, with social media and the almost limitless capabilities of crowd sourcing technology, offers great opportunities to the ODPM with regard to planning and implementation of the National Emergency Communications Plan.	Increase the scope of the emergency communications infrastructure beyond land mobile radio systems and broadband. Communications methods should be chosen based on resiliency, such as:	Comments and recommendations made in this consultation process are welcomed. Section 4 of the revised NECP includes the use of a web portal system.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			Noting that in case of an emergency, Internet services will likely be unavailable, we believe that localised communication platforms will be necessary. Resiliency of the methods used will be extremely important. For example, SMS, better known as Text Messages, are the most resilient that depend on infrastructure because of the FIFO (First In, First Out) method which allows messages to eventually get through... with the ancillary benefit of using less battery on the ground, allowing a phone in the hands of someone	Outside of infrastructure, communications considered should be HAM radio and CB. As well as Broadcast: Radio, TV. Based on the communications infrastructure – SMS /text messaging. Bias should be for the more resilient - text messages/SMS, HAM, CB.	HAM and CB radios are identified in section 5 as secondary communications systems. Broadcast radio and TV are in use for emergency communication/information dissemination. Broadcast SMS for emergency communication is also in operation. In the restructuring of the NECP, 6.5 has been amended to include an IXP. IXP nodes have been implemented in both south and north Trinidad. DNS infrastructure has been implemented at the IXP. Larger ISPs have also implemented BGP routing between themselves.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			needing assistance to offer more usage.	Establishment of IXPs and localised (cached) communication platforms for popular communication systems such as Facebook, WhatsApp, Viber, etc. as well as underlying infrastructure such as DNS and BGP Routing. The TTCS stands available to the ODPM to discuss the power of crowd sourcing and using social media to gather information and respond accordingly	The ODPM and TEMA currently use social media to gather information on emergency events from and respond directly to the public. TATT will investigate any further improvements to the current operation of the ODPM and TEMA in this regard and discuss with TTCS accordingly. Section 7 of the NECP references the use of social media in emergency communication.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
19	Objectives	Digicel	Digicel (Trinidad & Tobago) Limited (“Digicel”) believes that although the target of 72 hours for the restoration of basic telecommunications services is a useful objective it is not practical as each incident is unique and the impact on the telecommunications infrastructure is unpredictable. As such, timeframes for restoration cannot be guaranteed.	Digicel therefore recommends direct communication between the ODPM and service providers in order to share information about incidents and impact on telecommunication infrastructure. It is suggested that service providers be given the opportunity to have representatives in ODPM’s NEOC to facilitate this communication.	Comments and recommendations made in this consultation process are welcomed. Currently there exists direct communication between the ODPM, TEMA and service providers on emergency-related information. The ODPM will consider the recommendation by the end of 2021, as the emergency operations centre (EOC) structure is currently under review.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
20	Regulatory Framework	Digicel	The Regulatory Framework grants the Government of the Republic of Trinidad and Tobago specific powers over telecommunications networks related to disaster communications. The framework is largely silent on the mechanism for executing these powers.	Apart from this proposed National Emergency Plan, Digicel recommends that a protocol should be established to activate the provisions in the Regulatory Framework. This protocol should clearly identify who (e.g. which Ministry) notifies service providers, the manner in which this notification is done, the timeframes for the service providers to hand over their operations and whether the service provider is required to provide manpower and experts for its various systems.	The recommendation will be treated in the SOPs, which is to be developed following the approval of the NECP. Guidance will be provided by TATT in relation to the protocol for the use of telecommunications facilities during an emergency/disaster, as stated in section 84 of the Act. TATT shall develop such guidelines and procedures for the application of section 84 of the Act, in consultation with the Ministry of National Security, concessionaires

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					and other relevant stakeholders in the 2022 calendar year.
21	Review Cycle	Kereen McPherson	The review cycle is too short.	The review of this plan should be done biennially. Annually is too short to get feedback from relevant stakeholders and implement changes.	Section 3 of the NECP was revised as follows: “The plan shall be reviewed every year, and/or after each emergency/disaster, after exercises, or at the discretion of the ODPM and TEMA”. This implies that the annual review is an outside time frame, as reviews would be more frequently triggered by any major disaster or planned disaster management drill by the ODPM.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					The NECP will be a living document and it is expected that the implementation of any changes
22	Existing primary communication systems	Kereen McPherson	Consideration may be given to giving some first responders access to ODPM's land mobile radio (LMR) network.	Give responders access to ODPM's LMR (this may be done in times of a disaster only).	The recommendation is accepted, noting that all the agencies attached to the Ministry of National Security have access to the ODPM's land mobile radio (LMR) network, as per section 4.2.
23	Existing primary communication systems	REACT	REACT notes that some of the municipal corporations also operate trunked LMR systems rented from commercial providers. These include ICOM IDAS VHF from CARIBEL and Motorola Moto TRBO 800 MHz systems which are essentially	REACT recommends noting the existence of these systems within this section as well as inclusion in the Annex II.	The NECP was amended to include the existence of the systems mentioned in appendix III. These systems were also discussed in section 4.2.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			closed systems as there is no interoperability.		
24	Existing primary communication systems	REACT	REACT also notes the many instances in which agencies are significantly reliant on consumer technologies and contemporary ICTs. REACT welcomes the recognition that while these are useful and may be partially operational in a small-scale incident, in the event of a wide scale disaster, such	REACT recommends consideration of two difference scenarios, one where there is a localized situation and the other a much wider event. The channels of communications can be adjusted to the type of event.	The SOP to be developed subsequent to the approval of the NECP will outline the scalability of the response required based on the type of emergency event, location, number of people affected and other factors.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			systems may be overwhelmed or suffer infrastructure failure.		
25	Existing primary communication systems	TSTT	There is an incorrect reference to section 2.2 in paragraph two (2). The appropriate reference should be 2.3 <i>Existing Secondary Communication Systems</i> .	References to be reviewed.	The error was corrected in the revised NECP.
26	Upgraded Primary Communication Systems	Kereen McPherson	I agree with the public address system (ITU, 2013) but I am not sure how this will be implemented. Will it be like the system used by Muslims to broadcast their prayers?	-	All modes of communication will be deployed, as per section 5.2.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
27	Digital Land Mobile Radio System	Kereen McPherson	ODPM and TATT should provide guidance to Emergency Response Agencies on how to develop strategic plans and to evaluate current emergency strategies.	-	Continuous training is an ongoing effort by the ODPM and TEMA. It is expected that guidance to emergency response agencies will be accomplished through appropriate training and drills, as described in section 6.6. Such training can include, upon request, how to develop strategic plans and to evaluate current emergency strategies.
27	Digital Land Mobile Radio System	REACT	REACT applauds moving away from the PSTN as the primary communications channel and establishing an improved system.	REACT suggests that another option available to facilitate interoperability is the use of software/hardware interface or connector systems that have the ability to integrate disparate communications	The digital LMR system will be implemented in phases, as indicated in section 5.2. The ODPM will consider implementing a patch control at the

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				structures. This can also be used as a stop-gap measure while the replacement system is being sourced/implemented. Additionally, resilience by virtue of not “placing all eggs in one basket” can be an advantage. REACT suggests that another viable avenue as a form of interoperability is the hybrid use of Unified Command and inter-agency linking via common systems. REACT suggests that specification for FM/Intrinsically Safe	EOC to facilitate better interoperability. The ODPM will also consider the use of a unified command system. Existing systems utilised meet the required specifications for being intrinsically safe and equipment being installed in the future will continue to meet this requirement. The power requirements in the ODPM’s design will cater for state-of-the-art radios capable of

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				equipment be considered for the upgraded system so as to be operable in hazardous areas. REACT suggests that consideration for powering communications equipment be a critical consideration with the upgraded equipment. This includes sufficient capacity to run for 1 – 2 weeks prior to refresh, including handheld/mobile/portable equipment.	operating under all conditions and in all environments.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
28	Digital Land Mobile Radio System	TSTT	Statement 1: Upgraded Primary Communication Systems (c) Additional information is needed such as details of the internal communication system requirements, technologies etc.	Efforts should be made to standardise the equipment and technology among the varying agencies to ensure that they can communicate effectively with minimal challenges.	One of the main objectives of the NECP is to ensure interoperability of systems amongst all responders. The NECP has focused on the interoperability of systems, rather than standardisation, to ensure effective communication. This was seen as more practical.
29	National Emergency Operations Centre (NEOC)	REACT		REACT recommends the consideration of a sufficiently decentralized communications system, so that should the Communications Centre be affected, traffic flow will not be totally impeded.	This recommendation was accepted but cannot be considered within the current scope of the NECP. It can be implemented in a future revision of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				REACT recommends standardization on the power connectors for the Communications Centre. E.g. Anderson Powerpole. REACT recommends that the antennas for the Communications Centre be pre-staged for each agency/frequency via a consultation process and standardized connectors be used for the transmission cable. E.g. N-Type or SO-239.	The NECP does not propose or direct the system designs of any responder agencies. Each responder who establishes a station at the NEOC will be required to install, operate and dismantle their respective equipment.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
30	National Emergency Operations Centre (NEOC)	TSTT	In the event of a disaster the National Emergency Operations Centre (NEOC) operated by the ODPM may be inaccessible or can be destroyed.	In times of a disaster there is no guarantee that all coordinators will be able to assemble at this location in a timely manner, if at all. Perhaps a second location should be considered.	TEMA's facility will act as the alternate EOC should the NEOC be inaccessible or destroyed. The NECP in section was amended to section
31	Stand-by Emergency Repeater Stations	TSTT	It is stated that these stations shall be tested every month to ensure proper operation. The results of the test and maintenance checks shall be entered in the station log book. What happens if the results indicate that something is wrong and needs to be addressed? And what is the time frame for addressing it?	The escalation path needs to be clearly defined and a timeframe given for resolution, inclusive of the checks along with the re-certification process to regain operability.	This is an excellent recommendation. However, it will be considered in the development of the SOP subsequent to the approval of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
32	Emergency Directory	Kereen McPherson	The Emergency Directory should definitely be established and updated regularly.	It is very important to have the latest version of the Emergency Directory. It should have a Maintenance History. This Directory should be placed on ODPM and TATT's website. (kept at the NEOC and EOC). Members of the public should be advised to print a copy prior to the hurricane season. The budget for the roll out of this plan should include publishing hard copies as some	The recommendation was noted. The Emergency Directory is kept up to date for use by emergency coordinators only. The Emergency Directory is not intended for use by the general public and will therefore not be made available to the public. This directory is for use by emergency coordinators at the NEOC. It contains the contact information of persons and agencies responsible for all levels of disaster management and the

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				disasters such as earthquakes do not give a warning.	operationalisation of relief processes. Emergency contacts for the public are published on the ODPM's website and made available by the various regional corporations.
33	The Emergency Directory	REACT		REACTs suggests that the contact information for the organization REACT be included in the Emergency Directory. REACT suggests making the Emergency Directory	The ODPM agreed with this recommendation. This change is projected to be made by the end of 2021 or on approval of the NECP. The Emergency Directory is intended for the purposes of

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				available online and fed from a real-time database so that the most current information is easily accessed by stakeholders.	agencies involved in the emergency coordinators. The contacts identified in the directory are not intended for use by all emergency responders. To emergency support functions (ESFs) will have to consult further on the recommendation to widen the distribution of the directory amongst emergency responders.
34	Wide Area	REACT		REACT recommends tapping into crowdsourced communications mechanisms. E.g. Zello. This can provide a rich avenue of additional situation intelligence.	TATT notes the recommendation as well as the use of Zello by some responders in Trinidad and Tobago. TATT will consider the use of crowd sourcing communication

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				REACT also suggests the inclusion of FRS as a tool for additional crowdsourced information, a recommendation which may also apply to Section 5 of the plan -Public Information Exchange. REACT recommends engaging the amateur radio community to establish a high-speed, resilient, self-healing broadband Wide Area Network utilizing either the HSMM Broadband Hamnet (BBHN) or AREDN networks. This can provide a low cost, multi-megabit network to	mechanisms as a solution to aid in additional situation intelligence. Furthermore, the establishment and coordination of crowdsourcing communication mechanisms will be included as part of the SOP. Family Radio Service (FRS) is a low-powered radio intended for very short-range personal communication. TATT has class licensed FRS radios, which can be found in the <i>Schedule of Devices Eligible for Use under a Class Licence</i>.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				provide high-speed data for transmission of multimedia content (files, pictures and videos) and can also be Internet-connected should a provider be operational at any of the nodes. This can also supported via hosting at one of the Tier-3 data centers which may continue to be Internet connected during a disaster.	TATT will consider discussions with amateur radio operators on the implementation of such a network to assist with emergency communication. Amateur radio operators own and operate their equipment. While they perform a very important role in disaster communication, their networks are designed and constructed privately.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
35	Wide Area Network	TSTT	This is a good initiative however much thought is required such as: • The requirements of the WAN • Method of procedure to ensure a smooth transition/implementation. • Type of equipment needed etc.	Thorough consultation should be done with Operators prior to the implementation of the Public Safety Broadband WAN.	The recommendation was noted and accepted. All relevant stakeholders will be consulted in the design and commissioning of the wide area network (WAN), as indicated in section 4.2.3.
36	Existing Secondary Communications Systems	REACT		REACT suggests that the ODPM 2 VHF Frequency 148.800 MHz should be officially designated for Emergency Communications and authorized for use by radio	The use of ODPM 2 (148.800/148.200 MHz) VHF frequency is designated for emergency communication. Emergency responders including REACT are now authorised to use this repeater for emergency communication only.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				organizations as REACT that have VHF capability. REACT suggests that the REACT Emergency Coordinator to be on the ODPM 1 VHF Frequency 147.800 MHz The REACT Emergency Coordinator is a licensed amateur operator.	Although it is placed outside the amateur VHF band, permission was given to amateurs to use this repeater for emergency communication when the other repeater 147.800/147.200 MHz is off the air. REACT-licensed amateur radio operators are authorised to use these frequencies for emergency communication only. The operational details for the use of these frequencies will be included in the SOP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				Possible typographical error – Annex III should be Annex II as both primary and secondary communications systems are listed in Annex III.	Following the restructuring of the NECP, the error no longer exists and can now be seen in appendix III.
37	Amateur Radio	REACT		REACT suggests including REACT in the list of organizations which are authorized to operate the Amateur Radio Station as several members are licensed amateurs and the organization has an authorized club call 9Z4RCC.	It is noted that REACT has since obtained a club station licence in order to be recognised as an amateur radio station, in accordance with TATT's <i>Authorisation Framework for Amateur Services</i> . As such, REACT would be authorised to operate an amateur

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				REACT seeks clarification on the inclusion of the 4m (70 MHz) band in the plan. Notwithstanding the adoption of the CDEMA guideline as per Table 1, REACT recommends establishing emergency frequencies in the 70cm and 1.25 cm bands as secondary. It could also be useful to similarly establish frequencies in the 60m, 30m, 17m, 15m, 12m and 10m bands.	radio station, as stated in section 5.1.1. CDEMA has recommended the 4 m (70 MHz) band for regional emergency communication. The NECP does not intend to identify or limit the frequencies that should be used by amateurs for emergency communication in Trinidad and Tobago.
38	Citizen Band Radio	REACT	REACT appreciates and commends the inclusion of CB radio in the plan, given REACT, via it's US- based		All operation of CB equipment shall be in conformance with TATT's <i>Authorisation Framework for Citizen Band</i>

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			parent Organisation REACT International, Inc., lobbied for the designation of Channel 9 as an emergency channel and this was accepted by the FCC in 1970. REACT welcomes the use of CB channel 9 strictly as an emergency channel in Trinidad and Tobago. REACT notes that the Authorization Framework for Citizen Band Radiocommunications Devices (July 2014) also lists channels 3, 5, 7, and 11 as emergency channels in the event of a local or national emergency.		<i>Radiocommunications Devices</i>, published in 2019, as stated in section 5.1.2. This <i>Authorisation Framework for Citizen Band Radiocommunications Devices</i> includes channel 9 as an emergency channel.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			REACT noted the verbal indication by TATT at the consultation, that the Authorization Framework for Citizen Band Radiocommunications Devices finalization was delayed due to consideration of REACT's recommendation for the use of data transmission including digital modes on Channel 40. REACT hereby withdraws that recommendation, with the hope of expediting the completion of the framework. This will help tremendously in accessing Equipment Certification for the acquisition of additional CB		REACT's withdrawal of the recommendation on the use of data transmission, including digital modes on Channel 40, was noted. <i>The Authorisation Framework for Citizen Band Radiocommunications Devices only allows voice communication.</i>

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			assets which will enhance the role which can be played by CB radio and associated operators.		
39	Citizen Band Radio	TSTT	The mandate for Citizen Band users to use particular frequencies in cases of an emergency to operate on Channel 9 during an emergency ought to be supported by both a mechanism for communication of this prohibition and sanctions to be imposed for non-compliance.	Provision should be made for the publication of the restriction within public awareness campaigns; include the provisions in regulations governing the use of Citizen Band Radio.	Consideration will be given to a public awareness campaign for the CB community on the use of channel 9 for emergency communication and will form part of the SOPs.
40		REACT		REACT suggests including a section 2.4.3 and an inserted Statement X as Emergency Voluntary Two-way Radio	The recommendation was noted. However, due to the restructuring of the entire document based on the ITU guidelines, section 2.4.3 was not applicable. However, the

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				Communications Organizations. Members of REACT are in communications throughout Trinidad and Tobago spread across nine (9) Teams and are involved with the municipal Corporations and the THA. Many REACT members operate on Amateur, VHF, UHF, and Citizens Band Frequencies as licensed. Statement X: Secondary Communications – REACT VHF Communications	contribution of voluntary organisations was addressed in section 7. The ODPM and its stakeholders recognise the invaluable contribution of volunteer organisations as secondary communications providers. It should be noted that REACT is one of the agencies authorised to use ODPM 2 Frequencies.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				In the event that commercial two-way radio communications is to be used as secondary emergency communications to supplement primary emergency communications, REACT operators shall operate on authorized REACT frequencies as well as the ODPM 2 Frequency.	REACT's comments on their two-way communication protocol is noted.
41	Contingency Communications Systems	REACT		REACT recommends the inclusion of external agencies in the Emergency Directory. REACT recommends that a different e-mail system be	The recommendations in relation to the inclusion of external agencies and a contingency email address were noted and shall be further considered by the end of 2021.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				utilized as the back end for the contingency address. REACT recommends that other key stakeholder agencies, such as REACT be assigned FTPAS and MTPAS.	The ODPM notes some aspects of these recommendations have already been implemented. The recommendation that agencies such as REACT be assigned FTPAS and MTPAS (to be replaced with dual sim phones) will be considered by the end of 2021.
42	Contingency Communications Systems	REACT		REACT suggests including the organization's systems in Table 2: Existing Systems, Risks, Protection and Contingency.	This recommendation was accepted and the category was added to the relevant table, i.e., table 3 in section 6.2.

Item	Document Section	Stakeholder	Comments	Recommendations				Decisions	
				Existing Primary and Secondary Communication System	RISKS	Protection Scheme	FALLBACK or System Contingency		
				REACT VHF Repeater System	Repeater Failure	Regular Maintenance	Simpler Operation		
43	Contingency Communications Systems	TSTT	<i>“This plan recommends that the ODPM/TEMA acquire five (5) MTPAS protected mobile</i>	This statement should be reviewed as advancement in technologies make the				The recommendation was noted and the NECP has been revised to replace the MTPAS phones with	

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			<i>phones fitted with special SIM cards that allow the phones to roam on the strongest available mobile phone network.”</i> TSTT would like to point out that developments in technology seem to make this requirement for national roaming moot. Dual SIM handsets would allow the users’ handset to lock unto whichever network is available. Table 2: Existing Systems, Risks, Protection and Contingency It is being suggested that the table include a section for the likelihood of the risk occurring. This will put each item into a	“national roaming” requirement moot. It is recommended that a more comprehensive risk assessment be performed and detailed for a more comprehensive NECP development.	dual SIM phones, as stated in section 6.2. Table 3 (formerly table 2) in section 6.3 was revised to include more comprehensive risk management. Table 3 (formerly table 2) in section 6.3 was revised to include

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			better perspective as it will highlight awareness and establish priority for each communication system contingency/fall back plan. It is also suggested, that while we have a list of major hazards that affect Trinidad and Tobago (T&T) (Annex I), it will be useful if these can be listed in order of most likely to occur or most likely to have the greatest impact on T&T inclusive of its corresponding primary and secondary plans.	Each item should have at least one fall back/contingency plan.	an additional column, “Fall Back or System Contingency”. Appendices I and II were revised to analyse the probability and likely effects of major hazards.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			Consequently, areas of network vulnerability will be highlighted which will lead to better stakeholder focus for a more efficient and effective disaster planning process/plan and its corresponding preparedness activities.		
44	Contingency Communications Systems	Digicel	Mobile Telephones Privileged Access Scheme (“MTPAS”) is a well-defined British procedure for granting privileged access to mobile telephone networks. The implementation of a similar system in Trinidad and Tobago has to be carefully considered and the associated processes,	Further consultation with mobile telecommunications providers should be prioritized before such a system is pursued.	The recommendation was noted and section 6.2 has been revised to replace the MTPAS phones with dual SIM phones. This recommendation was supported by both Digicel and TSTT.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			procedures and technologies need to be implemented before such a system is activated.		
45	Public Notifications and Warnings	TTCS	The list of public notifications and warnings is too limited. Currently members of the TTCS get information from the ODPM from their website and this is forwarded through WhatsApp from not so trusty sources.	The ODPM can disperse information using the various social media and technologies exist today in Trinidad and Tobago: SMS, Twitter, Instagram, Facebook, ODPM App, Email, TV, Cable, Radio, WhatsApp, Viber.	Section 6.5 was revised to include more extensive use of social media and other technologies.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
46	Public Notifications and Warnings	TTCS	The type of information that is needed during a disaster was not specified and should be clearly stated based on data and best practices. Some information might be: Location of shelters Locations to stay away from Traffic warnings and alerts Road blockages and alternate routes Dispatching of emergency supplies	The ODPM should create a standard schedule of types of data that are needed during particular kinds of disasters and have this as part of their plan.	The ODPM currently uses its electronic and print media/material to address this issue.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
47	Public Notifications and Warnings	TTCS	Only Columbus Communications has an agreement with the ODPM	The agreement with Columbus Communications should be extended to all other providers.	The mechanism needs to be put in place for other operators to have the ability to carry out this function. The ODPM is at present taking up this issue with the various operators across the country. This is addressed in section 6.3, as part of the establishment of the EAS.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
48	Public Notifications and Warnings	Kereen McPherson	I appreciate the importance of giving evacuation notices but members of the public need to be aware of how to develop a family evacuation plan (ODPM's website has some guidance on this) and exactly where the nearest emergency shelter is located.	Make the knowledge of how to develop a family evacuation plan and the location of the nearest emergency shelter an integral part of this plan.	The ODPM noted the recommendation. Reference is made to the ODPM's website where regularly updated information on evacuation plans, emergency shelters and much more can be obtained. This recommendation was addressed in section 6.7.
49	Public Notifications and Warnings Bullet one of number 5	Kereen McPherson	In order for buildings to be constructed to withstand category 3 hurricane force winds, they should be constructed to an approved building code.	Engage the Board of Engineering of Trinidad & Tobago, the Joint Consultative Council in the Construction and the Trinidad & Tobago Bureau of Standards to have the local building code approved.	The recommendation was noted. However the issue of building codes does not form part of the NECP. Only a standard for the NEOC was addressed in section 4.2.1.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					The Town and Country Division and the building inspectorates?? of the regional and city corporations establish and ensure the standards as they relate to building codes and construction.
50	Public Notifications	TSTT	Statement 10: Public Notifications and Warnings <i>“(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</i>	Proper planning and documentation of business cases, etc. will enable stakeholders to properly project cost and allow for proper budgeting for future investments.	TATT and the ODPM agreed with the recommendation. Statement 10 was replaced by statement 17 in section 5.3. TATT has provided guidance on the suitable standards for telecommunications and broadcasting networks through its <i>Technical Standards for Public</i>

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			<i>efficient public notifications and warnings.”</i> While as a service provider we are willing to make our facilities and resources available in the event of an emergency, it should be noted that these upgrades etc. come at a cost. Therefore, greater discussion needs to be had surrounding the funding of these upgrades and other requirements, to ensure this exercise is done properly and in the most cost-effective way possible, while not conflicting with quality.		<i>Fixed Telecommunications Networks.</i> TATT expects that the network operators will regularly conduct their risk assessments and maintain and update their disaster preparedness and business continuity plans to ensure resilience in times of crisis. Section 5.3 requires each network operator to provide to TATT a risk analyses, disaster preparedness plan and BCP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			<i>“(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.”</i> While in agreement with the combine effort to determine appropriate standards which will ensure consistency and a holistic view in the communication plan. It is also being suggested that an evaluation criterion be implemented as this will show forth awareness and understanding of the objectives	It is recommended that while standards are being determined it is also important that these have established evaluation criteria to ensure that they are being adhered to and any gaps and/or weakness are addressed immediately.	TATT will use the information submitted to determine if the network operators are adequately prepared. The ODPM agrees with the recommendation and will consult

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			of the plan by stakeholders and highlight any gaps noted, thus ensuring that any communications needs are prioritized appropriately. “(c) <i>“All subscription television broadcasting services shall provide emergency alerts to their subscribers via a ticker tape shown at the bottom of the viewing screen.”</i> While TSTT agrees in principle with this recommendation, there needs to be more amplification with regard to the terms of such agreements between CATV/ IPTV operators and the ODPM.	Terms of agreement to be looked at with greater detail.	with the necessary stakeholders on the future development of the EAS.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
51	Public Notifications and Warnings	Digicel	**Confidential** Digicel is open to engage in discussions with TATT/ODPM/TEMA about the general resilience of our network to natural disasters and disaster plans. However details of same are confidential and critical to the competitiveness our business. We will provide assurances where possible that the recommendations of this		The comment on the confidential nature of networks and the impact on competitiveness is noted and will be considered in the way information from network operators is handled.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			section are incorporated into our plans.		
52	Emergency Alert System (EAS)	Kereen McPherson	Also develop Work Instructions to support the Procedures for the installation and maintenance of the EAS equipment.	-	The ODPM agrees with the recommendation. Work instructions are necessary and shall be done in the development and implementation of the EAS by the ODPM and the relevant stakeholders.
53	Emergency Alert System		REACT requests to be included in the discussions regarding the development of the Emergency Alert System.		The ODPM will consider the suggestion by REACT.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
54	Emergency Alert System	TSTT	Government Information Services Limited (<i>GISL</i>) will no longer be able to provide support for Public Notifications and Warnings since its closure.	Engage the replacement agency (if any) to provide this support.	This recommendation will be considered. The ODPM is currently engaging in discussions with other stakeholders as part of the crisis communications plan. This issue does not form part of the NECP.
55	Emergency Alert System	Digicel	Digicel welcomes the opportunity to participate in the consultations related to the development of an Emergency Alert System (“EAS”) to be operated in accordance with the provisions of the relevant legislation.		The recommendation to participate in the consultations related to the development of the EAS was welcomed. The ODPM will engage all the necessary stakeholders in the development of the EAS.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
56	Public Information Exchange	TTCS	Some persons may need help but do not have credit on their phone for calls, data (texting) for communicating with authorities, downloading videos for how to quickly fix things such as plumbing, electrical.	All Internet Service Providers should open all calling, SMS and data plan services and have them for free during the state of emergency.	This recommendation is noted but requires more consultation with services providers and the implication to network capacity and business continuity. The recommendation, however, shall be considered in the context of communication to the essential services (i.e., police, fire and ambulance) and amongst responders. TATT will consider discussing with service providers in this regard.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				Establishment of IXPs and localised (cached) communication platforms for popular communication systems such as Facebook, WhatsApp, YouTube, Viber, etc. as well as underlying infrastructure such as DNS, BGP Routing should be implemented should the Internet be disconnected from the rest of the world.	The recommendation on the establishment of a localised IXP was noted. Section 5.3 has been amended to include the status and availability of the local IXPs.
57	Public Information Exchange	TSTT	<i>“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</i>	It is recommended that mandatory timelines be discussed and debated before being included in the plan.	The ODPM agrees with the recommendation surrounding what is a reasonable and realistic time frame for restoration or any timelines based on there may be other external factors that may

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			<i>suffered severe structural damages (e.g. damage to antennas and tower). ”</i> Further discussion should be had surrounding what is a reasonable and realistic time frame for restoration or any timelines thereabout. Although the site may be accessible and has not suffered any structural damages, there may be other external factors that may prevent restoration from occurring within the stipulated timeframe.		prevent restoration from occurring within the stipulated timeframe. Section 6.5 was amended to state, “for sites which are accessible and have not suffered severe structural damage”.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
58	Public Information Exchange	Digicel	Cells on Wheels (“COWs”) are useful in the provisioning of disaster communications. They address coverage or capacity gaps that may exist on a service provider’s network. However, the integration of a COW into an existing network is a major change that requires detailed planning particularly with respect to the transmission links back to the core switching sites.	Digicel recommends instead that the ODPM acquire and maintain a mobile command centre which can accommodate colocation of a cell from the mobile network providers.	The ODPM agrees with the recommendation. The ODPM will consider a mobile command centre, as recommended. Section 6 addresses the issue of contingency systems.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
59	Public Information Exchange	Digicel	Reference is made to the following statement: <i>“Emergency responders providing rescue and relief services in these affected areas shall be allowed priority access to the telecommunications facilities.”</i> Digicel’s understanding of the MTPAS system is that it is not intended to grant broad ranging privileged communications.	Digicel requests that further clarification be provided for this statement. The MTPAS system should be limited only to the most critical roles in the incident management system	The ODPM agrees with the recommendation. The NECP has been revised to replace the MTPAS phones with dual SIM phones. Additional research into call prioritisation will be considered in assessing this application in emergency scenarios.
60	Public Information Exchange – Statement 12 (i)	Digicel	Structural damage and accessibility to a cell site may not be the only cause of loss of service. More critically, transmission links to the	Please note Digicel’s above recommendations with respect to section 1.4 of this policy document.	The ODPM recognises that the restoration period after an incident is dependent on the extent and accessibility of resources and may, at times, exceed the 48-hour

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			switching location and emergency power are required for service to be restored. A 48 hour window is inconsistent with section 1.4 of this policy document which sets a target of 72 hours for the restoration of basic telecommunications services. The restoration of service at any particular cell site is highly dependent on the overall network restoration efforts. As such, timeframes cannot be guaranteed.		window. As such, in section 6.5, the statement was amended to include, “for sites which are accessible and have not suffered severe structural damage” was inserted. This 48-hour window was also recommended by TATT in its <i>Draft Telecommunications (Consumer) (Quality of Service) Regulations, 2015: Indicator 1.4 (Fault Repair Time) – Immediate Standard for Mobile Telecommunications</i>. However, mechanisms should be in place, as far as possible, to achieve the 48-hour window.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
61	Reporting of Local Emergencies	REACT		REACT suggests including the notion that voluntary organizations such as REACT also relay information to response agencies.	This recommendation will be considered and formalised in a controlled arrangement by the ODPM.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
62	Reporting of Local Emergencies	TTCS	The list of methods for the public to report local emergencies is extremely limited. It only has telephone contacts and doesn't include modern and cheap or free technologies.	The ODPM should consider: The use of drones, An ODPM app for reporting and receiving information, Website submission from the ODPM's website Social media posts for assessing the disaster. Emails, SMS, messaging tools Third party groups/organizations. The TTCS would also like to propose a system called CSA - Credible Source Assessment (CSA) - a system of determining the credibility,	The recommendation on the use of social media and other suitable technologies has been included in the NECP, section 6.5. The recommendation to implement the CSA will be investigated by the ODPM for future use and included in the appropriate procedures, pursuant to the approval of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				accuracy and reliability of a source.	

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
63	Reporting of Local Emergencies	TTCS	The TTCS considers that the document does not address the confirmation of reports of local emergencies. Before activation of emergency response for a local emergency, efforts should be made to quickly determine whether the report is true or not.	The TTCS would like to recommend that the ODPM institute an Evaluation/Confirmation of Emergency reporting process. ODPM Official - eyewitness Camera Network System Helicopter Surveillance Drone surveillance Police Report surveillance - Regular patrolling Fire Report surveillance - Regular patrolling Coast Guard Surveillance Life Guard Surveillance	The recommendation does not form part of the NECP. The ODPM already employs a system for verifying reported information. The ODPM is also constantly conducting research into the systems available and the feasibility of implementing them in Trinidad and Tobago

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				Persons with a high Credible Source Assessment (CSA) rating	
64	Reporting of Local Emergencies	TTCS	The TTCS believes that the plan lacks items such as how emergency responders deal with cases such as persons requiring immediate medical treatment, especially with respect to the	The ODPM should consider implementing an ICE (In Case of Emergency) database that	The ODPM agrees to the existence of such a database. The database has been implemented by the Ministry of

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			need for blood and considering allergies and other complications	Has data on every citizen in the country - including blood type, allergies, etc. And offers access to the ICE database for protective services	Health who has responsibility for this information. The ODPM is not required to implement such a database.
65	Reporting of Local Emergencies	TTCS	During a disaster the number of emergencies can be overwhelming and there should be delegated response teams at a neighbourhood level or even street level.	The ODPM should consider implementation of Community Based Disaster Recovery Reporters (CDDR) and Teams. The idea is to create small scale first responders for the community. The system can include community captains and even	The recommendation does not form part of the NECP. This project exists to a certain extent and is under review by the ODPM for full implementation.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				street captains to determine and fulfil immediate needs	
66	Reporting of Local Emergencies	TTCS	The communications infrastructure among first responders and the ODPM does not appear to be standardised	The TTCS recommends standardized communications infrastructure (voice, video and data) so that agencies can communicate more easily amongst themselves (ODPM, Police, Fire, and Defence Force in the first instance.)	The ODPM agrees with the recommendation. One of the major objectives of the plan is to achieve interoperability amongst the various systems used by responders, as reflected in sections 1.2 and 1.5.
67	Reporting of Local Emergencies	Kereen McPherson	References to 911 in this section and all others need to be removed.	-	The correction was made to the NECP as part of the restructuring in alignment with the <i>Global</i>

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					<i>Guidelines for National Emergency Telecommunications Plans.</i>
68	Text to E999 Rapid Response Unit	TSTT	Statement 13: Reporting of local emergencies (a) Some disasters are single events (earthquakes) whereas others continue over several hours (hurricanes). For the sake of determining the 24-hour period during which emergency calls are to be prioritised on Telecommunications Services Networks, it would be useful to identify the starting point for the actual disaster. <i>“(b) Implement the Text to E999 Rapid Response Unit service at least six (6) months subsequent</i>	The ODPM/TEMA and the Authority should set a start-point for the determination of the existence of a disaster and broadcast same to all Public Telecommunications Service Network Operators. This implies that it should take at least six (6) months to be implemented when it should be made a priority.	The ODPM and TEMA agree with the recommendation. The ODPM and TEMA will consider setting a start point, as recommended. The “Text to E999” feature is currently on the radar and will be implemented by the end of 2021.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			<i>to the commencement of implementing the Statements of the NECP.”</i>		The NECP includes Text to E999 service in section 5.2.2. .

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
69	Statement 13 (b): Reporting of Local Emergencies	Digicel	**Confidential** SMS to E999 service is an existing capability of service provider networks. However, the provision of complementary data to E999 or any other responding agency requires a regulatory framework to be established. Complementary data may include subscriber information, location data or any other data which may be useful	**Confidential** A regulatory framework for the exchange of information between service providers and responding agencies should be established. The framework should be aligned with or modify existing statutes and regulations regarding telecommunications services and data privacy and security.	The ODPM and TATT agree with the recommendation to establish an appropriate mechanism for the exchange of information, subsequent to the approval of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			in identifying and responding to persons in distress		
70	Implementation, Monitoring and Evaluation of the Plan	REACT		REACT suggests including standard activation levels for agencies to have a common nomenclature. For example, some organizations appear to utilize 3 levels whilst other utilizes 4 or 5. There may be a need to differentiate between categories of activation levels. For example the levels outlined in the National Response Framework, 1, 2 and 3 may be appropriate for the ODPM/TEMA/Municipal Corporations to indicate the level to which assistance is	This recommendation will be considered in the development of the SOP, following the approval of the NECP for the communications protocol.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				required. However other responder organization may require differing activity levels. Notwithstanding, efforts should be made to develop a standard to be used so that all agencies are on the same page. REACT suggest the specific inclusion and mandate in the plan for standard training which is also necessary for Agency Operators	
71	Implementati on, Monitoring and	TTCS	The document does not address evaluation of the plan, nor of the implementation of the plan. This is required to understand success and failures, which can lead	The TTCS recommends that Data Capture, Analysis, Reporting and the CSA Update take place.	This recommendation will be considered during the implementation phase, in accordance with the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
	Evaluation of the Plan		towards development of a better plan the next time a disaster happens.	Measuring effectiveness of the alerts is considered critical as well.	Measuring the effectiveness of alerts will be considered in the implementation of the EAS.
72	Implementation, Monitoring and Evaluation of the Plan	TTCS		The TTCS recommends regular training and testing of all personnel expected to play a role in disaster recovery	The ODPM agrees and has been engaging its stakeholders/support agencies in the relevant training and emergency drills. The ODPM plans to continue these efforts in the future, as reflected in section 6.6.
73	Implementation, Monitoring and Evaluation of the Plan	TTCS	The TTCS notes that legislation is required for mandating test disaster recovery/continuity plans	The TTCS recommends that legislation be enacted, mandating that organizations of national importance develop, implement and test disaster recovery/continuity	The ODPM agrees with the recommendation and is currently seeking legislative authority so that this recommendation can be legally implemented.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				plans as well as implement and overall ICT security policies.	
74	Implementation, Monitoring and Evaluation of the Plan	TTCS	Depending on the disaster, the electricity supply may be disrupted. The TTCS notes that legislation may be needed for implementing alternative power sources in the event of general power failure.	The TTCS recommends that the plan should reference methods that the population can use to charge their own communications devices. These may include solar chargers, hand cranked radios, generators, etc. The TTCS also recommends that the ODPM consider replicating the Florida action of removing sales tax on hurricane supplies before a hurricane hits.	This recommendation is noted and the ODPM will publish this type of information on their website. The ODPM will continue to make recommendations to the Ministry of Finance on the removal of sales tax on hurricane supplies before a hurricane.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
75	Implementation, Monitoring and Evaluation of the Plan	Kereen McPherson	The method and criteria to be used to conduct the review has not been included.	The criteria may include items such as the time taken for relief to be dispatched, the number of first responders involved in providing assistance, the length of time taken to dispatch early warnings etc.	The recommendation shall be considered in the monitoring and evaluation of the plan.
76	Tampere Convention	Kereen McPherson	A GANTT Chart needs to accompany this plan and should include the estimated completion of some tasks such as when arrangements between Customs and Excise Division and TATT for the importation and operation of the transmitting equipment will be completed.	-	The ODPM agrees with the recommendation that time estimates and milestones for the completion of certain tasks should be ascertained. The detailed arrangements and implementation schedule for key areas will be established as part of the SOP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
					With respect to the importation of equipment, the rules under the Tampere Convention (section 2.2.1.) apply to Trinidad and Tobago, which is a signatory to the Convention.
77	Annex 1	TTCS	The list does not appear complete. Missing are (as an example): Gun shooting rampage, Looting, Road accidents that block major highways, Terrorism, Invasion The type of disaster is not categorised e.g. the response and	Consider adding the other items that the TTCS also believes to be disasters. A classification system should be implemented to determine the nature and type of response. Realistic simulations including personnel and equipment will identify any deficiencies in the	As part of the document restructuring, annex 1 was replaced by appendix 1 which expands the classification of various disasters. The ODPM, on a regular basis, conducts training and simulation exercises (section 6.6) for various types of disasters, including for

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			action for an earthquake might be different for that for a hurricane.	plan, and these can be remedied. The TTCS notes that Cuba runs large scale simulations so that every adult member of the population knows where they have to go and what they have to do, before during and after a hurricane. Their system should be studied and some of their best practices rolled into our plans.	various response agencies, as part of its preparedness programme in the event of a real-life emergency.
78	ODPM Communications System			REACT suggests the inclusion of the organizations communications system in both the ODPM and TEMA list as these are currently utilized	The NECP, in appendix III, Table 4, was revised to include REACT's communications systems.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
				as channels of communications.	
79	References	TTCS	Have a look at other references on what information and action is required for a disaster	https://www.ted.com/talks/cait_ria_and_morgan_o_neill_how_to_step_up_in_the_face_of_disaster	The reference was noted. However, since the restructuring of the NECP to conform to the <i>ITU Guidelines for National Emergency Telecommunication Plans</i> , the literature review was significantly expanded, with authoritative references in relation to the NECP.
80	The Entire Document	Digicel	The subsea fibre optic infrastructure that links Trinidad and Tobago to the Internet is centralized on one area within the north west peninsula. The risk of natural or man-made events disrupting	A specific case study for this scenario should be developed showing the specific application of the National Response Framework (“NRF”) and National Emergency Communications Plan	The recommendation was noted. However, case study scenarios do not form part of the NECP.

Item	Document Section	Stakeholder	Comments	Recommendations	Decisions
			telecommunication services using this infrastructure is high.	(“NECP”). The case study should detail how the response would be managed should such a scenario occur. The case study should be developed in collaboration with the various telecommunication service providers and stakeholders. Other such scenarios should be contemplated and documented as complementary guidance to the NRF and NECP.	Various scenarios, including telecommunications disruptions, are developed and tested nationally, as part of the training and simulation exercises conducted by the ODPM with the various emergency response agencies and stakeholders. This issue is being addressed directly with the concerned operators and TATT.

Appendix V. Decisions on Recommendations for the Second Consultative Round

(...Matrix is attached separately...)