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DAR ES SALAAM REGION



Contingency Plan for Tsunami Caused by Earthquake

September 2021

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Preface

The Dar es Salaam Region is Tanzania's international hub for business. It is a host to many economic opportunities for greater social mobility and the overall development of the Tanzanian people. However, these opportunities are also challenged by various disaster risks and hazards in the region. Disasters, whether related to natural hazards or human-induced, such as floods, landslides, disease outbreaks, explosions, traffic accidents, and collapsed structures, have impacted lives, livelihoods, and properties in Dar es Salaam and can set back important developmental and economic progress. It is therefore imperative that the leadership take a proactive stance in managing such risks.

In this regard, the Regional Government is in full support of projects and programs aimed to build the preparedness and capacities of the Region to cope with and manage disasters and emergencies – a core stakeholder for which is the Dar es Salaam Multi-Agency Emergency Response Team (DarMAERT). On behalf of the Regional Commissioner's Office, through the Regional Disaster Management Committee, we would like to congratulate DarMAERT for their valuable insights on this Contingency Plan for Tsunami. The plan shows the steadfast commitment of DarMAERT to take part in the continuing development of the Region, by strengthening its capabilities to provide more organized and strategic emergency management services for the people of Dar es Salaam.

Many improvements in the emergency management systems and infrastructure for DarMAERT, and the Dar es Salaam Region as a whole, are still needed. However, this Contingency Plan provides a sound foundation for further enhancements as the Region endeavors to continually build its emergency management capabilities. We hope that this Contingency Plan for Tsunami helps develop and integrate objectives and protocols, and strengthen coordination among all stakeholders for a more efficient response to emergencies in Dar es Salaam.



Hon. Amos Makalla
REGIONAL COMMISSIONER
Dar es Salaam

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This Contingency Plan for Tsunami Caused by Earthquake was formulated within a highly participative process. The active involvement of many institutions, key actors, experts, and professionals with their extensive contributions made possible the development of this Plan.

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These key representatives participated in a series of co-development processes which proved to be instrumental to the development of the 2021 Contingency Plan for Tsunami Caused by Earthquake. In this light, we would like to acknowledge with our sincerest thanks the contributions of these individuals and their respective institutions in the development of the Contingency Plan for Tsunami Caused by Earthquake of DarMAERT under the leadership of the DarMAERT Coordinator, Mr. Salum Hamidu, without which this process would not have been possible. Thank you for spending time and resources to participate in the different activities conducted for the development of this Contingency Plan from April 2020 to June 2021 under the technical assistance for Strengthening Emergency Preparedness and Response Capacity of the Dar es Salaam Multi-Agency Emergency Response Team.

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It is our expectation, that this Contingency Plan is utilized by all stakeholders for the continuing improvement of DarMAERT's emergency management services for the people of Dar es Salaam.



Hassan Abbas Rugwa
REGIONAL ADMINISTRATIVE SECRETARY
Dar es Salaam

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Acronyms and Abbreviations

CSO	Civil Society Organization
DarMAERT	Dar es Salaam Multi-Agency Emergency Response Team
DAWASA	Dar es Salaam Water and Sewerage Authority
DLAs	Dar Local Authorities
EM	Emergency Management
EMI	Earthquakes and Megacities Initiative
EOC	Emergency Operations Center
EOCC	Emergency Operations and Communications Center
ERF	Emergency Response Function
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FNI	Food and Non-Food Items
GAD	Gender, Age, and Disability
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
IMT	Incident Monitoring Team
MHPS	Mental Health and Psychosocial Support
NEOCC	National Emergency Operations and Communications Center
NGO	Non-Government Organization
NOAA	National Oceanic and Atmospheric Administration
PHC	Population and Housing Census
PIO	Public Information Officer
PPE	Personal Protective Equipment
RAS	Regional Administrative Secretary
RCO	Regional Commissioner's Office
RDANA	Rapid Damage Assessment and Needs Analysis
SAR	Search and Rescue
SitRep	Situation Report
SOP	Standard Operating Procedures
SPEED	Surveillance in Post Extreme Emergency and Disaster
TANESCO	Tanzania Electric Supply Company
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural and Urban Road Agency
TDMA	Tanzania Disaster Management Act
TFRF	Tanzania Fire and Rescue Force
TMA	Tanzania Meteorological Authority
TNOG	Tanzania National Operational Guidelines for Disaster Management
TPDF	Tanzania People's Defense Force

TPF	Tanzania Police Force
TRCS	Tanzania Red Cross Society
UNDRR	United Nations Office for Disaster Risk Reduction
VHF/UHF/HF	Very High Frequency/Ultra High Frequency/High Frequency
WASH	Water Sanitation and Hygiene
WB	World Bank

Key Concepts

Capacity

Capacity is the combination of all the strengths, attributes, and resources available within an organization, community, or society to manage and reduce disaster risks and strengthen resilience. Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership, and management. (United Nations Office for Disaster Risk Reduction [UNDRR], 2017)

Contingency Planning

Contingency planning is a management process that analyses disaster risks and establishes arrangements in advance to enable timely, effective, and appropriate responses. It results in organized and coordinated courses of action with clearly identified institutional roles and resources, information processes, and operational arrangements for specific actors at times of need. Based on scenarios of possible emergency conditions or hazardous events, it allows key actors to envision, anticipate and solve problems that can arise during disasters. Contingency planning is an important part of overall preparedness. Contingency plans need to be regularly updated and exercised. (UNDRR, 2020)

Disaster

Disaster means A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.

Annotations: The effect of the disaster can be immediate and localized, but is often widespread and could last for a long period of time. The effect may test or exceed the capacity of a community or society to cope using its own resources, and therefore may require assistance from external sources, which could include neighbouring jurisdictions, or those at the national or international levels. (UNDRR, 2017)

Disaster Management

The organization, planning and application of measures preparing for, responding to, and recovering from disasters.

Annotation: Disaster management may not completely avert or eliminate the threats; it focuses on creating and implementing preparedness and other plans to decrease the impact of disasters and “build back better”. Failure to create and apply a plan could lead to damage to life, assets, and lost revenue. (UNDRR, 2017)

Disaster Response

This refers to actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Annotation: Disaster response is predominantly focused on immediate and short-term needs and is sometimes called disaster relief. Effective, efficient and timely response relies on disaster risk-informed preparedness measures, including the development of the response capacities of individuals, communities, organizations, countries and the international community.

The institutional elements of response often include the provision of emergency services and public assistance by public and private sectors and community sectors, as well as community and volunteer participation. “Emergency services” are a critical set of specialized agencies that have specific responsibilities in serving and protecting people and property in emergency and disaster situations. They include civil protection authorities and police and fire services, among many others. The division between the response stage and the subsequent recovery stage is not clear-cut. Some response actions, such as the supply of temporary housing and water supplies, may extend well into the recovery stage. (UNDRR, 2017)

Disaster Risk

This refers to the potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society, or a community in a specific period, determined probabilistically as a function of hazard, exposure, vulnerability, and capacity. The definition of disaster risk reflects the concept of hazardous events and disasters as the outcome of continuously present conditions of risk. Disaster risk comprises different types of potential losses which are often difficult to quantify. Nevertheless, with knowledge of the prevailing hazards and the patterns of population and socioeconomic development, disaster risks can be assessed and mapped, in broad terms at least. It is important to consider the social and economic contexts in which disaster risks occur and that people do not necessarily share the same perceptions of risk and their underlying risk factors. (UNDRR, 2017)

Disaster Risk Management

Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses. Disaster risk management actions can be distinguished between prospective disaster risk management, corrective disaster risk management, and compensatory disaster risk management, also called residual risk management. (UNDRR, 2017)

Disaster Risk Reduction

Disaster risk reduction is aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development. Disaster risk reduction is the policy objective of disaster risk management, and its goals and objectives are defined in disaster risk reduction strategies and plans. (UNDRR, 2017)

Emergency

This term is sometimes used interchangeably with the term disaster, as, for example, in the context of biological and technological hazards or health emergencies, which, however, can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society. (UNDRR, 2017)

Emergency Management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response, and initial recovery steps. EM differs from Disaster Management in that it not only deals with managing disasters, but all types of emergencies and crises. (UNDRR, 2009)

Hazard

A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation.

Annotations: Hazards may be natural, anthropogenic or socionatural in origin. Natural hazards are predominantly associated with natural processes and phenomena. Anthropogenic hazards, or human-induced hazards, are induced entirely or predominantly by human activities and choices. This term does not include the occurrence or risk of armed conflicts and other situations of social instability or tension which are subject to international humanitarian law and national legislation. Several hazards are socionatural, in that they are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change. (UNDRR, 2017)

Incident

This refers to an occurrence or event, either human-caused or by natural phenomena, that threatens human welfare, environment, or security of the country and that requires action by emergency response personnel to prevent or minimize loss of life or damage to property and/or natural resources. (TNOG, 2014)

Incident Commander (IC)

This refers to the officer that has overall responsibility for managing the incident and dictating tactics and resource management. (TNOG, 2014)

Incident Command System (ICS)

The ICS is a standardized on-scene emergency management construct specifically designed to provide for the adoption of an integrated organizational structure that reflects the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. ICS is the combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure, designed to aid in the management of resources during incidents. It is used for all kinds of emergencies and is applicable to small, as well as large and complex incidents. ICS is used by various jurisdictions and functional agencies, both public and private, to organize field-level incident management operations. (FEMA, 2010)

Preparedness

Preparedness refers to the knowledge and capacities developed by governments, response and recovery organizations, communities, and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent, or current disasters. Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response to sustained recovery. Preparedness is based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation, and public information, and associated training and field exercises. These must be supported by formal institutional, legal, and budgetary capacities. The related term “readiness” describes the ability to quickly and appropriately respond when required. (UNDRR, 2017)

Prevention

This refers to activities and measures to avoid existing and new disaster risks. Prevention (i.e., disaster prevention) expresses the concept and intention to completely avoid potential adverse impacts of hazardous events. While certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts where, as a result, the risk of disaster is removed. Prevention measures can also be taken during or after a hazardous event or disaster to prevent secondary hazards or their consequences. (UNDRR, 2017)

Resilience

The ability of a system, community, or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. (UNDRR, 2017)

Response

This refers to actions taken directly before, during, or immediately after a disaster to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of people affected. Disaster response is predominantly focused on immediate and short-term needs and is sometimes called disaster relief. The effective, efficient, and timely response relies on disaster risk-informed preparedness measures, including the development of response capacities of individuals, communities, organizations, countries, and international community. The institutional elements of response often include the provision of emergency services and public assistance by public, private and community sectors, as well as community and volunteer participation. (UNDRR, 2017)

Strategy

The general plan or direction selected to accomplish incident objectives. (FEMA, 2010). The term “strategy” is used in this document as an Incident Command System terminology.

Tsunami

Tsunamis are giant waves caused by earthquakes or volcanic eruptions under the sea. Out in the depths of the ocean, tsunami waves do not dramatically increase in height. But as the waves travel inland, they build up to higher and higher heights as the depth of the ocean decreases. The speed of tsunami waves depends on ocean depth rather than the distance from the source of the wave. Tsunami waves may travel as fast as jet planes over deep waters, only slowing down when reaching shallow waters. While tsunamis are often referred to as tidal waves, this name is discouraged by oceanographers because tides have little to do with these giant waves. (NOAA, 2017)

1. Introduction

The Contingency Plan for Tsunami Caused by Earthquake¹ within DarMAERT's Family of Emergency Response Plans

As an addition to the Dar es Salaam Multi-Agency Emergency Response Team (DarMAERT)'s "Family of Emergency Response Plans" this Contingency Plan for Tsunami Caused by Earthquake is intended to supplement and complement both the Emergency Response Plan 2020 Update, and Standard Operating Procedures for DarMAERT's Emergency Response Functions. With the Emergency Response Plan 2020 update establishing a *framework for DarMAERT's response operations and general guidelines*, and Standard Operating Procedures for Emergency Response Functions establishing a *multi-hazard Concept of Operations for interactions between Emergency Response Functions and the DarMAERT EOC*, this Contingency Plan for Tsunami Caused by Earthquake (herein after may be referred to as Tsunami CP) provides additional detail *for external-facing response operations, further refining specific response strategies of the DarMAERT EOC and ERFs in the event of a catastrophic tsunami*.

Whereas the Standard Operating Procedures for Emergency Response Functions are multi-hazard operational policies and procedures to achieve quality, safe operations and security, the Contingency Plan for Tsunami Caused by Earthquake augments these policies and procedures when the DarMAERT EOC is activated for a tsunami emergency. This Tsunami CP is a document that guides external response operations, and is typically updated by the Operations Sector Commander and Planning Sector Commander. The Contingency Plan for Tsunami Caused by Earthquake is activated by the DarMAERT EOC when DarMAERT is provided a warning by the Tanzania Meteorological Agency that there is a threat of a potential damaging tsunami.

This Contingency Plan for Tsunami Caused by Earthquake contains an overview of the hazard as it pertains to Dar es Salaam, goals and objectives, and operational details pertaining to Command, Control, and Coordination to establish specific emergency response parameters.

Please note that the Contingency Plan for Tsunami Caused by Earthquake is not intended to supplement what is referred to as a "Field Operations Guide." Whereas the Tsunami CP

¹ The Contingency Plan Caused by Tsunami was developed under facilitation of the Earthquakes and Megacities Initiative and Ardhii University (ARU) with funding by the United Kingdom Foreign, Commonwealth and Development Office, through the World Bank under the Strengthening Emergency Preparedness and Response Capacity of the Dar es Salaam Multi-Agency Emergency Response Team (DarMAERT) technical assistance under the Tanzania Urban Resilience Program (TURP). DarMAERT chose tsunami as the hazard to focus on for this contingency plan during a co-design workshop held in December 2020. The Plan was subsequently developed and prototyped in time for DarMAERT review prior to Field Investigation 2, which trained and tested the Contingency Plan for Tsunami Caused by Earthquake during "Module 6 – Expand to Complement an Integrated Emergency Management System" in April 2021. The outputs from this Field Investigation have been incorporated into this latest draft.

provides strategies to guide the DarMAERT EOC and Emergency Response Functions during an emergency for a tsunami caused by earthquake, a Field Operations Guide is intended to be a checklist-based operational resource for first responders who are providing on-scene incident response. Please refer to the Plan Maintenance Section for detailed information regarding continuing to maintain this Contingency Plan of Tsunami Caused by Earthquake as a “living document,” training and testing processes, and editorial processes for continuing to refine the resource inventory tables which are currently shown in template form due to available information.

Geography

According to the 2012 Population and Housing Census (PHC), the Dar es Salaam Region is home to about 4.36 million people, accounting for about 10% of the total population in Tanzania. From 2002-2012, it had an average annual population growth rate of 5.6 %. Gender distribution in the region is balanced with females outnumbering males by less than 3%. The youth comprise about a quarter (23.8%) of the total population, while the elderly (aged 60 years and above) comprise only 3.5%. About two-thirds (66.3%) of people in the region are of working age (15-59 years).

Also according to the 2012 PHC, Kinondoni is the most populated municipality with about 1.8 million people, followed by Temeke and Ilala with 1.3 million and 1.2 million people, respectively. While the 2012 PHC was conducted when the Ubungo and Kigamboni municipalities were yet to be established, the population in the said municipalities for the same timeframe (i.e. August 2012) was estimated to be about 1,189,518 and 766,569 persons, respectively². Population density is estimated at 3,100 persons per square kilometer³. The current total population in the region is estimated at 6 million people based on historical population growth⁴. Dar es Salaam (4.6 million population in 2012) is expected to become a megacity by 2030 with a population of over 10 million⁵.

Dar es Salaam receives over 1,000 mm of rainfall per year and has a bimodal rainfall distribution, the two main rain seasons being the long rains and the short rains, associated with southward and northwards movements respectively of the Inter-Tropical Convergence Zone. The long rains season (Masika) occurs from mid-March to the end of May, and the short rains (Vuli) from mid-October to late December. In terms of temperature, Dar es Salaam has a mean annual maximum of 30.8°C, and a mean annual minimum of 21.3°C.

² Tanzania National Bureau of Statistics (web). Retrieved, January 2020 at <https://nbs.go.tz/index.php/en/>, <https://www.citypopulation.de/php/tanzania-coastal-admin.php?adm2id=070112>, <http://citypopulation.info/php/tanzania-coastal-admin.php?adm2id=070301>.

³ Macrotrends (web). Retrieved, January 2020 at <https://www.macrotrends.net/cities/22894/dar-es-salaam/population>

⁴ World Population Review (web). Retrieved, January 2020 at <http://worldpopulationreview.com/world-cities/dar-es-salaam-population/>.

⁵ World Bank. 2015. Project Appraisal Document. Dar es Salaam Metropolitan Development Project

The city is divided into three ecological zones, namely the upland zone comprising hilly areas to the West and North of the city, the middle plateau, and the lowlands, which include Msimbazi Valley, Jangwani, Mtoni, Africana, and Ununio areas.

1.1. Hazard Identification: Tsunami Caused By Earthquake

Dar es Salaam is exposed to many hazards, especially as a coastal region—this includes coastal and riverine flooding, the threat of landfalling cyclones, epidemics, structural fires, road accidents, building collapse, as well as earthquakes caused by tsunami. Population growth in the region is turning it into a megacity (with more than 10 million population by 2030) increasing vulnerabilities. Dar es Salaam also remains one of the urban centers worst affected by flooding in Tanzania⁶. Severe impacts in terms of loss of life and property are associated with floods in 2008, 2009, 2011, 2014-2016, 2018 and 2019, and 2020⁷.

Aside from the most common hazard of flooding, human-induced hazards in Dar es Salaam include road accidents, fire outbreaks (may mostly be attributed to electrical faults and flammable industrial products), building collapses (such as the 16-storey building collapse in 2013 that claimed 34 lives and involved a major rescue operation), and health epidemics (such as cholera, malaria, dysentery, diarrhea, swine flu, avian flu, etc.). Accidents involving ammunition have also been reported in the last two decades. During the ammunition depot explosion in Mbagala on April 29, 2009, about 26 lives were lost and 9,704 people were affected, also costing response and recovery expenses of about TZS 10.8 billion.

In 2004, Tanzania suffered impacts from the Great Sumatra Earthquake and Indian Ocean Tsunami which traveled across the Indian Ocean Basin. Coastal Tanzania was hit by 1-1.5 meter waves that lasted for 10-15 minutes. Across Tanzania, the tsunami event caused 11 fatalities and damaged boats that were close to shore.⁸ The latest significant earthquake occurrence that affected the Dar es Salaam region includes the 6.0 magnitude earthquake in August of 2020 near the Tanzania Coast. The latest earthquake occurrence fortunately did not cost much damage in the Region but, on the other hand, projects a more severe outcome had they occurred closer to the shore, likely affecting about 60,000 people.⁹

⁶ The United Republic of Tanzania and The World Bank Global Facility for Disaster Risk Reduction, Final Report: Lessons Learned Exercise for Emergency Preparedness and Response in Tanzania [draft], 2019.

⁷ The United Republic of Tanzania, the European Union, the United Nations Office for Disaster Risk Reduction and CIMA Research Foundation, UR Tanzania: Disaster Risk Profile (Flood and Drought), 2019.

⁸ Impacts of the 26 December 2004 tsunami in Eastern Africa. Ocean and Coastal Management, 2006. https://www.researchgate.net/publication/245123801_Impacts_of_the_26_December_2004_tsunami_in_Eastern_Africa

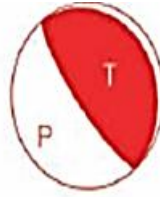
⁹ <https://www.volcanodiscovery.com/earthquakes/2020/08/12/17h13/magnitude6-Tanzania-quake.html>

In a research published in 2008 in the *Geophysical Journal International*, researchers Emile A. Okal and Costas E. Synolakis reviewed multiple scenarios for future Indian Ocean basin tsunami risk, including risk to East Africa. The authors reviewed multiple potential earthquake epicenters, ranging from the Persian Gulf region to South Asia and Southeast Asia. In one such scenario based on a hypothetical earthquake near Sumatra, Indonesia, depicted below, East Africa would receive significant coastal impact with “especially high amplitudes on Madagascar and the Mascarene Islands (Réunion, Mauritius, Rodrigues, and Seychelles), ...[and] and amplitudes off the eastern coast of Madagascar about four times larger than for the 2004 model.”¹⁰ A depiction of this scenario is presented below in **Error! Reference source not found.**

A similar simulation with greater impact than the 2004 Indian Ocean Tsunami was also modeled by the authors. Okal and Synolakis state that “while this study does not perform small scale modeling of inundation at individual sites, and thus no quantitative values of run-up can be quoted from our results, it is clear that off-shore amplitudes [of a worst case hypothetical scenario simulation modeled as “Scenario 2”] are significantly increased over those of “Scenario 1” [which replicates great earthquake of November 24,1833 as the most significant historical analogue] and that the eventual impact on coastlines would be catastrophic at many distant locations. Among them, the Maldives, Madagascar, and the Mascarene Islands are particularly affected, with offshore amplitudes as high as seven times those of 2004 along the east coast of Madagascar. Similarly, our results suggest offshore amplitudes of 25 cm off South Africa, equivalent to those which attacked Somalia in 2004.”

¹⁰ Emile A. Okal, Costas E. Synolakis. Far-field tsunami hazard from mega-thrust earthquakes in the Indian Ocean. *Geophysical Journal International*. March 2008. <https://academic.oup.com/gji/article/172/3/995/572931>

Scenario 1



Scenario 2

Strike = 322 ; Dip = 12 ; Slip = 90 .

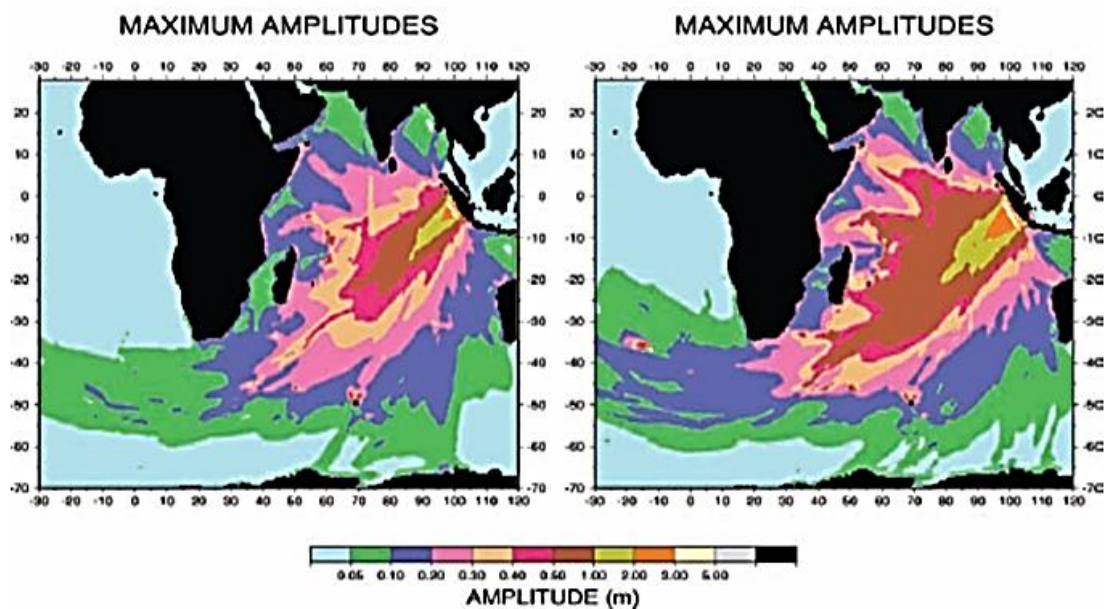
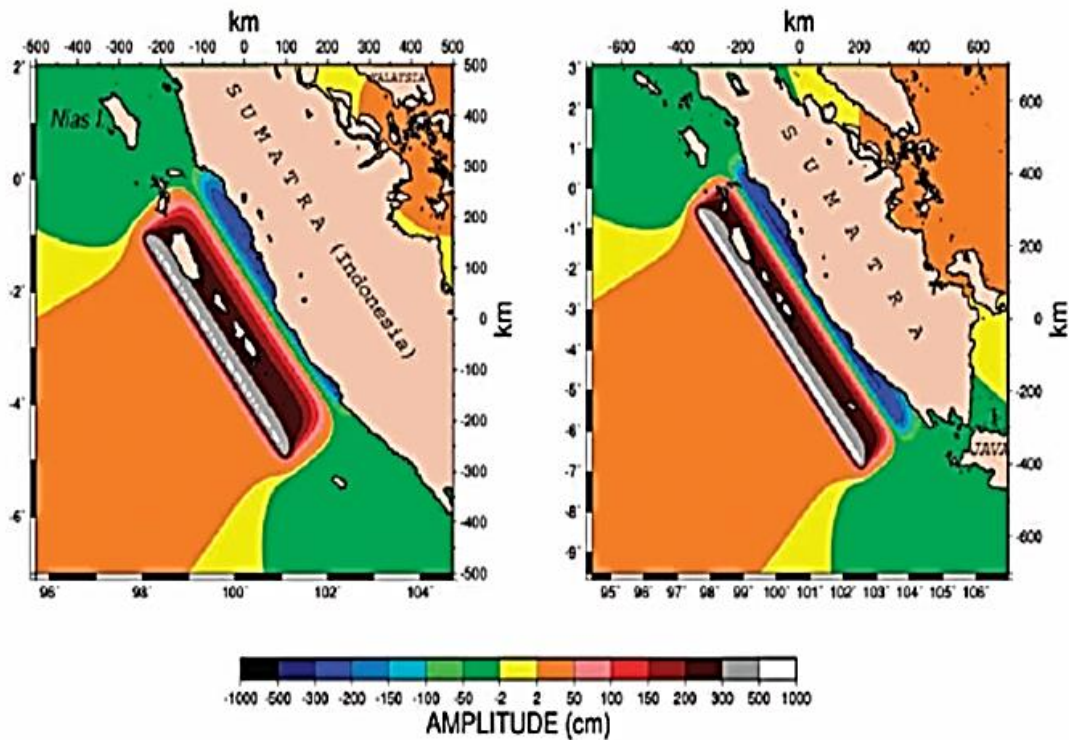


Figure 1. Modeling outputs from Okal and Synolakis (2008) depicting a tsunami wave propagation throughout the Indian Ocean Basin to East Africa based on a catastrophic earthquake near Sumatra, Indonesia.

1.1.1. Key Features of a “Worst Case Scenario”

Based on the information above, the following assumptions can be posited to represent a “worst-case scenario” for Dar es Salaam. These assumptions do not in any way supersede a more detailed Risk and Vulnerability Assessment for Dar es Salaam based on modeled tsunami risk. The Tanzania Meteorological Authority (TMA) has modeled this worst-case scenario and provided modeling outputs in Google Earth in March 2021 (depicted in **Error! Reference source not found.** and Table 1). TMA, DarMAERT leadership, and Ardhi University provided inputs that such a scenario is useful as a worst-case scenario, especially given Dar es Salaam’s vulnerability during recent lunar tidal surge events, as well as increased vulnerability to climate change-induced Sea Level Rise

- A “Worst-Case Scenario” for Dar es Salaam would be similar in origin to the 2004 Indian Ocean tsunami but would be more severe in scale. For simulation purposes, a Magnitude 9.4 earthquake in the Indian Ocean in the North Andaman Sea is utilized¹¹.
- A more severe scenario based on the 2004 Indian Ocean tsunami would involve greater coastal inundation and would potentially include areas in the coastal-riverine interface.
- Poor urban drainage systems which are frequently overwhelmed for annual flooding episodes could similarly be overwhelmed by tsunami inundation.
- Critical infrastructure could be at risk, including Dar es Salaam’s port as well as nearby health facilities that have close proximity to the shoreline.

¹¹ As part of the technical assistance project, this scenario was utilized in a simulation exercise by DarMAERT to train and test the draft Tsunami Contingency Plan during *Module 6: Expand to Complement and Integrated Emergency Management System*, April 12-16, 2021. Outputs from this facilitation have also been integrated into this document.

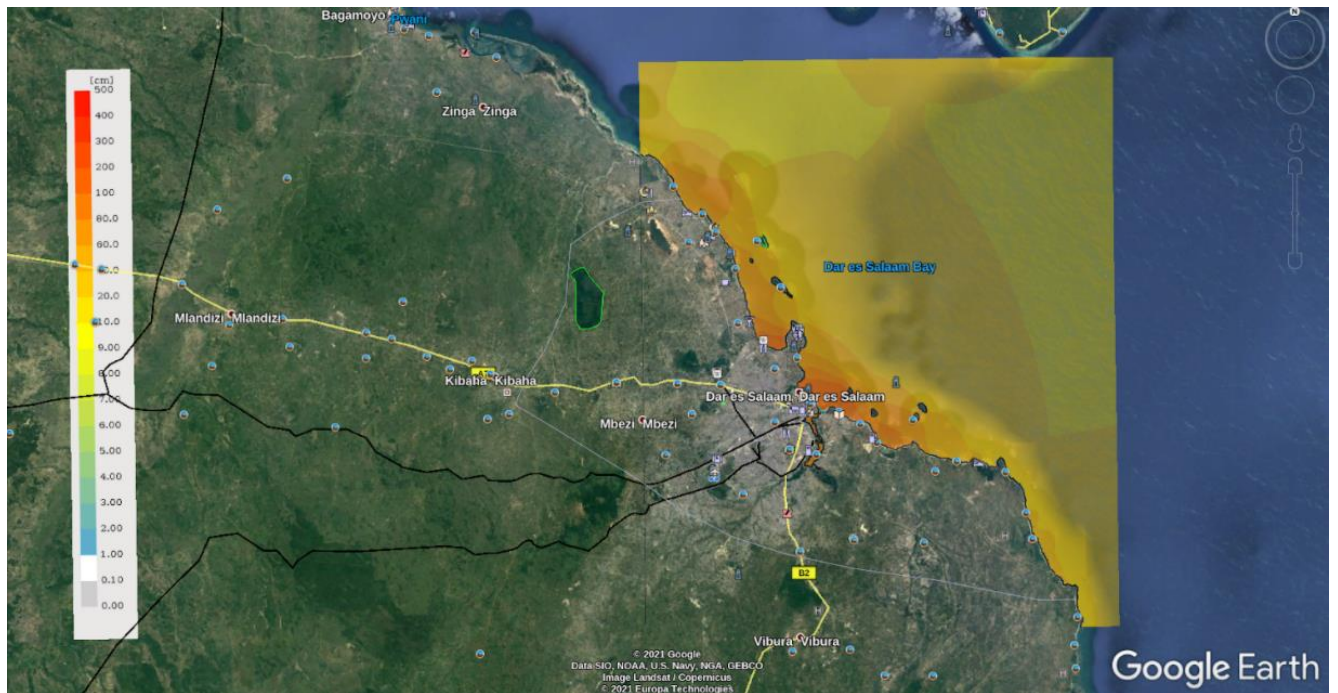


Figure 2. Modeling outputs in Google Earth showing tsunami run-up in Dar es Salaam from a hypothetical 9.4M earthquake near Sumatra, Indonesia.

Table 1. Effects of the Worst-case scenario based on TMA modeling

SITUATIONS	EFFECTS OF THE WORST-CASE SCENARIO
Description of the Event	Earthquake with more than 9.4 M occurring in the Indian Ocean creating a Tsunami
Death	
Slight Injuries	
Serious Injuries	
Life-Threatening Injuries	
Missing	Unidentified
Affected population (local residents)	
Affected population (foreign staff/non-governmental organizations, tourists)	
Housing	
Tourism	Not operational, for rehabilitation
Agriculture	Severely affected
Fisheries	Devastated
Livelihood & Businesses	≥1 month delay in operation
Roads	Most areas are damaged and not passable either damaged by flood due to tsunami
Bridges	Bridges going in and out of the city are damaged and not passable

SITUATIONS	EFFECTS OF THE WORST-CASE SCENARIO
Description of the Event	Earthquake with more than 9.4 M occurring in the Indian Ocean creating a Tsunami
Communication	Total loss of communication within the city
Power	Total power shut down
Water	Total water shut down
Environment	Severely affected
Response Capability	Only 50% of response groups are available to respond to the affected population

2. Goal and Objectives of the Contingency Plan

2.1. Goal

The Contingency Plan for Earthquake Caused by Tsunami suggests key actions that DarMAERT can take to execute external-facing response operations during a severe tsunami event. It is a document that is typically developed and updated by the Planning Sector Commander and Operations Sector Commander.

It is understood that currently there are limitations on Risk and Vulnerability Assessment data to include assessments of inundation based on multiple tsunami scenarios, vulnerable coastal infrastructure, and geographic features including bathymetry and coastal-riverine interfaces. However, based on available scientific literature and the Tanzania Meteorological Agency (TMA), a catastrophic scenario was postulated with the following features:

- 9.4 Magnitude earthquake near Indonesia in the North Andaman Sea;
- Wave energy approaching Dar es Salam from the northeast, largely by-passing Madagascar;
- Impacts to vulnerable coastal infrastructure, including areas with coastal-riverine interfaces;
- Model outputs for the scenario provided by TMA (which were greatly appreciated both for development of the plan, as well as the simulation.).

The goal of the contingency plan is to provide effective, efficient, timely and well-coordinated response mechanisms in the event of the occurrence of a tsunami in Dar es Salaam. Such mechanisms shall help to protect lives, properties and the environment, and address the immediate needs of the affected communities.

2.2. Objectives

The objectives to meet these goals are:

- To ensure the protection of lives and properties in the event of a tsunami in Dar es Salaam;
- To determine the immediate needs and the resources that will meet the needs in the event of a tsunami;
- To establish coordination and linkages between and among the stakeholders of Dar es Salaam in the event of a tsunami.

3. Coordination, Command, and Control

This section describes the Coordination, Command and Control aspects of Emergency Response coordination as related to a worst case scenario tsunami impact in Dar es Salaam. – “Coordination” involves the activities that ensure that onsite Incident Command System (ICS) organization receives the information, resources, and support needed to achieve incident objectives. “Command” takes place in a number of entities and at all levels of government as a standardized approach to provide a common hierarchy within which responders from multiple agencies can be effective. “Coordination” refers to later and vertical modes of communication to ensure effective collaboration between Emergency Response partners. Typically, incident management systems allow for the flexibility of these parameters to function under a range of different management structures and incident sizes.

Coordination among the different agencies and organizations that comprise and/or support DarMAERT is crucial to ensure that the expertise and skills needed during tsunami emergencies are provided. Table 2 provides a list of the required Emergency Response Functions (ERFs) that must be activated in response to a worst case scenario tsunami. Please refer to the DarMAERT 2020 Emergency Response Plan Update, as well as DarMAERT’s Standard Operating Procedures for Emergency Response Functions for further details on the composition and protocols for each ERF in a multi-hazard setting.

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Table 2. Description of Key Emergency Response Functions in Dar es Salaam Region

Emergency Response Function	Description
1. Direction and Control	Directing and controlling all emergency response activities in Dar es Salaam Region, including making sure that the response is governed by the applicable legal framework, and efforts and resources are well-coordinated and implemented.
2. Communication and Warning	Ensuring rapid and reliable communication of official information for effective disaster response operations. Official information to be issued relates to the causes, effects, potential hazards and action to be taken to prevent death, injury, or damage to property.
3. Evacuation	Releasing of order for evacuation, controlling evacuation operation from the EOC, moving people from the emergency area to a safer place through identified routes, and provision of return instructions.
4. Firefighting	Managing firefighting operations, including preventing, detecting, and controlling/extinguishing fire at the disaster scene.
5. Law Enforcement	Securing the incident area, maintaining public safety and order, crime prevention, ensuring access to justice, and traffic and crowd control.
6. Health and Medical Services	Providing treatment, stabilization, and caring for those injured at the scene and transferring them to health facilities, as well as appropriate transport of medical staff, resources, and equipment.
7. Search and Rescue	Searching and rescuing of people trapped (by fire, wreckage, or debris), lost, or at risk.
8. Shelter and Mass Care	Constructing temporary shelter and facilities in case of an evacuation, including their use and management. Likewise, it also entails family reunification and provision of health and medical services, emergency relief materials, food, and psychosocial support.
9. Emergency Public Information	Timely releasing and disseminating of official information to the public about the disaster incident, including handling of information inquiries.
10. Damage Assessment	Determining the magnitude of the disaster, potential associated risks, and preparation of situation reports.
11. Public Works and Engineering	Organization of resources to repair and restore essential public facilities and services (roads/streets, solid waste management, sanitary sewer, and wastewater treatment),

Emergency Response Function	Description
	removal of debris, inspection of damaged structures, and provision of engineering solutions to manage the disaster situation.
12. Utilities	Restoring power, gas, clean water, wastewater services, and their infrastructure in the affected areas. It also involves employing alternative measures to provide these services in times of an emergency.
13. Resources Management and Supply	Managing resources (financial, material, and human), inventory, and prompt allocation of resources as needed. It implies the facilitation of logistics for relief supplies, including their procurement, transport, storage, distribution, and inventory.
14. Transportation	Transporting people and resources to, from, and within the affected area, as well as the internal mobility of the city. It also entails enabling the ground, marine, and aerial transport that is required.
15. Dead Bodies Management	Managing of the dead, including their identification, investigation on the reasons for the death, and burial of bodies that could not be identified or pose a health risk. This also includes the installation and management of mortuaries.

Source: DarMAERT Emergency Response Plan 2020

Please refer to DarMAERT's 2020 Emergency Response Plan for guidelines for each Emergency Response Function, as well as DarMAERT's Standard Operating Procedures for Emergency Response Functions for each ERF's multi-hazard concept of operations across all four phases of Emergency Management—preparedness, response, recovery, and prevention.

3.1. Coordination

3.1.1. Additional Emergency Response Functions (ERFs) Protocols Specific to Tsunami caused by Earthquake

In the event of the activation of the Contingency Plan for Tsunami Caused by Earthquake, the following protocols will apply to each Emergency Response Function. These protocols provide additional detail over and above the multi-hazard ERF guidelines in the Emergency Response Plan 2020 Update, and the multi-hazard concept of operations in the Standard Operating Procedures for Emergency Response Functions.

ERF 1 – Direction and Control

Specific Objectives:

- ☐ To analyze the emergency and decide how to respond quickly, appropriately, and effectively;
- ☐ To direct and coordinate the efforts of the region's various response agencies;
- ☐ To coordinate with the response efforts of other jurisdictions;
- ☐ To manage and use available resources efficiently and effectively. Table 3 summarizes the materials needed and activities or arrangements to meet the needs.

Roles and Responsibilities:

- ☐ Develop and maintain the EOC Staff Roster and operating procedures as the tsunami situation warrants;
- ☐ Advise the higher officials on emergency management activities and coordinate resource and information support for emergency operations in tsunami-affected areas;
- ☐ Coordinate emergency response planning and implementation;
- ☐ Coordinate analysis of the emergency response and recovery problems, and development of appropriate courses of action based on the effects and impacts of the tsunami;
- ☐ Maintain constant communications with the National EOCC (Emergency Operations and Communications Center and other concerned local Emergency Operations Centers (EOC) in the affected areas, if any, and initiate periodic teleconferences with all appropriate parties to coordinate the joint local and national operations;
- ☐ Analyze resource requirements based on information received and establish contacts with the concerned local Disaster Management Coordinators and local government officials to coordinate the use of resources. Table 4 shows a sample of resource inventory;
- ☐ Provide status situation reports to outside agencies and officials as required.

Protocols:

- ☐ After receiving warning of a major earthquake which will cause a tsunami the ERF 1 shall check if the designated command center is still structurally sound for continuous operations and will not be affected by the tsunami. Table 5 depicts needs projection and resource gap identification;
- ☐ ERF 1 will activate the EOC as required. Actions include alert, notification, and situation reporting.

- ❑ Transfer command center if the site becomes unsafe and unsuitable;
- ❑ will maintain constant communications with the local Emergency Operations Center (EOC) or coordinators in the affected area and initiates periodic teleconferences or radio communications with all appropriate parties to coordinate the operations;
- ❑ Develop the incident action plan (IAP) for each operational period
- ❑ Review and prepare available all plans such as ERF SOPs, ERP and Contingency Plans that will be needed during operations and planning;
- ❑ Analyze resource requirements based on information received.

Table 3. Template for Needs and Activities for ERF 1 –Direction and Control, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/ arrangements to meet the needs	Responsible agencies/offices	Timeframe

Table 4. Template for Resource Inventory for ERF 1 –Direction and Control, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/ Office	Resource location	Remarks

Table 5. Template for Needs Projection and Gap Identification for ERF 1 –Direction and Control, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Source s To Fill Gaps
	Families	Persons		Cost (TSH)	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	

- ☐ Check all communications equipment and power supply that would support continuous and unhampered operations. Table 7 shows a sample of resource inventory;
- ☐ Install fixed radio repeater system to establish clear audio transmission within the local radio network. Establish mobile repeater system as necessary;
- ☐ Ensure that all responding units have a minimum of 1 radio per team;
- ☐ SMS blast all information for public dissemination as directed by the Public information Officer (PIO);
- ☐ Radio communication technicians should be ready and available to do onsite repairs;
- ☐ Ensure the availability of a back-up communication system and power supply;

Protocols:

- ☐ After a major earthquake has occurred causing a tsunami, the Communication and Warning ERF shall check if the designated command center is still structurally sound for continuous operations. Table 8 depicts needs projection and resource gap identification;
- ☐ Transfer command center if the site becomes unsafe and unsuitable;
- ☐ Conduct radio check using all available frequencies in the radio net diagram and establish a connection with local governments within Dar Es Salaam and National Emergency Operations and Communications Center (NEOCC);
- ☐ Rectify all technical concerns and ensure availability of technicians for onsite repair;
- ☐ Distribute radios to all responding units and ensure the availability of back-up systems;
- ☐ Maintain all systems and ensure continuous and unhampered operations, especially between DarMAERT EOC and the NEOCC, and;
- ☐ Demobilization of all communications equipment and other resources used or acquired that is not part of normal operations. This includes any resources used such as personnel, vehicles or facilities which are used to respond directly to the tsunami emergency.

Table 6. Template for Needs and Activities for ERF 2 -Communications and Warning , to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/ arrangements to meet the needs	Responsible agencies/offices	Timeframe
UHF radios	Inventory, Budget Allocation, Procurement		D-1 year
Satellite Phones	Inventory, Budget Allocation, Procurement		D-1 year
VHF Radios	Inventory, Budget Allocation, Procurement		D-1 year

Needs	Activities/ arrangements to meet the needs	Responsible agencies/offices	Timeframe
Base Radios	Inventory, Budget Allocation, Procurement		D-1 year
Repeater	Inventory, Budget Allocation, Procurement		D-1 year

Table 7. Template for Resource Inventory for ERF 2 - Communications and Warning, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/ Office	Resource location	Remarks
	Units	Two-way Radios			
	Units	Repeater			
	Units	Cellphones			
	Units	Satellite Phones			
	Units	Base Radios			

Table 8. Template for Needs Projection and Gap Identification for ERF 2 - Communications and Warning, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost (TSH)	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Utility Vehicle													
Mega Phone													
TOTAL													

ERF 3 – Evacuation

Specific Objectives:

- ☐ To identify the scope of authority granted to an Incident Commander to act under standing orders from DarMAERT.

- To support the development of a Risk and Vulnerability Assessment that will identify geographic locations for designated evacuation shelters in the event of a tsunami emergency. This ERF shall provide critical inputs and feedback to the development of the Risk and Vulnerability Assessment, such as the number of potential evacuees in specific geographic locations, to support the Emergency Response Functions for Transportation, as well as Shelter and Mass Care. It is understood that, in the meantime, no tsunami-specific shelters have yet to be established, and residents would typically self-evacuate in the event of a tsunami warning.
- To define the provisions that have been made for evacuating special needs populations. Such populations include children in school, children in day care centers, nursing home residents (long-term), the handicapped (hearing-impaired, sight-impaired, mentally impaired, and mobility-impaired), non-Swahili speaking people, institutionalized individuals (in hospitals, mental health facilities, nursing homes (short-term), incarcerated residents (in jails, juvenile facilities, drug treatment centers, etc.), transient populations (street people, motel and hotel guests, seasonal workers), and people without transportation.
- To define the means that the government will use to keep evacuees and the general public informed on evacuation activities and the specific actions they should take.
- To define the evacuation options and the evacuation routes that have been developed to protect and move the people away from the different types of hazards the region faces, and describe the modes of transportation that will be used to move evacuees.
- To identify assembly areas for picking up people that do not have their own transportation.
- To outline or reference the document that details the evacuation movement control procedures.
- To define the provisions that have been made to control access to the evacuated area.
- To define the provisions that have been made to provide security for the protection of property in the area that has been evacuated.

Roles and Responsibilities:

- Coordinate through the Tanzania Police Force for the designation of a safe evacuation route/s from the emergency area to the shelter place.
- Coordinate with the ERF 14 – Transportation group and the Resources Management and Supply ERF group on the resource needs for evacuating people.
- Provide the ERF 8 - Shelter and Mass Care's officer/s-in-charge and the EOC the list of evacuees and their relevant information.

Protocols:

- Upon the activation of the contingency plan, the members of ERF 3 will convene at the Emergency Operations Center to discuss further actions. Table 9 summarizes the materials needed and activities or arrangements to meet the needs;
- Each ERF 3 member shall observe the following:
 - Observe 8 hours shift to prevent premature exhaustion, aligned to the present recommended protocols of the DarMAERT EOC.
 - In cases where an ERF member will fail to arrive, he/she must notify the team 12 hours before his/her shift.
 - In cases of any complications, report directly to the team coordinator.
 - For procurement of supplies and other resources, follow the procurement protocol of the government. Table 10 shows a sample of the resource inventory.
 - For transport services, document and verify all transported supplies/resources through the use of delivery receipts.
 - All crew members are required to wear appropriate personal protective equipment (PPE) during operations. Table 11 depicts needs projection and resource gap identification.
 - Report all actions taken to the Incident Monitoring Team (IMT) for subsequent reporting to the EOC.

Table 9. Template for Needs and Activities for ERF 3 – Evacuation, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible offices or agencies	Timeframe
Land & Water Vehicles to Provide Support for Other ERFs	Inventory of existing supplies Budget allocation Procurement Storage & maintenance		D- 1 YEAR
Handheld Radios	Inventory of existing supplies Budget allocation Procurement Storage		D- 1 YEAR
Fuel	Preparation of MOA with Fuel Companies		D- 1 YEAR

Table 10. Template for Resource Inventory for ERF 3 – Evacuation, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Units	Mitsubishi L300			
	Units	Multi cab			
	Unit	Isuzu truck Drop side			

Table 11. Template for Needs Projection and Resource Gap Identification for ERF 3 - Evacuation, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Trucks													
Fuel													
Generators													
Hand held radio													
TOTAL													

ERF 4 – Fire Fighting

Specific Objectives:

- ☐ To organize teams that can be trained, deployed, and conduct Firefighting activities;
- ☐ To develop a well-coordinated response plan anchored on simulation exercises and preparedness drills among various stakeholders;
- ☐ To increase the survivability of victims by conducting firefighting operations;
- ☐ To enhance community awareness and preparedness by providing information and education materials, conduct community training, and drills and exercises; and
- ☐ To make all disaster tools and equipment operational and available, and ready at all times. Table 12 summarizes the materials needed and activities or arrangements to meet the needs.

Roles and Responsibilities:

- ☐ Direct and control operations regarding fire prevention, fire detection, fire suppression, rescue, and hazardous materials incidents.
- ☐ Assist with warning and alerting, communications, evacuation, and other operations as required during an emergency.
- ☐ Manage and coordinate firefighting activities including the detection and suppression of fires, and provide personnel, equipment, and supplies to support the agencies involved in the firefighting operations. Table 13 shows a sample resource inventory while Table 14 depicts needs projection and

resource gap identification.

- ☐ The TFRF is to assume primary operational control of all fire incidences and hazardous materials incidents.
- ☐ Other support departments may provide assistance to the TFRF, depending on their capabilities. Other departments may be called upon, depending on the nature of the incident.
- ☐ DarMAERT should determine which departments can support a hazardous material response, and which member agencies/organizations require hazardous materials response training, and seek specialized training.

Table 12. Template for Needs and Activities for ERF 4 – Firefighting, to be completed as part of the development of a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/ arrangements to meet the ends	Responsible agencies/ offices	Timeframe
Temporary Learning Spaces	Identify open spaces as assembly points		
	Procurement of additional equipment such as ropes, buoys, rubber boats or emergency vehicles or personal protective equipment such as life vests.		
	Additional storage capacity for assets procured for tsunami response.		
	Deployment of public address systems or warning sirens		

Table 13. Template for Resource Inventory for ERF 4 -Firefighting, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Pcs	Spine board			<i>*write down if resource is damaged, available, functional, etc.</i>
	Pcs	Axe			
	Pcs	Megaphone			
	Pcs	Rubber boots			
	Pcs	Fire Extinguisher			

Table 14. Template for Needs Projection and Resource Gap Identification for ERF 4 – Firefighting, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Manpower													
Handheld Radio													
Multi Cab													

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Life buoy													
Ring buoy													
Diving Equipment													
Regulator													
Buoyancy Compensator Device													
Scuba Tanks													
Lifejackets													
TOTAL													

ERF 5 – Law Enforcement

Specific Objectives

- ☐ To protect the lives of people;
- ☐ To protect the vulnerable sectors of society that are affected by the tsunami caused by an earthquake. Table 15 summarizes the materials needed and activities or arrangements to meet the needs;
- ☐ To deploy personnel that may deter the possible occurrence of violence and or abuse against women, children, and persons with disability;
- ☐ To establish a system on managing complaints and reports to assist the victims most immediately and responsively, and to prevent sexual and mental abuse of women and children by enforcing police powers as necessary to protect the victims and the public in general;
- ☐ To assist victims through facilitation of complaints and conducting psychosocial interventions;
- ☐ To ensure that the civilian population inside and outside evacuation sites and within the disaster zone will be safe from lawless acts and violence during and after the tsunami caused by an earthquake scenario;
- ☐ To ensure that all other ERF will be provided security assistance as needed for the completion of their tasks; and
- ☐ To prevent lawlessness such as looting that may occur as a result of the effects of the disaster.

Roles and Responsibilities:

- ☐ Establish a 24/7 complaint and action help desk;
- ☐ Making personnel available to respond to possible cases of abuse and violence;
- ☐ Acting upon complaints, security and safety-related issues and concerns related to Gender, Age, and Disability;

- ☐ Ensure security of the victims and apprehend the offenders;
- ☐ Proper assessment of both the offenders and victims on the reported violations; and
- ☐ Provision of psychosocial or counseling activities to affected individuals.
- ☐ To secure all vital facilities that may be critical for the survivability and continuity of relief operations;
- ☐ To assist the Food and Non-Food Items (FNI) group during the distribution of goods and supplies for those who are affected;
- ☐ To deploy security details in evacuation sites, shelters, and distribution centers to ensure the security of the area and population during camp activities;
- ☐ To provide crowd control measures and prevent any accident that may be brought about by a large gathering of people;
- ☐ To monitor the streets for possible threats to the affected population, structures, and properties;
- ☐ Maintenance of all vehicles and equipment to be ready for the activities of the ERF;
- ☐ Provide traffic management and security during evacuation procedures.

Protocols:

- ☐ Upon the establishment of temporary shelter facilities, ERF 5- Law Enforcement must be able to establish complaint and action help desks in all cantonment areas. Table 16 shows a sample resource inventory;
- ☐ Conduct security and safety inspection of evacuation sites and shelters, and ensure that facilities and utilities are sensitive to the needs of the unplanned neighborhoods, senior citizens and women, children, and persons with disabilities. Table 17 depicts needs projection and resource gap identification;
- ☐ Receive and act on complaints and reports related to all acts of lawlessness and violence against vulnerable populations, including (but not limited to) women, children, and persons with disabilities;
- ☐ Assist the victims that may be required to file a case in court and to support them during the legal process;
- ☐ Provide psychosocial intervention if necessary;
- ☐ Await further instructions from the EOC/ICS;

Table 15. Template for Needs and Activities for ERF 5 - Law Enforcement, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Time frame
Trained personnel on management of sensitive cases	Conduct of trainings on management of cases		D- 3 months
Trained Personnel on Gender, Age, and Disability (GAD)	Conduct of trainings on GAD		D- 3 months

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Time frame
Organized records, necessary documents and/or master lists	Consolidation of records, Necessary documents and/or master lists of particular/different departments, agencies, ERF members		D- 1 month
Trained personnel: psychologists, social workers, counselors	Hiring of trained personnel / volunteer		D- 3 months
Tables and Chairs	Procurement of tables and chairs		D – 1 YEAR
Emergency policies or SOPs	Conduct of trainings or workshops on formation of emergency policies and/or Standard Operating Procedures (SOP)		D- 3 months

Table 16. Template for Resource Inventory for ERF 5 - Law Enforcement, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Unit	Mobile			
	Unit	Short FAs			
	Unit	Motorcycle			

Table 17. Template for Needs Projection and Gap Identification for ERF 5 - Law Enforcement, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Emergency Policies or SOPs													
TOTAL													

ERF 6 – Health and Medical Services

Specific Objectives:

- ☐ To reduce mortality, morbidity, and disability rates due to the tsunami;
- ☐ To optimize services of both hospital and public health facilities for better emergency response and management;
- ☐ To provide health-related logistics and other resources in times of disaster;
- ☐ To provide immediate first aid and medical assistance.

Roles and Responsibilities:

- ☐ Health and Services: Consultation and treatment, immunization and chemoprophylaxis, etc.;
- ☐ Water Sanitation and Hygiene (WASH): Provision of potable drinking water, toilets, and bathing areas;
- ☐ Nutrition: Assistance to ERF 6 in the establishment of breastfeeding areas to ensure compliance to the Exclusive Breast Feeding, and special lanes for moderately acute malnourished and severely malnourished children; conduct supplementary feeding and vitamin A supplementation, micronutrient, and zinc supplementation.¹²
- ☐ Mental Health and Psychosocial Support (MHPSS): Conduct of rapid MHPSS assessment

Protocols:

- ☐ Upon activation of the contingency plan (CP), all key representatives of ERF 6 headed by the Regional Medical Office will have to convene in the assigned Medical Post/s to collaborate with other agencies supporting Health and Medical Services functions;
- ☐ Coordination with the Incident Commander (IC) for the assessment of the existing health centers and hospitals if still functional;
- ☐ Activation of SPEED: Surveillance in Post-Extreme Emergency and Disaster; and organization of a medical team including private practitioners (volunteer doctors or nurses) to provide medical and psychosocial assistance in evacuation areas. Table 18 shows the team composition with the respective functions. Table 19 summarizes the materials needed and activities or arrangements to meet the needs.

¹² Because of the likelihood that there will be children or babies that will need milk and proper nutrition in the event of a tsunami emergency, it is recommended to align to the Sphere Project's Humanitarian Charter and Minimum Standards in Humanitarian Response (UN Standing Committee on Nutrition), to include recommended supplements. In Tanzania this falls under the Ministry of Health, Community Development, Gender, the Elderly and Children/Tanzania Food and Nutrition Centre.

Table 18 . Template for Summary of team and functions for ERF 6 - Health and Medical Services, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Team Composition	Functions
Leader	<ul style="list-style-type: none"> • Coordinates with other ERF heads; • Ensures safety and needs of the team; • Reports to the Assistant Incident Commander; and • Monitors the quality of medical assistance and services.
Public Health Team	<ul style="list-style-type: none"> • Handles the medical posts in the evacuation centers; • Coordinates with Health Logistics Officers for medical supplies; • Reports to the Health team leader.
Hospital Team	<ul style="list-style-type: none"> • If the hospital is not functional, the hospital team is responsible for the field hospitals; • Coordinates with Health Logistics Officers for medical supplies; • Reports to the Health team leader.
Logistics Officers	<ul style="list-style-type: none"> • Manages emergency equipment, medicines, and other medical resources; and • Reports to the Health team leader.

- ☐ Each team should ensure the following services:
 - Medical treatment and consult
 - WASH (water, sanitation, and hygiene) facilities
 - Nutrition program
 - Mental health psychosocial support (MHPS)
 - 12 hours shifting
- ☐ If the existing hospitals and health centers are not functional, at least three (3) field hospitals must be established in strategic areas within the city. Table 20 shows a sample resource inventory;
- ☐ In Mass casualty incidents use triage: Red, Yellow, Green, and Black. Table 21 depicts needs projection and resource gap identification;
 - Red: Administer immediate care
 - Yellow: Administer care within 1 hour
 - Green: Walking wounded
 - Black: Dead;
- ☐ Coordinate with the Ministry of Health for additional medical personnel thru DarMAERT EOC;
- ☐ Await further instructions from EOC/ICS;
- ☐ Deactivation.

Table 19. Template for Needs and Activities for ERF 6 - Health and Medical Services, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Time Frame
Health Facility			
1. Medical Station/Clinic in Evacuation Center 4 x 4 meters w/ chair table & signages	Request for Station/Clinic availability/ ocular visit/ identification of possible area in the evacuation center		D-4 months

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Time Frame
2. Isolation facilities for Communicable Diseases 4x4 area w/ partition folding bed with good ventilation	Request for facilities availability/ocular visit/ identification of possible areas in the evacuation center		D-4 months
3. Field Hospital during an extreme disaster	Request for availability/ocular visit/ identification of the possible site of the field hospital.		D-4 months
Supplies			
1. Emergency Medicines and Supplies (paracetamol, antibiotic, ORS, cough & cold, Puritab/chlorine, micronutrient powder, zinc and vitamin A) 2. Kits a. Campolax kit b. Family kit First Aid kit trauma e. Hygiene kit	Request for medical supplies and kits availability Additional city stockpiling Inventory of existing supplies Budget allocation Procurement Storage Distribution		D-3 months
3. Cadaver Bags	Request for Cadaver Bags availability		D-3 months
Medical Services in evacuation center a. Consultation and immunization, chemo prophylaxis b. Reproductive and child care services c. TB and other non-communicable diseases	Request for services availability Coordinate with program coordinator (example: Family Planning, (MNCHN) Maternal, Newborn, and Child Health and Nutrition, Non-Communicable and Communicable Diseases Surveillance, Sanitation)		D-2 months
Transportation: a. Ambulance	Request for ambulance availability		D-1 year

Table 20. Template for Resource Inventory for ERF 6 - Health and Medical Services, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resource	Unit	Qty.	Agency or office	Location	Remarks
MANPOWER					
1. Medical Team					
a. Doctors	Personnel	10			
b. Nurses		15			
c. Midwife		30			
d. Dentist		2			
e. Driver		1			
g. Nutritionist		4			
2. Hospital Team					
a. Doctors	Personnel				
b. Nurses					
c. Nursing Attendant					
HEALTH FACILITY					
Rural Health Center	Center				

Resource	Unit	Qty.	Agency or office	Location	Remarks
SUPPLIES					
1. Basic Medicines	Capsules, tablets, syrups				
2. Kits					
a. First aid kit	PCS				
b. Campolas Kit	PCS				
c. Family Kit	PCS				

Table 21. Template for Needs Projection and Gap Identification for ERF 6 – Health and Medical Services, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
MANPOWER													
a. Public Health Team													
1.Doctors													
2.Nurses													
3.Midwife													
4.Dentist													
5.Nutritionist													
6.Driver													
7. Community Health Worker													
HEALTH FACILITIES													
a. Field Hospital Equipment													
SUPPLIES													
a. Emergency Medicine Supplies, Vaccines													
b. Kits													
1. First aid kit													
2.Family Kit													
3.Campolas Kit													
4. Trauma Kit													

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
5. Hygiene kit													
c. Cadaver Bags													
TOTAL													

ERF 7 – Search and Rescue

Specific Objectives:

- ☐ To organize teams that can be trained, deployed, and conduct Search and Rescue (SAR) activities;
- ☐ To develop a well-coordinated response plan anchored on simulation exercises and preparedness drills among various stakeholders;
- ☐ To increase the survivability of victims and shift efforts to retrieval operations if the situation warrants the same. Table 22 summarizes the materials needed and activities or arrangements to meet the needs;
- ☐ To enhance community awareness and preparedness by providing information and education materials, the conduct of community training, and drills, and exercises; and
- ☐ To make all disaster tools and equipment operational and available and ready at all times.

Roles and Responsibilities:

- ☐ Organize volunteers and coordinate with various agencies for the creation of SAR teams that can be deployed during disasters;
- ☐ Conduct drills and exercises that would allow smooth interoperability among various actors;
- ☐ Secure all rescue and disaster equipment that are strategically located in various areas of Dar es Salaam. Table 23 shows a sample resource inventory;
- ☐ Conduct actual SAR operations as directed by the Incident Commander;
- ☐ Coordinate with EOC/ICS for various SAR logistics needs as necessary;
- ☐ Continue SAR operations until ordered to shift to retrieval operations;
- ☐ Assist in the conduct of retrieval and ERF 15 - Dead Bodies Management activities;
- ☐ Assist in the evacuation of people to higher areas.

Protocols:

- ☐ The SAR teams will be activated upon the occurrence of a tsunami caused by an earthquake.
- ☐ All available SAR team members who are not directly affected shall report to their respective assembly areas.
- ☐ Search and rescue equipment will be withdrawn from their respective depositories for utilization. Table 24 depicts needs projection and resource gap identification.
- ☐ Team Leaders will check in with the Incident Command Post (ICP) for accounting and to request further instructions.
- ☐ ICP Commanders will assess the damages and in consultation with other ERF heads will deploy SAR teams to conduct rescue operations in collapsed structures and those that are in hazardous areas that were brought about by the earthquake.
- ☐ Rescue operations will be conducted and all those who are rescued shall be directed to a casualty collection point for primary treatment and possible transfer to a health facility.
- ☐ Survivors will then be directed to proceed to pre-established evacuation centers if necessary.
- ☐ Shift efforts will be as directed by the ICP commander. and
- ☐ Upon demobilization, the agencies' response personnel will stand down and release and return resources that are no longer required.

Table 22. Template for Needs and Activities for ERF 7 - Search and Rescue, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/ arrangements to meet the needs	Responsible agencies/offices	Timeframe
WASAR Team	Recruitment of Personnel Training of Personnel		D-2 months
Rescue Team	Recruitment of Personnel Training of Personnel		D-2 months
Ambulance Team	Recruitment of Personnel Training of Personnel		D-2 months
Ambulance	Inventory Budget Allocation Procurement		D-1 year
Extrication Equipment	Inventory Budget Allocation Procurement		D-1 year
Additional SAR Trainings	Coordination with Concerned Units		1 - 2 weeks
Refresher Seminars for Trained SAR Personnel	Coordination with Concerned Units		

Table 23. Template for Resource Inventory for ERF 7 - Search and Rescue, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
1	PC	spine board		Ambulance	
1	SET	k760 rescue cutter w/ rescue blade tp-rescue 300wp		Rescue Truck	
2	PCS	portable torch kit/ oxygen & acetylene		Rescue Truck	
10	PCS	rechargeable flood lamp weather proof			
1	SET	command light			
1	SET	vehicle/collapse structure stabilization set			
1	SET	hydraulic combination tool			
1	PC	rescue basket stretcher			
2	PCS	head block immobilizer			
1	UNIT	TSH			
1	PC	throw bag			
3	PCS	scuba equipment w/ tank (wetsuit, dive mask, swim fin)			
1	UNIT	chain saw gas driven			
1	UNIT	rotary and chisel hammer			
1	UNIT	Self-contained breathing apparatus			
1	UNIT	demolition hammer (electric)			
30	SETS	PPE			
3	PCS	scuba extra tank			
20	PCS	safety goggles			
2	PCS	fuel container			
2	PCS	automated blood pressure monitor			
1	PC	portable nebulizer			
2	UNIT	ambulance			
10	Pcs	Bolt cutter			

Table 24. Template for Needs Projection and Resource Gap Identification for ERF 7 - Search and Rescue, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Rescue Team													
Ambulance Team													
Ambulance													
SAR Training													
WASAR Training													
Rescue Boat													
Extraction Equipment													
TOTAL													

ERF 8 – Shelter and Mass Care

Specific Objectives:

- ☐ To provide an adequate and coordinated response to the immediate needs of affected individuals of Dar es Salaam. This shall include food and water supplies, sanitation and hygiene services, and basic commodities that will sustain the entire population for at least a month after the occurrence of an earthquake and tsunami. Table 25 summarizes the materials needed and activities or arrangements to meet the needs;
- ☐ To allow equal access to food and non-food items;
- ☐ To ensure that each individual has a sufficient amount of food and non-food items for sustenance;
- ☐ To provide displaced populations with safe and dignified living conditions inside evacuation centers;
- ☐ To protect the affected population from the effects of secondary hazards such as diseases and fires;
- ☐ To ensure basic resources and services are accessible and inclusive;
- ☐ To ensure that systems in place are efficient and effective to optimize the use of

resources;

- ☐ To support displaced populations in communal settings to realize their rights by coordinating the delivery of services and protections while seeking temporary or permanent sheltering solutions;
- ☐ To ensure that services are delivered efficiently and that populations of concern are protected in camp or camp-like settings (UNHCR).

Roles and Responsibilities:

- ☐ Prepare a list of critical food and non-food items that may be used for disasters and calamities. Table 26 shows a sample resource inventory.
- ☐ Provide psychological support and family reunification services;
- ☐ Facilitate the purchase of identified food and non-food items;
- ☐ Prepare an updated census of Dar es Salaam residents per district, ward, and village;
- ☐ Prepare an updated list of designated evacuation centers and their respective persons-in-charge;
- ☐ Institutionalize SOPs that will be applied during the **turnover** of relief goods to the shelters or distribution centers upon coordination with the respective team. This should include the process of doing stock inventory and checking the perishability of goods.
- ☐ Secure areas that can be used as safe warehouses for stocking of items, prepositioning of goods, and safekeeping of emergency items;
- ☐ Facilitate proper marking and mapping of prepositioned goods for immediate access and product identification;
- ☐ Identify appropriate locations to be used as evacuation sites and shelters;
- ☐ Identify strategies to maximize space allotted for evacuees;
- ☐ Coordinate with the logistics, security, and rehabilitation ERFs for movement into camps with Alternative Temporary **Shelter set-up**;
- ☐ Conduct proper information dissemination about evacuation center rules and regulations;
- ☐ Create a master list or database that provides disaggregated data on the evacuees, including data on vulnerable sectors;
- ☐ Coordinate efforts from other ERFs that also concern the well-being of evacuees;
- ☐ Establish critical facilities guided by Sphere standards, including but not limited to, temporary learning spaces, child-friendly spaces, religious spaces, Water supply, sanitation and hygiene (WASH) spaces, etc.;
- ☐ Organize evacuation center management teams; and
- ☐ Ensure the safety and security of evacuees during their transition to and from the evacuation areas.; and
- ☐ Ensure all evacuees can have inclusive access to basic services.

Overall FNI Protocols:

- ☐ All unaffected Food and **Non-Food** Items personnel must assemble at predetermined locations within the city. Table 27 depicts needs projection and resource gap identification.
- ☐ Secure warehouses where FNI are located.
- ☐ Organize volunteers, districts, wards, and partners to access and distribute prepositioned goods;
- ☐ Coordinate with Shelter and Mass Care ERF for needs and information of affected families.
- ☐ Coordinate with Food Security and Livelihood and Resources Management and Supply ERF for respective assistance that they may provide to facilitate the access and distribution of prepositioned goods from the warehouses to the respective shelters;
- ☐ Await further instructions from EOC/ICS;
- ☐ Demobilize and stand down the agencies' response personnel, and release and return resources that are no longer required.

Food Items Protocols:

- ☐ Coordination with ERF 8 for needs and information on affected families;
- ☐ Activation of staff and volunteers:
 - Hot meals team
 1. Sub-group A: Volunteers
 2. Sub-group B: Evacuees
 - Distribution team
 1. Sub-group A: Inventory & Inspection
 2. Sub-group B: Repacking
 3. Sub-group C: Labor
 4. Sub-group D: Delivery
- ☐ Turn over goods to the evacuation site manager or point person-in-charge of receiving goods for distribution.
 - Report to the main office upon arrival at the area;
 - Fill out two (2) copies [one (1) copy for camp, one (1) copy for main reporting unit] of the Receiving and Endorsement Form that details the types and quantity of the goods for turnover, time received, and name of the receiver.

Non-Food Items Protocols:

- ☐ Coordination with the districts/wards for needs and information on affected families;
- ☐ Activation of staff and volunteers to be divided into four teams:

- Team A: Inventory and Inspection
 - Team B: Repacking
 - Team C: Labor
 - Team D: Delivery
- ☐ Turn over goods to evacuation site manager or point person-in-charge of receiving goods for distribution.
- Report to the main office of arrival at the area; and
 - Fill out two (2) copies [one (1) copy for evacuation the site, one (1) copy for main reporting unit] of the Receiving and Endorsement Form that details the types and quantity of the goods for turnover, time received, and name of the receiver.

Other protocols for Evacuation Site Management:

- ☐ Unaffected personnel must assemble at their designated Alternative Temporary Spaces.
- ☐ Respective camp managers must coordinate with the Protection, Law & Order, Health, Food and Non-food, Logistics and Communication personnel to send the necessary personnel and supplies to the respective camps to facilitate the operations of each camp.
- ☐ Set up camp according to pre-determined and appropriate camp layout.
- ☐ The evacuation site manager gives the cue for registration and profiling of internally displaced persons to begin reception once the camp is set up and ready to function.
- ☐ Proper camp management is maintained until such time that more permanent facilities are available.
- ☐ Await for further instructions from EOC/ICS.
- ☐ Demobilize.

Table 25. Template for Needs and Activities for ERF 8 - Shelter and Mass Care, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs		Activities or arrangements to meet the needs	Responsible agencies or offices	Time frame
Hygiene Kits	Toothbrush, Toothpaste, Bath Soap, Laundry Soap, Sanitary Napkins, Diapers, Buckets, Jerry cans	Inventory of existing supplies Budget allocation Procurement Storage Repacking		D-4 months
Kitchen Set	Cooking Pots, Plate, Bowls, Utensils, Buckets			D-1 year

Needs		Activities arrangements meet the needs	or to	Responsible agencies or offices	Time frame
Other Non- food Items	Blanket, Sleeping bag, Mattress Towel				D-1 year
Funds					D-1 year
Ball pens					D-1 year
Paper					D-1 year
Megaphone					D-1 year
Sacks of Rice (represent as number of families per day)		MOA with Private Supply Outlets			D-1 year
Two-way Radios		Inventory of existing supplies Budget allocation Procurement Storage Repacking			D-1 year
Batteries (For Radio and Megaphone)					
Stove/common cooking equipment at camps					
Jerry Cans					

Table 26. Template for Resource Inventory for ERF 8 - Shelter and Mass Care, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard¹³

Quantity	Unit	Resource	Locality	Agency/Office	Resource location	Remarks
Shelter Materials						
	Boxes	Blanket			Warehouse	
	Pcs	Sleeping Mats			Warehouse	
	Pcs	Cot Beds			Warehouse	
Water, Sanitation and Health (WASH) Materials						
	Boxes	Mineral Water			Warehouse	

¹³ Please note that the policies and methods of implementing a shelter program will depend on variables including type of shelter, local context, availability of building materials, culturally-specific building and living methods, and the availability of qualified staff and skills within the displaced and host communities. Shelter response should be categorized across WASH, health, livelihood, food and non-food related activities. Shelter planning should also consider issues including cross-cutting issues such as gender, as well as the traditions, customs and culture of the displaced and/or host community. Table 26, hence, may be updated to include and/or remove specific items as appropriate.

Quantity	Unit	Resource	Locality	Agency/Office	Resource location	Remarks
Health Items						
	Packs	Hygiene Kit: Bathing Soap Laundry Soap Washable Cotton Cloth Toothbrushes - Sanitary pads Towel			Warehouse	
Food Items						
	Sacks	Rice			Warehouse	
	Boxes	Sardines			Warehouse	
	Boxes	Corned Beef			Warehouse	
	Boxes	Tuna			Warehouse	
	Boxes	Instant Noodles			Warehouse	
	Boxes	Luncheon Meat			Warehouse	
	Boxes	Tea Leaves			Warehouse	
	Boxes	Sugar			Warehouse	
Non-Food Items (NFI)						
	Pcs	NFI Kit: Spoons Forks Cups Tarpaulins - (shelter grade) Mattresses Water Jerry Can First Aid Kit			Warehouse	

Table 27. Template for Needs Projection and Resource Gap Identification for ERF 8 - Shelter and Mass Care, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard¹⁴

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Manpower for distribution													
Trucks													
Fuel													
Warehouse/Storage Facility													
Shelter Materials													
WASH													
Health Items													
Food Items:													
Non-Food Items													
TOTAL													

ERF 9 – Emergency Public Information

Specific Objectives:

- ☐ To ensure that Emergency Public Information is generally instructional, focusing on issues such as warning and evacuation.
- ☐ To ensure that a special effort will be made to keep the public informed of the general progress of events, including positive information regarding emergency response to help reassure the community that the situation is under control.

¹⁴ It is recommended that the Tanzania Red Cross Society (TRCS) and ERF 8 update this sample as needed, with consideration of specific needs and preferences that may apply in the displaced and/or host communities. The table provided is a guide from which DarMAERT can request further inputs on from the TRCS and municipalities as part of the Plan Maintenance process—especially if Risk and Vulnerability data on tsunami hazard is developed in the future.

- To ensure that rumor control is implemented.

Note: All information and education efforts will rely heavily on the cooperation of every type of media organization and all levels of government. Hence, DarMAERT should maintain a Media Roster that contains the names and contact details of its media resources.

Roles and Responsibilities:

- The overall responsibility for providing emergency information and instructions to the public rests with DarMAERT.
- The Coordinator of DarMAERT, and the Regional Commissioner's Office shall provide general guidance for public information programs and appoint a Public Information Officer (PIO) and ERF 9 – Emergency Public Information lead officer.

The PIO will manage and coordinate all emergency public information-related activities and direct such staff as may be assigned or recruited to assist in those activities.

Protocols:

- After a major earthquake has occurred causing a tsunami, ERF 9- Emergency Public Information shall check if the designated command center is still structurally sound for continuous operations. Table 28 summarizes the activities or arrangements to meet the needs during an emergency.
- Acquire accurate data and information on the ground.
- Transfer command center if the site becomes unsafe and unsuitable.
- Conduct radio checks using all available frequencies in the radio net diagram, check all communication lines including the internet, and establish a connection with local governments within Dar es Salaam, various stakeholders, and the NEOCC. Table 29 shows a sample resource inventory.
- Rectify all technical concerns and ensure the availability of technicians for onsite repair.
- Provide timely release of public information and advisories to the public.
- Maintain all systems and ensure continuous and unhampered operations especially between DarMAERT EOC and the National EOCC. Table 30 depicts needs projection and resource gap identification.
- Demobilize.

Table 28. Template for Activities for ERF 9 - Emergency Public Information, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible offices or agencies	Timeframe
Trained personnel and relevant stakeholders on	Coordination with partner NGOs for the conduct of Emergency Public Information Trainings and Capacity Building; Conduct of Risk Communications Training and Capacity Building		D- 1 YEAR

Table 29. Template for Resource Inventory for ERF 9 - Emergency Public Information, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	No.	Manpower			
	Pcs				

Table 30. Template for Needs Projection and Gap Identification for ERF 9 - Emergency Public Information, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit t Cost	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day	Cost	(x) Days	Cost	QTY	Cost	QTY	COST	
Manpower					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Utility Vehicle													
Two way radios													
Generators													
Satellite Phones													
Trained personnel and relevant stakeholders on _____													
TOTAL													

ERF 10 Damage Assessment

Specific Objectives:

- ☐ To accomplish comprehensive assessment and reporting of damage to public and

private property resulting from impacts of the tsunami and provide support to requests for regional or national disaster assistance.

- To ensure that the accumulated assessments provide a basis to:
 - a. Establish emergency management priorities.
 - b. Formulate effective response efforts.
 - c. Substantiate assistance requests

Roles and Responsibilities:

- Safety Assessment

The primary function of the Safety Assessment is to rapidly determine the extent, location, and nature of life-threatening conditions brought by the tsunami within Dar es Salaam. The department/agency assets (typically public safety officers, fire and EMS units, and other DarMAERT workers) shall report what they observe and what specific resources are needed. This information is transmitted to the Situation Unit in the EOC where it is processed into a common operating picture ¹⁵ of what has happened to the community.

- Damage Assessment.

- A damage assessment of public and private property in Dar es Salaam is required to determine the extent of the damage created by the tsunami to provide a basis for necessary actions, the establishment of priorities among essential actions, and allocation of DarMAERT government resources. The damage assessment process will expedite relief and assistance if promptly implemented.
- The DarMAERT EOC is required to complete an initial damage assessment report and submit it to the National EOCC.
- Damage assessment is different from safety assessment and may continue into the recovery phase. As such, it is important to also assess losses to support a transition from response to recovery, and the onset of large-scale recovery efforts.

¹⁵ Common Operating Picture is an overview of an incident by all relevant parties that provides incident information enabling the Incident Commander/Unified Command and any supporting agencies and organizations to make effective, consistent, and timely decisions. (Federal Emergency Management Agency [FEMA], 2010)

Note: Other details regarding Damage Assessment can be viewed at the ERF SOPs for Damage Assessment. Table 31 summarizes the materials needed and activities or arrangements to meet the needs;

Protocols:

- ☐ Validate Rapid Damage Assessment and Needs Analysis (RDANA) and SitRep report received;
- ☐ Determine the list of damaged public and private infrastructure. Table 32 shows a sample resource inventory.
- ☐ Prioritize according to survivability, continuity, and sustainability;
- ☐ Establish a list depending on the gravity or the extent of the damage;
- ☐ Provide a report to the EOC Manager and update the report as new information comes in;
- ☐ Provide an estimated cost of damages. Table 33 depicts needs projection and resource gap identification.

Table 31. Template for Needs and Activities for ERF 10 - Damage Assessment, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Timeframe
Information, Education, and Communication Materials	Inventory of existing supplies Budget allocation Procurement Storage		D-1 YEAR

Table 32. Template for Resource Inventory for ERF 10 - Damage Assessment, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Unit	Utility Vehicle			
	Unit	Mega Phone			

Table 33. Template for Needs Projection and Gap Identification for ERF 10 - Damage Assessment, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
Utility Vehicle													
Mega Phone													
TOTAL													

ERF 11 – Public Works and Engineering

Specific Objectives

- ☐ To assist in the immediate provision of safe and dignified evacuation areas to all displaced population through the clearing of debris;
- ☐ To immediately provide access to roads for the mobility of people and resources;
- ☐ To hasten the continuation of services through the immediate set-up of emergency facilities for government operations; and
- ☐ To prevent the spread of diseases through the systematic collection and disposal of solid waste. Table 34 summarizes the materials needed and activities or arrangements to meet the needs.

Roles and Responsibilities:

- ☐ Clear all debris and obstruction as soon as possible for access and temporary shelter;
- ☐ Conduct inventory and assessment of open spaces suitable for use post-earthquake;
- ☐ Conduct infrastructure audit of all buildings in the city to identify structures that may still be of use post-disaster;
- ☐ Manage debris and waste disposal sites; and
- ☐ Assist in the formulation and implementation of a Post-Earthquake Space Management Plan together with the DarMAERT Coordinator, ERF 13 - Resources Management and Supply, and ERF 8- Shelter and Mass Care. Table 35 shows a sample of resource inventory.

Protocols:

- ☐ Upon the activation of the contingency plan, all unaffected personnel must assemble at the DARMAERT EOC immediately.

- ☐ ERF 11 will organize its personnel into teams and assign team leaders. These teams will be deployed to pre-assigned districts/ERFs after the earthquake.
- ☐ Teams will be deployed to respective assigned districts/ERFs through ICS;
- ☐ Heavy equipment will be requested as the need arises. Table 36 depicts needs projection and resource gap identification;
- ☐ Areas will be cleared and debris disposed of in designated temporary debris and waste disposal sites;
- ☐ Debris management shall be based on the Post-Earthquake Space Management Plan;
- ☐ Wait for further instructions from EOC/ICS (Repeat Steps 4-5 if necessary).

Table 34. Template for Needs and Activities for ERF 11 - Public Works and Engineering, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible offices or agencies	Timeframe
Manpower	The hiring of additional personnel or call for volunteers (if needed) Organization & task delegation of personnel		D- 5 months
Debris Sites	Consultation with City Assessor's Office for site identification Ocular visit & inspection Preparation of MOA or Lease Agreements (if private land)		D- 5 months
Debris Clearing Equipment (shovel, chainsaw, chain block, jackhammer, minor tools, carts)	Inventory of existing supplies Budget allocation Procurement Storage & maintenance		D- 1 year
Heavy Equipment (payloader, dump truck, backhoe)			D- 1 year
Service Vehicles (L300, Elf Truck, etc.)			D- 1 year
PPE (gloves, masks, boots, etc.)	Inventory of existing supplies Budget allocation Procurement Storage		D- 1 year
Trained Personnel on Collection/Management of Toxic & Hazardous Waste	Coordination with Environment Agencies for the conduct of training on Collection/Management of Toxic & Hazardous Waste Hiring of additional personnel (if needed) Conduct actual training Organization & task delegation of trained personnel		D- 3 months

Table 35. Template for Resource Inventory for ERF 11 - Public Works and Engineering, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/Office	Resource Location	Remarks
	Units	Garbage truck			
	Pcs	Shovel			
	Pcs	Garden Rake			

Table 36. Template for Needs Projection and Resource Gap Identification for ERF 11 - Public Works and Engineering, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Heavy Equipment (payloader, dump truck, backhoe)													
Service Vehicles (L300, Elf Truck, etc.)													
PPE (gloves, masks, boots, etc.)													
TOTAL													

ERF 12 Utilities

Specific Objectives:

- ☐ To expedite the rehabilitation of primary facilities needed for survivability of the affected population;
- ☐ To ensure that all rehabilitated structures are built back better and safer;

- ☐ To facilitate the recovery and revitalize the development process of the city and its communities;
- ☐ To restore the capacity of the city to serve its people and provide them their right to life with dignity; and
- ☐ To provide a conducive environment for the growth and development of current and future generations after the earthquake. Table 37 summarizes the materials needed and activities or arrangements to meet the needs.

Roles and Responsibilities:

- ☐ Rehabilitation and improvement of the city's road networks, facilities, and structures;
- ☐ Coordination with key agencies for the rehabilitation of major lifeline utilities that provide essential infrastructure services to the community such as water, wastewater, transport, energy and telecommunications;
- ☐ Provision of support to the affected population in rebuilding their shelter structures;
- ☐ Provision of support and coordination with other ERFs in the rehabilitation process of the city and its population;
- ☐ Provision of support to the city government to resume its operations through construction of facilities and formulation of more efficient systems of governance; and
- ☐ Provision of support to the regional/district Disaster Management Coordinators in enhancing the capacities of communities regarding resilience building and formulation of systems for disaster risk management.

Protocols:

- ☐ Validate RDANA report to EOC Manager;
- ☐ Determine the list of damaged public and private infrastructure. Table 38 shows a sample of resource inventory while Table 39 depicts needs projection and resource gap identification;
- ☐ Prioritize according to survivability, continuity, and sustainability;
- ☐ Establish a timeline for the completion of the project;
- ☐ Establish a Project Management team for rehabilitation projects;
- ☐ Continue developmental efforts until normal conditions.

Table 37. Template for Needs and Activities for ERF 12 - Utilities, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/arrangements to meet the needs	Responsible offices or agencies	Time frame
Generator Set	Conduct inventory Budget allocation Procurement		D-1year

Needs	Activities/arrangements to meet the needs	Responsible offices or agencies	Time frame
Manpower	Recruitment of personnel		D+3 days
Utility Vehicles (Elf trucks)	Conduct inventory Budget allocation Procurement		D-1year
Heavy equipment	Conduct inventory Budget allocation Procurement		D-1year

Table 38. Template for Resource Inventory for ERF 12 - Utilities, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Generator Set													
Manpower													
Utility Vehicle (Elf truck)													
Utility Vehicle (Man-Lift)													
TOTAL													

Table 39. Template for Needs Projection and Resource Gap Identification for ERF 12 – Utilities, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Generator Set													
Manpower													
Utility Vehicle (Elf truck)													
Utility Vehicle (Man-Lift)													

Resources	Target Pop.	Standards	Unit	Projected Needs	Current Resource	Gaps	Sources To Fill Gaps
TOTAL							

ERF 13 – Resource Management and Supply

Specific Objective:

- ☐ Ensure that there will be enough food and continuous alternative livelihood activities for post-earthquake/tsunami events.

Roles and Responsibilities:

- ☐ Create Standard Operating Procedures regarding asset protection and establishment of livelihood insurance;
- ☐ Prepare and institutionalize a Business Continuity Plan for the sectors that may suffer disruption—including the fishing industry, agricultural sector, and associated supply chains that ensure food security and continuous alternative livelihood activities;
- ☐ Ensure the availability of all types of food (fish, meat, rice/corn, and vegetables) resources and nutritional needs through the Ministry of Agriculture and Ministry of Livestock and Fisheries and Ministry of Health (Tanzania Food and Nutrition Center);
- ☐ Request national support for resources once all available supplies in the region are exhausted;
- ☐ Identify all logistics requirements and ensure their availability during times of disasters and calamities. Table 40 summarizes the materials needed and activities or arrangements to meet the needs;
- ☐ Update the list of boat and other naval vehicle owners;
- ☐ Ensure close monitoring on livelihood and food sources during disasters;
- ☐ Establish Memorandum of Agreement with boat owners and shipping companies;
- ☐ Establish Memorandum of Agreement with groceries, food retailers, hardware stores, and other relevant businesses;
- ☐ Conduct training for food preservation methods and local technologies.

Protocols:

- ☐ ERF 13 - Resources Management and Supply will check the availability of food resources from the Ministry of Agriculture and the Ministry of Livestock & Fisheries.

- ❑ An inventory of grocery stores, hardware, and food retailers for the availability of food and material resources to be used during calamities will be created. Table 41 shows a sample of resource inventory.
- ❑ Coordination will be undertaken with the Incident Management Team and ERF 8 for the continuous distribution of food and non-food items through an acceptable supply chain management. Table 42 depicts needs projection and resource gap identification.
- ❑ Operations will continue until ordered to demobilize by the Incident Commander.

Table 40. Template for Needs and Activities for ERF 13 - Resources Management and Supply, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Time frame
Updated inventory of Partners	Coordinate with the Business Registration and Licensing Agency and LGA to get list of stores and groceries within the REGION		D-2 months
	Ocular visit to know the exact locations of partners		
	Get list of products per partner		
Training on food preservation	Identify and profile the target participants		D -1 months
	Prepare Logistics (Venue, Budget, Resource Person)		
Market Identification and Scanning	List and Profile of Market/Suppliers		D -3 months
	Facilitate Minimum Order Value to suppliers		
	Food production for the suppliers		
MOA with Boat Owners and Shipyards	DA/FARMS to lobby in drafting MOA between boat and shipping owners		D -5 months

Table 41. Template for Resource Inventory for ERF 13 - Resources Management and Supply, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Manpower	Fisherfolks			
	Units	boats			

Table 42. Template for Needs Projection and Resource Gap Identification for Resources Management and Supply ERF, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons			1 Day		(x) Days						
				Cost	QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Training on food preservation													
Market Identification and Scanning													
MOA with Boat Owners and Shipyards													
Boats													
Boat Engine													
Styrofoam													
Fishtubs													
TOTAL													

ERF 14 Transportation

Specific Objectives:

- ☐ To support transportation planning and identify areas impacted by a tsunami impact and the populations at risk;
- ☐ To identify, designate, and maintain access and egress routes;
- ☐ To arrange to obtain additional emergency transportation resources from different ERFs or agencies that can provide additional support, with the highest priority given to resources needed for immediate evacuation and saving lives. Table 43 summarizes the materials needed and activities or arrangements to meet the needs.
- ☐ To designate and plan transportation bases, staging areas, and refueling and repair facilities;
- ☐ To ensure that transportation priorities and routes are consistent and coordinated to all affected areas;
- ☐ To provide DarMAERT members with situational awareness of any major disruptions to transportation caused by the tsunami.

Roles and Responsibilities:

- When carrying out emergency transportation activities, immediate needs must be considered first, followed by continuing requirements. Immediate transportation needs involve the evacuation of people, including residents of institutional facilities, from high-risk areas. Continuing transportation needs involve the movement of relief supplies, equipment, and emergency workers during response and recovery operations. Table 44 shows a sample resource inventory.

Protocols:

- Activate emergency transportation function to receive and process requests for cargo and passenger transportation immediately after receiving an order from EOC Manager that the EOC is activated. Table 45 depicts needs projection and resource gap identification.
- Respond to transportation requests within limits of available resources.
- Monitor transportation resource status and identify requirements for additional resources to the EOC Manager, ERF Lead, other.
- Maintain records on use of transportation resources.

Table 43. Template for Needs and Activities for ERF 14 - Transportation, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities/arrangements to meet the needs	Responsible offices or agencies	Time frame
Generator Set	Conduct inventory Budget allocation Procurement		D-1year
Manpower	Recruitment of personnel		D+3 days
Utility Vehicles (Elf trucks)	Conduct inventory Budget allocation Procurement		D-1year
Heavy equipment	Conduct inventory Budget allocation Procurement		D-1year

Table 44. Template for Resource Inventory for ERF 14 - Transportation, to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/Office	Resource Location	Remarks
	Set	Utility Vehicle (Elf truck)			
	Set	Utility Vehicle (Man-Lift)			

Table 45. Template for Needs Projection and Resource Gap Identification for ERF 14 - Transportation to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Generator Set													
Manpower													
Utility Vehicle (Elf truck)													
Utility Vehicle (Man-Lift)													
TOTAL													

ERF 15 – Dead Bodies Management

Specific Objectives:

- ☐ To secure the availability of adequate supplies, equipment, and trained personnel to meet the needs of the affected population of the region regarding the management of dead bodies, and missing persons;
- ☐ To ensure the organization of records, forms, and documents necessary for the proper management of the dead and missing. Table 46 summarizes the materials needed and activities or arrangements to meet the needs.
- ☐ To establish a partnership with key stakeholders for the management of the dead and missing;
- ☐ To guarantee that management of the dead will impose proper sanitation practices and systems; and

- To disseminate information for the awareness of community members regarding the protocol of the ERF 15 – Dead Bodies Management.

Roles and Responsibilities:

- Reception of all dead bodies and rescued persons from ERF 7- Search and Rescue for identification;
- Proper handling and transport of dead bodies from reception from ERF 7 - Search and Rescue up to the temporary graves (if needed for staging in a catastrophic event), as well as final graves;
- Proper tagging and markings for cadaver bags and grave sites;
- Complete documentation and record keeping;
- Cross-matching of missing persons and unidentified dead bodies; and
- Preparation of necessary reports on the management of the dead and missing.

Protocols:

- Upon activation of the contingency plan, all key representatives of ERF 15 - Dead Bodies Management, headed by the Tanzania Police Force, will convene at the EOC to undertake coordination work.
- Coordination will be made with ERF 11 - Public Works and Engineering and ERF 13- Resources Management and Supply regarding appropriate temporary and permanent grave sites.
- ERF 15 shall organize the following:
 - 5-man IMT composed of a Leader, Deputy Team Leader, Supply Officer, Records Officer, and Communications Officer; and
 - Three 6-man District Sub-teams composed of a Leader, Supply Officer, Records Officer, Communications Officer, Sanitation Officer, and Welfare Officer.
 - Functions of the Incident Monitoring Team (IMT)¹⁶ for ERF 15- Dead Bodies Management stationed at the Incident Command Post / On-Scene
 1. Team Leader
 - Communicates with the EOC;
 - Receives work instructions from the EOC;
 - Monitors work rotations for IMT and sub-teams;
 - Ensures safety of the IMT and sub-teams; and
 - Reports to EOC.
 2. Deputy Team Leader
 - Carries out work instructions from the Team Leader;
 - Updates the ERF 15 Leader on task progress;
 - Monitors the tools and equipment used during operations;

¹⁶ An Incident Monitoring Team (IMT), is specific structure for a catastrophic event under the Incident Command System. It is often used for specific hazards, such as earthquakes or tsunamis.

- Requests for the resources necessary to complete the task from the Team Leader; and
 - Assumes tasks of Team Leader in his/her absence.
- 3. Supply Officer
 - Maintains a log of all events, actions, and expenditures;
 - Coordinates and regulates the release of supplies;
 - Coordinates with the Resources Management and Supply ERF on the transport of supplies from the centralized warehouse to the respective districts and wards; and
 - Provides a timely report regarding the status of supplies in the inventory to the Deputy Team Leader.
- 4. Records Officer
 - Consolidates the master list of identified cadavers and missing persons;
 - Maintains a master list of medical & dental records for cadaver identification;
 - Distributes the clustered medical & dental records to the respective sub-teams; and
 - Issues death certificates.
- 5. Communications Officer
 - Consolidates reports from sub-teams on missing and dead persons;
 - Reports to the Deputy Team Leader; and
 - Informs sub-teams on instructions from the Team Leader.
- District Sub-teams are to be deployed with temporary cadaver holding areas in each district.
 - 1. Team Leader
 - Communicates with the IMT;
 - Receives work instructions from the IMT;
 - Monitors work rotations for the sub-team;
 - Ensures safety of the sub-team; and
 - Reports to the IMT.
 - 2. Supply Officer
 - Requests from the Team Leader the resources necessary to complete the task;
 - Monitors the supplies, tools, and equipment during operations;
 - Coordinates with and receives instructions from the IMT on the transport of supplies from the centralized warehouse to the District.
 - Maintains a log of all events, actions, and expenditures;
 - Coordinates and regulates the release of supplies, tools, and

- equipment, and;
- Updates the Dead Bodies Management ERF Leader on task progress.
- 3. Records Officer
 - Maintains a master list of identified cadavers;
 - Receives the master list of medical & dental records for cadaver identification from the IMT;
 - Receives the clustered medical & dental records for the district;
 - Assists the Sanitation Officer in the identification of cadavers;
 - Creates a list of buried identified and unidentified cadavers; and
 - Updates the Dead Bodies Management ERF Leader on task progress.
- 4. Communications Officer
 - Updates the Dead Bodies Management ERF Leader on task progress;
 - Consolidates on-the-ground reports on missing and dead persons;
 - Informs the teams on instructions from the Team Leader and the IMT; and
 - Turns over a copy of the lists of dead and missing persons to the Welfare Officer.
- 5. Sanitation Officer
 - Spearheads identification of cadavers;
 - Coordinates with the Records Officer for proper identification of cadavers;
 - Commences the tagging of identified cadavers;
 - Reports all findings and actions to the Records Officer for proper documentation; and
 - Updates the Dead Bodies Management ERF Leader on task progress.
 - Ensures sanitary practices during the retrieval, transport, and burial of the dead.
- 6. Social Welfare Officer
 - Obtains a copy of the lists of dead and missing persons;
 - Provides psycho-social counseling to the bereaved families;
 - Documents psycho-social counseling activities; and
 - Updates the Dead Bodies Management ERF Leader on task progress.
- Each team shall:

1. Check in to the established ICP and receive instructions under the supervision of the EOC/IMT;
2. Maintain 12-hour shifts to prevent premature exhaustion;
3. Use the supplies, tools, equipment, and accessories correctly and safely. Table 47 shows a sample of resource inventory while Table 48 depicts needs projection and resource gap identification; and
4. Report all actions taken to the IMT for subsequent reporting to the EOC.

Table 46. Template for Needs and Activities for ERF 15 - Dead Bodies Management to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Needs	Activities or arrangements to meet the needs	Responsible agencies or offices	Timeframe
Cadaver Bags	Budget allocation Procurement Storage		D - 1 year
Formalin Supply	Budget allocation Procurement Storage		
MOA with Mortuaries for Cadaver Preservation & Handling	Prepare an MOA with funeral parlors		D - 2 MONTHS
Tables for Cadaver Inspection/Identification	Budget allocation Procurement Storage		D - 2 MONTHS
ERF SOP or Protocol	Formulation of manual for the protocol of the Dead Bodies Management ERF 15		D - 3 MONTHS
Locations for Mass Grave/Temporary Cadaver Holding Area	Consultation with City Assessor's Office Ocular visit		D - 3 MONTHS
PPE (gloves, masks, etc.)	Budget allocation Procurement Storage		D - 1 year
Trained personnel on Dead Bodies Management	Coordination with national agencies for the conduct of trainings Conduct of trainings Organization, tasking & strategic assignment of trained personnel in various areas within the Region		D - 3 MONTHS

Table 47. Template for Resource Inventory for ERF 15 - Dead Bodies Management to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Quantity	Unit	Resource	Agency/office	Resource location	Remarks
	Personnel	Trained manpower on Dead Bodies Management			

Table 48. Template for Needs Projection and Gap Identification for ERF 15 - Dead Bodies Management to be developed in coordination with a Risk and Vulnerability Assessment for Tsunami Hazard

Resources	Target Pop.		Standards	Unit	Projected Needs				Current Resource		Gaps		Sources To Fill Gaps
	Families	Persons		Cost	1 Day		(x) Days						
					QTY	Cost	QTY	Cost	QTY	Cost	QTY	COST	
Trained Personnel on Dead Bodies management													
Cadaver Bags													
Formaline Supply													
Medical & Dental Records from Private & Public Clinic													
MOA with Funeral Parlors for Cadaver Preservation & Handling													
Software for Encoding Missing Persons Data													
PPE (gloves, masks, etc.)													
Camera													
Tables													
Tents													
TOTAL													

3.1.2. Estimated Total Budgetary Requirements

A template for computing the total budgetary requirements for the completion of resources for the contingency plan is presented in table 49 below.

Table 49. Template for Total Budgetary Requirements for the Tsunami CP (Summary of Table 50, below)

ERFs	Cost of Projected Needs (TSH)	Cost of Current Resources	Shortfall	Source of Fund
ERFs				
TOTAL ()				

3.1.3. Estimated Total Resource Requirements

A template for computing total resource requirements for all ERFs is shown in table 50 below.

Table 50. Template for Total Budgetary Requirements for all 15 ERFs. To be compiled by the Logistics Sector Commander based on all ERF inputs.

ERFs	Description	Projected Needs	Current Resources		Source
	Manpower for distribution		0		
	Trucks		0		
	Fuel	0	0	0	
	Warehouse/Storage Facility	0	0	0	
	Sacks of Rice				
	Instant Noodles				
	Luncheon Meat				
	Coffee				

3.2. Concept of Operations¹⁷

3.2.1. General Organization

¹⁷ For more detailed procedures for the various ERFs, please refer to the document: DarMAERT Standard Operating Procedures for ERFs Handbook.

The Concept of Operations protocols presented here are intended to supplement the DarMAERT's Emergency Response Plan as well as Standard Operating Procedures for Emergency Response Functions in the event of a tsunami emergency in Dar es Salaam.

In accordance with the principles of the Incident Command System (ICS), the response to an emergency or disaster is managed at the lowest level (local government) possible. DarMAERT is responsible for emergency response within its jurisdiction or within Dar es Salaam. Under the ICS, Dar es Salaam serves as both a local jurisdiction and an Operational Area¹⁸. As such, DarMAERT coordinates emergency response with various responders in the region and other agencies located within the geographic boundaries of Dar es Salaam.

When a significant emergency, such as a tsunami caused by earthquake, exceeds the capacities of Dar es Salaam to respond, DarMAERT may request assistance from neighboring jurisdictions through the Mutual Aid system¹⁹ or from the National Government.

Figure 3 shows the command structure that DarMAERT adheres to as part of the Silver (Tactical) Level of command for disaster management.

¹⁸ Operational Area is an intermediate level of the regional emergency organization, consisting of a region and all political subdivisions within the regional area.

¹⁹ In emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries.

Command Levels

Multi-agency Management Structure in Different Command Levels

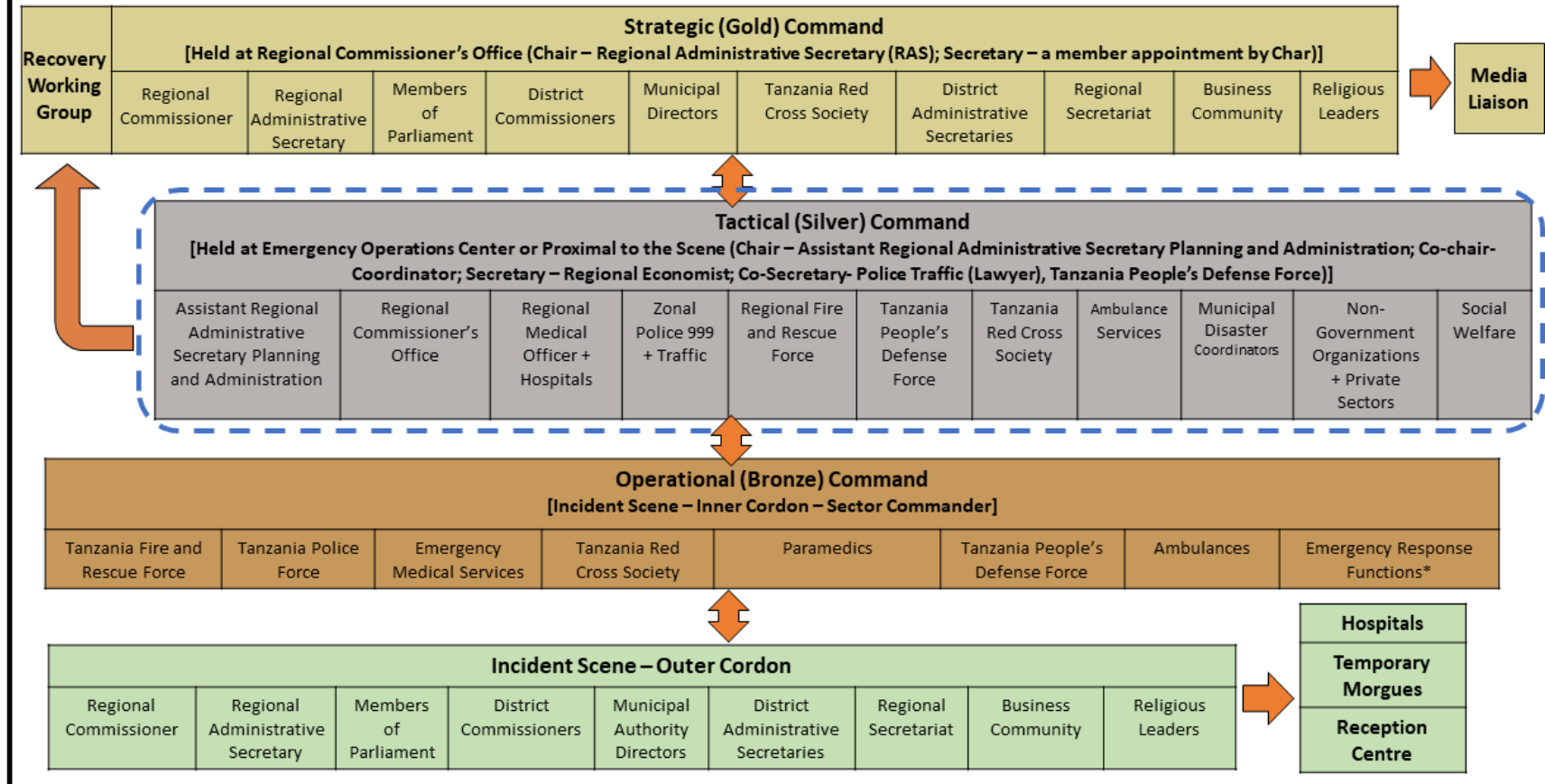


Figure 3. DarMAERT Command Level Structure as Prescribed by the DarMAERT Emergency Response Plan

3.2.1.1. DarMAERT EOC

The DarMAERT EOC is the focal point for emergency management coordination. Dar es Salaam's various local governments, departments, and agencies with emergency response responsibilities manage the operations of their specific resources, including tactical operations of field units during normal emergencies. Once the EOC is activated, all Agencies responsible for ERFs shall send a representative or an ERF coordinator to the DarMAERT EOC.

3.2.1.2. DarMAERT EOC Operations

The focal point of coordination for region-wide emergency response is the EOC, located on the 1st Floor, Ilala Fire and Rescue Station, Ilala District, Dar es Salaam Region. EOC operations are described more fully in the DarMAERT Emergency Operations Center Operations Manual. Basic operations and concepts will remain the same for a major tsunami and are not repeated here.

3.2.1.3. General Objectives for Response Operations

Immediately following a major tsunami, and for as long as a state of calamity exists within Dar es Salaam, response to flooding created by the tsunami will be the priority of all DarMAERT Emergency Response Agencies. All available DarMAERT emergency response personnel will be directed to achieve the following objectives:

- Save lives.
- Reduce immediate threats to life, public health and safety, and public and private property.
- Provide necessary care, shelter, and medical services to Dar es Salaam residents as well as non-residents.
- Restore the operations of facilities, whether public or privately owned, that are essential to the health, safety, and welfare of the community, including critical Dar es Salaam facilities, hospitals, utilities, and transportation infrastructure.
- Assess damage to infrastructure, public facilities, and the built environment, as well as other related needs.
- Expedite the restoration of services, the economy, and the community at large; and begin the process of recovery.
- Keep the public informed.

3.2.1.4. Coordination with National Emergency Operations and Communication Center and National Agencies

- The impact of major flooding caused by the tsunami will necessitate coordination with the National EOCC and national agencies to (i) Coordinate response operations, and (ii) Request assistance to meet needs that cannot be met with Dar

es Salaam resources or with Mutual Aid resources available from nearby regions/cities.

The DarMAERT EOC must direct all resource requests that could be met by the National EOCC or national agencies to the Regional Administrative Secretary.

DarMAERT may coordinate directly with the National EOCC or national agencies as part of specific incident response operations, particularly when necessary to save lives and protect public safety.

3.2.1.5. Transition to Recovery

The immediate response to major flooding caused by the tsunami will focus on saving lives, providing resources to sustain both Dar es Salaam residents and non-residents alike, and stabilizing the situation. At some point, however, Dar es Salaam must transition to a phase in which recovery operations take precedence. Given the level of damage to housing, business, roads, and infrastructure; the direct impact on the population, and the effect on the regional economy, full recovery from a major tsunami may take years. Nonetheless, immediate recovery operations (build back better) is critical to restoring confidence within the community.

Within the first few days of activation or after all immediate response missions have been completed (such as Search and Rescue), the triggers for the transition from EOC response to recovery operations (EOC deactivation) should be determined and shared with EOC staff. These may include the following conditions:

- Search and Rescue (SAR) operations have concluded.
- Evacuations have ceased.
- Mutual Aid response resources are being released.
- Care and shelter operations have stabilized and the population in shelters is decreasing daily.
- Water level is receding in the streets.
- Restoration of utilities and lifelines is underway.
- Local Assistance Centers are in operation.
- DarMAERT member personnel and assets are safely demobilizing and being accounted for by the Operations Sector Commander and the Logistics Sector Commander.

At this point, the EOC may consider scaling back staffing to partial levels or may transition to a full recovery operation. The recovery operation can be organized with an ICS structure and may be carried out in a facility other than the EOC, or may be performed in several separate departmental locations.

3.2.2. Situation Assessment

3.2.2.1. Situation Assessment Overview

While the ability to quickly assemble, verify, analyze, and hand out confirmed situation information is vital to the response, it is equally important that initial response strategies are developed with an accurate picture of the potential scope of the disaster and that external resource requests quickly be pushed up to the DarMAERT EOC and National EOCC level without delay. Quickly identifying the potential scope of damage following a major tsunami is critical to mounting an effective response. However, initially, this may be extremely difficult due to limited communications capability, information overload, limited staff, and fragmented or conflicting damage reports.

This Tsunami Contingency Plan is based on projected impact scenarios of a major earthquake event occurring in the Indian Ocean that is believed to present the greatest risk of creating a tsunami reaching Dar es Salaam. The plan assumes that it is better to form a quick picture of the potential scope of damage using a combination of actual street-level impact reporting and pre-event impact modeling, if available from a Risk and Vulnerability Assessment for tsunami hazard, rather than total reliance on waiting two to three days for confirmed impact information to be available.

3.2.2.2. Determining the Potential Scope of the Disaster

Immediately following a major tsunami, it may be possible to establish an initial assessment of the impact using available analytical tools such as Rapid Damage and Needs Assessment (RDNA). This assessment can be used to direct initial response activities towards those areas that are most likely to be seriously affected, given the location and magnitude of flooding created by the tsunami within the city. This process will be coordinated through the Municipality/City /Local Disaster Coordinators affected by the tsunami.

3.2.2.3. Tsunami / Flood Information

Key information about the tsunami includes:

- Report of an earthquake;
- Arrival time of the tsunami;

Areas to be affected by the tsunami and height of the tsunami. However, it should be noted that the height of the tsunami in the open ocean is not the only triggering factor to determine the risk to Dar es Salaam. Other factors, such as bathymetry, coastal-riverine interface, and at-risk coastal infrastructure are also essential in factoring in key information to support early warning. It is understood that this plan is being developed with current limitations in available Risk and Vulnerability Assessment data for tsunami hazards. At all times, TMA will be responsible for providing early warning and risk assessment messaging on a potential tsunami threat.

3.2.2.4. Initial EOC Actions

Initially, the DarMAERT EOC will take the following actions to disseminate and refine information regarding the magnitude of the disaster:

- Determine the potential scope of flooding caused by the tsunami, including the extent, depth, and location of the flooded areas;
- Disseminate tsunami map information to the EOC Manager and DarMAERT members so that they can incorporate information regarding potential damage into action planning;
- Transmit updates to the tsunami flood map and damage projection information to the DarMAERT Officials—including the Public Information Officer of the National Emergency Operations and Communications Center, and others, as directed in accordance with situation report procedures;
- Analyze emerging situation information from sources such as field responders and the media to validate the overall consistency of scenario projections;
- Review and clarify incomplete or conflicting information;
- Confirm or guide the EOC Manager and DarMAERT members on suggested adjustments to the resource requirement projections based on updated information;
- Coordinate through VHF/UHF radio, telephone (cellular and landline), e-mail, and social media communications platforms such as WhatsApp.

3.2.2.5. Initial Situation Assessment

This section describes available means for the initial collection and dissemination of information regarding the effects of the tsunami.

Field Personnel Actions

Immediately following the flooding caused by the tsunami, various government emergency personnel and local government personnel assigned to different parts of the region will begin reporting on the effects of the tsunami. These reports will flow to dispatch centers and other points of collection. The actual number of DarMAERT personnel deployed at any given time varies with the time of day and the day of the week. Many of these employees, particularly those of public safety agencies, travel in radio-equipped vehicles or are carrying handheld radio equipment and cell phones (if the network is usable). All DarMAERT personnel deployed in the field at the time of the event are expected to do the following:

- Assess their situation and identify any possible threats to life safety;
- Take action to protect themselves and members of the public in their immediate vicinity;
- Report time-sensitive life safety information to their dispatcher via radio or cellphone (take pictures if possible);

- Report non-life safety information within 60 minutes to their respective office/agency, either by radio or by cellphone, or email; and
- Follow the response procedures established by their respective department/agency emergency plan.

In addition to DarMAERT personnel, NGO responders and accredited amateur radio volunteers may be used to gather and transmit situation information. Accredited NGOs may include Very High Frequency (VHF) and Citizens Band (CB) radios, and foot and vehicle couriers to report damage and needs assessments.

Aerial Reconnaissance (Request to National EOCC or TPF)

Daylight aerial surveillance via helicopter or fixed-wing over-flight would allow response managers to quickly assess:

- The general extent of the damage;
- Location of trapped /stranded civilians;
- Location of significant roadway damage or flooded, blockages, and potential alternate routes;
- Condition of potential staging areas.

3.2.2.6. Updates to Critical Information for the first 24 hours

- Conducting a rapid damage assessment to inform the Situation Report and Incident Action Plan that identifies the number and geographic location of deaths and injuries;
- Location and extent of secondary events, including fires, collapsed structures, and hazardous materials events;
- Location of severely damaged or collapsed structures;
- Location and estimated number of people trapped on top of their houses;
- Requirements for major evacuations and estimated number of people displaced.

Status of communication systems, including (i) Public telephone and wireless systems, (ii) DarMAERT's communications system, and (iii) Tanzania Emergency Hotline 112 and 114, whose dispatchers will relay information to the DarMAERT EOC if escalation and coordination are required.

- Critical resource shortfalls impacting public safety;
- Status (open, partial closure, or full closure) of roads, bridges, major surface streets, and public transportation systems;
- Results of preliminary assessment of evacuation centers;
- Location and operational status of Emergency Operations Center (EOC);
- Damage to critical public buildings and other infrastructure, including:
 - TFRF and TPF facilities
 - Hospitals and Health centers

- Schools
- Jails
- City Halls or Government Buildings
- Status of and damage to major utility systems, including:
 - Water
 - Sewer
 - Power
 - Communication

3.2.3. Recovery

Immediately following a tsunami event caused by an earthquake, all available resources must be devoted to saving lives and property. Nonetheless, recovery efforts must begin as soon as possible and sometimes can occur concurrently with some response operations during response-to-recovery transitions.

Recovery phases will likely occur while the DarMAERT EOC is in operation and will be managed through DarMAERT. Long-term recovery will be implemented through different mechanisms, described below. During a response-to-recovery transition that involves the deactivation of the DarMAERT EOC, the Planning Section Command shall oversee the publishing of a Demobilization Plan to account for the safe return and accounting for all deployed personnel and equipment. The Planning Section Command will also schedule and facilitate a hotwash/after-action review to identify key lessons learned to support revisions to DarMAERT's Emergency Response Plans, hazard-specific contingency and continuity plans, and Standard Operating Procedures — for the EOC as well as Emergency Response Functions.

During a large-scale disaster event, another disaster-specific recovery agency, to be established at the national level by the PMO-DMD would manage large-scale recovery operations. However, DarMAERT would still be utilized as a coordinating agency at the regional level and to facilitate communication between municipalities.

3.2.3.1. Short-Term (90-day) Recovery Strategies

This section describes key issues that must be addressed urgently when initiating short-term recovery operations. The Regional Recovery Plan will provide a strategy for addressing critical issues, such as debris removal, housing, and utility restoration, during the first 90 days following major flooding caused by the tsunami. The magnitude of these issues and the resources required to address them will necessitate regional approaches with assistance from the national government and international partners. DarMAERT's short-term recovery efforts will be greatly enhanced by collaboration. DarMAERT

emergency response agencies would be involved in the initial recovery, but DarMAERT EOC may demobilize. DarMAERT EOC may support the response-to-recovery transition.

Debris Removal Strategy

Debris must be removed from the region to allow resumption of services and business, and make way for rebuilding. Activities include:

1. Remove material from damaged structures and demolish unsafe structures;
2. Establish procedures to expedite the removal of unsafe structures;
3. Develop a plan for transporting debris to staging sites; separating, reducing, and recycling debris; and trucking to a disposal site;
4. Secure contracting of national resources to support long-term debris removal operations;
5. Collaborate regionally to address movement and disposal of debris in areas with limited landfill space.

Interim Housing Strategy

Emergency shelters are a short-term solution to the problem of displaced residents. They must transition to interim and long-term housing arrangements.

1. Establish a plan to determine interim and long-term housing needs, based on the needs of the shelter population;
2. Utilize Dar es Salaam resources, such as building inspectors, to work with shelter residents to determine whether they can move back into their homes if not damaged by floods;
3. Establish a housing recovery team (to be decided by a regional or national Recovery Planning process) to act as the lead for local housing planning efforts and immediately begin a working dialogue with national and international agencies engaged in the housing issue;
4. Collaborate nationally to reach a consensus regarding what type of housing is needed and where it should be placed.

Utility Restoration Strategy

Public and private utility providers will coordinate with ERF 10 – Damage Assessment, ERF 11 – Public Works and Engineering, and ERF 12 - Utilities, to assess the damage and restore utility services within the region. Restoration of services will be affected by the following:

- Key emergency response facilities will have back-up power to continue operations temporarily while utility service is being restored.
- Water service and communications will be disrupted within the first several hours and could take weeks to be fully restored.
- Electrical power will be interrupted immediately and may take a few days or longer to restore.
- Repair sites may be inaccessible temporarily due to debris, flood, and damage to

transportation infrastructure.

The strategy for restoring utilities includes the following:

1. Service providers will begin damage assessments immediately. Assessment results and information will be provided to ERFs 10 – Damage Assessment, 11 – Public Works and Engineering, and 12 - Utilities. Collected information will form a separate damage assessment with other relevant information to be distributed to service providers upon availability.
2. Emergency restoration of lifeline utility services will be the top priority for the first 1-7 days after the event.
 - Service providers may implement interim repairs and establish temporary delivery systems.
 - Utility providers will restore services in accordance with their pre-established restoration priorities. Public Works and Engineering ERF will convey incident-specific restoration priorities to utility services providers, which will incorporate these priorities into their restoration plans.
 - ERF 11 will identify priorities for restoring services to facilities and services necessary for emergency response operations, hospitals and healthcare facilities, and continuity of government, as well as restoration of service to the greatest number of people.
3. ERFs 11 – Public Works and Engineering and 12 - Utilities will coordinate with ERF 5 – Law Enforcement to provide utility workers with access to repair sites.
4. Permanent restoration of utility infrastructure will occur after critical services are restored on an interim basis and will continue for months after the major tsunami.

3.2.3.2. Long-Term Recovery Strategy

Dar es Salaam's various local governments, departments, and agencies have specific responsibilities for implementing recovery of their respective operations and proceeding with the restoration of their facilities. However, the general recovery of Dar Es Salaam's services, economy, infrastructure, housing, and communities will require a coordinated effort beyond the specific responsibilities of various agencies. Therefore, national and regional authorities may convene a Recovery Management Task Force as part of the recovery planning process. The Task Force will provide a mechanism to coordinate the recovery activities of Dar es Salaam's various agencies and local government, identify critical needs and roadblocks to recovery, leverage available resources, and coordinate DarMAERT's efforts with those of the national government. The Task Force will convene as short-term recovery efforts proceed and the scope and magnitude of the long-term recovery effort become evident. Long-term recovery strategies will be strongly informed by the damage and losses assessment activities that are conducted. These assessments will inform the recovery process, including potential recovery funds mobilization.

3.3. Command and Control

3.3.1. Features of the Emergency Operations Center (EOC)

The DarMAERT EOC is the repository of information and the main hub for coordination of DarMAERT. It serves as the main communication link for all responding units, receives emergency and non-emergency calls, dispatches calls to concerned responding units, and receives data and reports from responding units. Please refer to DarMAERT's Standard Operating Procedures for the DarMAERT EOC ("SOP Handbook") for further information. DarMAERT EOC's location is as follows:

Location: 2nd Floor, Ilala Fire and Rescue Station, Ilala District, Dar es Salaam Region Interoperability

3.3.1.1. On-Scene Interoperability Coordination

Communications support at the site of an incident is coordinated with the assistance of various communications channels, resources, and deployable teams.

3.3.1.2. District/Municipal Disaster Management Coordinator

District/Municipal Disaster Management Coordinators are personnel stationed in their respective localities. Their role includes coordinating emergency preparedness activities, response, and recovery operations within their area. Coordinators deploy to incident sites to help assess the damage, identify urgent needs, and advise local officials and the DarMAERT EOC. Concerns raised are in regard to the needed assistance and deployment coordination of emergency resources in assisting local responders.

4. Activation, Deactivation, and Non-Activation

4.1. Activation and Deactivation

The procedures for activating and deactivating this Contingency Plan for Tsunami Caused by Earthquake shall adhere to the flowchart below (Figure 4).

The contingency plan shall be activated based on the findings of the Pre-Disaster Risk Assessment by DarMAERT once the tsunami warning is received, leading to the activation of the EOC. TMA shall proactively communicate potential tsunami threats to DarMAERT members via WhatsApp and e-mail. The DarMAERT EOC Manager shall then convene all the Emergency Response Function agencies to assess the situation. Afterward, the EOC Manager shall officially activate ICS and delegate authority to the IC. The IC shall then proceed to organize the IMT and implement tactical activities based on the strategic decisions of the emergency response agencies. Full activation shall be communicated primarily to members of DarMAERT through VHF/UHF radio calls, telephone calls, and

WhatsApp messages, with the following stakeholders being notified: hospitals, ambulance services, Tanzania Police Force, Tanzania Fire and Rescue Force, Tanzania Red Cross Society, DAWASA, TANESCO, TANROADS, TARURA, and Municipal Disaster Coordinators.

The contingency plan shall be deactivated once the situation has improved and when heightened alert is no longer required. The recommendation for deactivation shall emanate from the IC going to the EOC Manager via the EOC. Once deactivated, operations will continue until such time that the EOC will be back to Alert Level 1 status. At this point, the operation is already terminated.

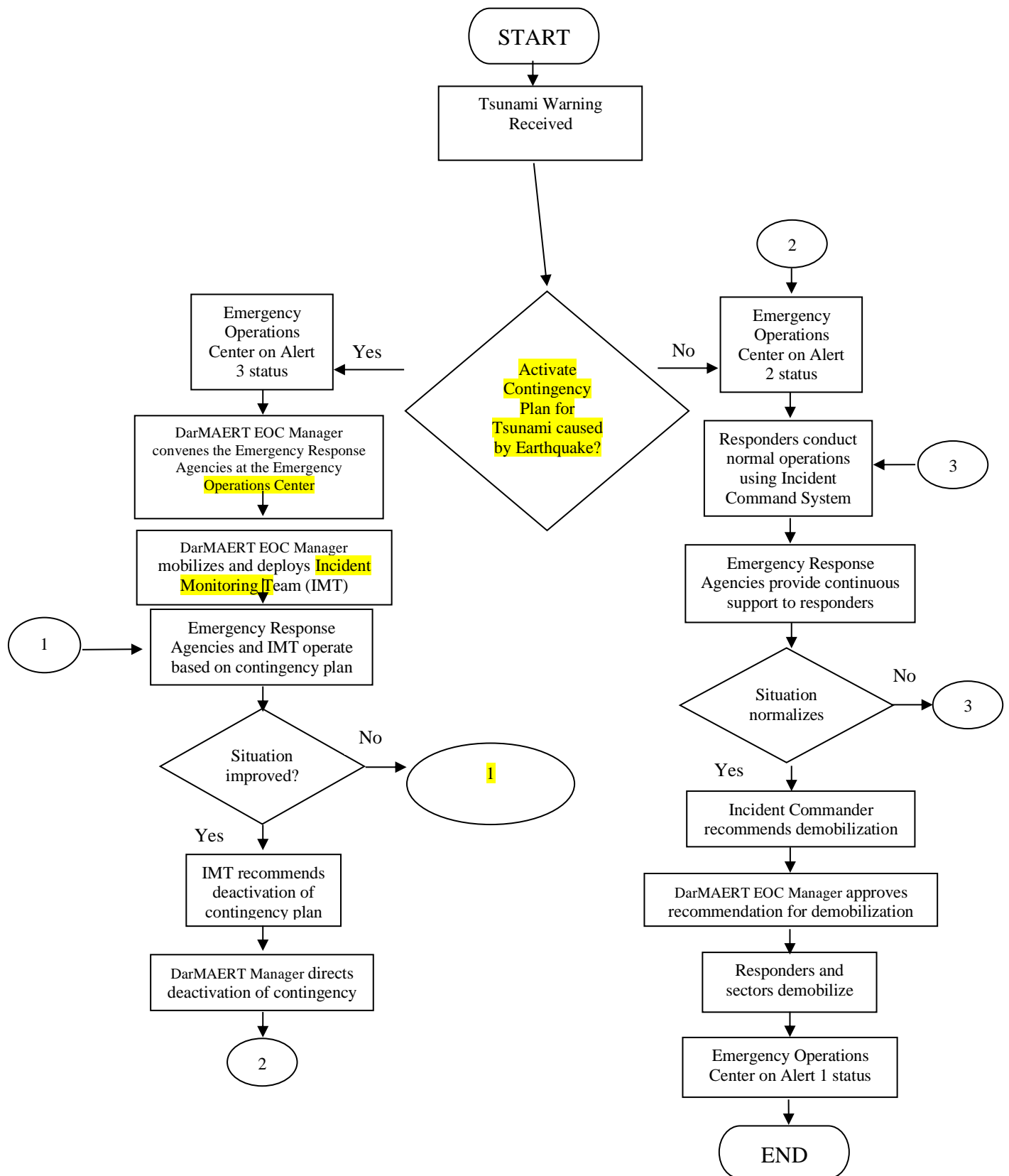


Figure 4. DarMAERT's Activation and Deactivation Flow Chart of the Contingency Plan For Tsunami Caused by Earthquake

4.2. Non-Activation

In case that an earthquake occurs and the tsunami threat does not create the height to cause damages and flooding, the contingency plan will not be activated. In this case, the plan will be maintained as a lasting plan for future use in the event of an earthquake causing a major tsunami. The Operations Sector Commander and Planning Sector Commander shall lead the updating and testing of the contingency plan as deemed necessary.

5. Plan Maintenance

This section discusses the activities associated with maintaining the Contingency Plan for Tsunami Caused by Earthquake. These activities are recommended to assure that this plan remains an updated and functional document.²⁰ It is recommended to test this plan through exercises that should be conducted on an annual basis and integrate exercise outputs into an updated version. This plan should also be revised following any DarMAERT EOC activations for a tsunami, and through the revision process, integrate any key findings as suggested by After Action Reporting. Resource inventory tables currently indicated as templates should be populated as more information becomes available during each review cycle.

The DarMAERT Planning Sector Commander and Operations Sector Commander will establish procedures to ensure that information obtained from any real-world activations, as well as trainings, exercises and drills are incorporated into a corrective action process to update this plan. This evaluation process will include an *annual review/update* of this plan and all support documents.

The DarMAERT Planning Sector Commander and Operations Sector Commander will:

- Conduct an annual formal audit of the Contingency Plan for Tsunami Caused by Earthquake;
- Evaluate all areas of the plan and develop corrective actions based on any key findings.

To ensure that the Contingency Plan for Tsunami Caused by Earthquake always reflects current organizational conditions, any changes in DarMAERT's organizational structure, functions or mission, and service to clients will be reflected in the plan accordingly.

Major issues to be considered include:

- Identifying items or issues that affect how frequently changes to the Contingency Plan for Tsunami Caused by Earthquake will be required, such as the frequency of turnover of DarMAERT members or the issuance of any national-level guidelines that may necessitate a plan revision.
- Establishing a review cycle;

²⁰ It should be noted that the initial prototype version of the Contingency Plan for Tsunami Caused by Earthquake was tested during FI-2 (Module 6) during April 12-16, 2021. The outputs from the After Action Report for FI-2 have been integrated into this version of the plan as the first iteration of the ongoing Plan Maintenance process.

- Maintaining overall plan currency and readiness—to include procedures, equipment, systems, personnel, and rosters;
- Advising the DarMAERT Coordinator on plan-related matters;
- Coordinating among related plans, including the ERP 2020 Update, SOP Handbook, and EOC Handbook, as well as Standard Operating Procedures for Emergency Response Functions;
- Conducting training, testing, and exercises to test DarMAERT tsunami contingency operations;
- Updating plans annually to incorporate lessons learned from testing and exercises, as well as any actual events that occurred during the year. In addition to updating the plan annually, more frequent plan updates may be necessary under conditions that include:
 - Employee contact numbers that change;
 - New processes that are implemented;
 - If substantive changes to existing mission-critical processes occur;
 - Reorganization of DarMAERT's goals and objectives;
 - Employee duties change within the scope of the plan;
 - Results of exercises or drills compel change in the plan;
 - Relevant regulatory changes occur.

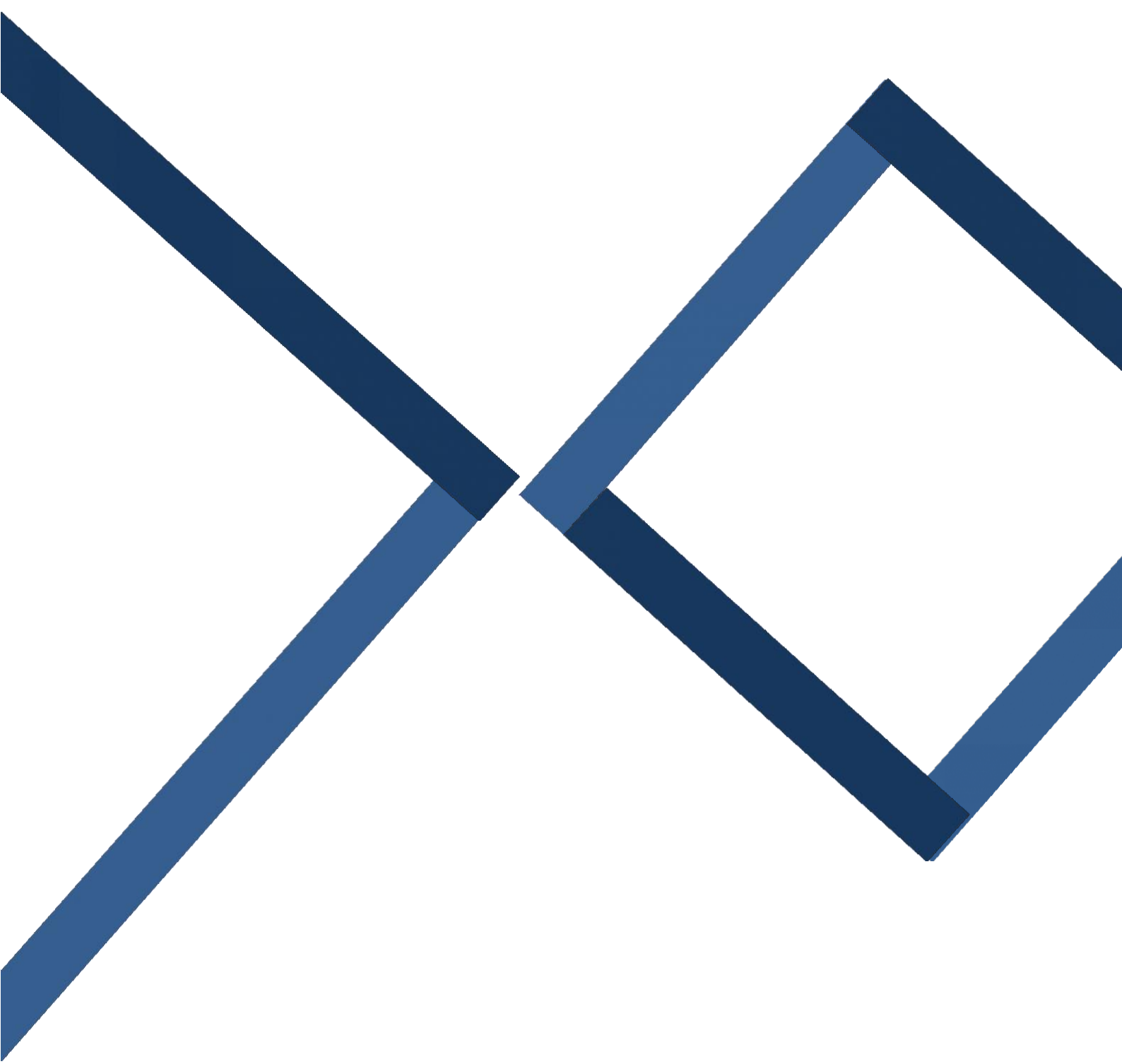
Whenever the plan is updated, it shall be reissued with the update recorded.

6. Annex 1: DarMAERT Directory

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