



Dhaka North City Corporation

Scenario based Ward level Spatial Contingency Plan

Ward No. 11

November 2014



DNCC 11

Scenario based Ward level Spatial Contingency Plan
Ward No. 11, Dhaka North City Corporation

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Project Brief

The scenario-based Ward-level Spatial Contingency Plan for Ward No. 11 of Dhaka North City Corporation (DNCC) is prepared under Comprehensive Disaster Management Programme, Phase-II (CDMP II). CDMP was initiated by the Ministry of Disaster Management and Relief of the People's Republic of Bangladesh to reduce country's vulnerabilities to adverse natural and anthropogenic hazards and extremes events, including the devastating potential impacts of climate change. Under CDMP Phase I (2006-2009), earthquake risk assessment was carried out in three major cities- Dhaka, Chittagong and Sylhet City Corporation areas. The corresponding preparedness activities, mainly the scenario based earthquake contingency plans also developed for these cities with the aim to create an efficient and effective collaborative approach to emergency response and management at city level with the participation of all city level stakeholders. After the successful completion of the Phase-I, CDMP was initiated Phase II (2010-2014). CDMP II is a vertical and horizontal expansion of its Phase I activities designed based on the achievements, lessons learned and the strong foundation laid during CDMP I by continuing the processes initiated, deriving actions from the lessons learned, utilizing knowledge resources generated and knowledge products published. CDMP II was took initiatives to further scale up the earthquake and other urban risk reduction activities through carrying out similar earthquake risk and damage assessment and subsequent development of scenario based contingency plans for six new cities (Rangpur, Dinajpur, Mymensingh, Tangail, Bogra and Rajshahi) as well as to develop scenario-based Ward-level Spatial Contingency Plan for Dhaka, Chittagong and Sylhet City Corporation areas.

The programme is funded by the United Nations Development Programme (UNDP), UKaid from the Department for International Development (DFID), European Union (EU), Norwegian Embassy, Swedish Sida and Australian AID. Asian Disaster Preparedness Center (ADPC), Thailand in association with National Society for Earthquake Technology-Nepal (NSET), Asian Institute of Technology (AIT), Thailand; and OYO International Corporation, Japan have provided technical assistance to CDMP for carrying out the earthquake risk and damage assessment and subsequent development of scenario-based Ward-level Contingency Plans.



Executive Summary

Bangladesh is vulnerable to earthquake because of its location close to the boundary of two active plates: the Indian plate in the west and the Eurasian plate in the east and north. Earthquake risk in urban centers is high because most of the urban centers of the country are growing without proper planning and guidance. A major hazard (such as earthquake, flood, landslide, cyclone or fire) affecting these urban centers may result in widespread damage with a disastrous consequences for the entire nation. Due to the geographic location and historical earthquake events in this region, Dhaka is highly vulnerable to earthquake which is increasing continuously due to the pace of haphazard development. The city-level first responder agencies might not be able to carry out the response operations immediately due to their limited capacities. For an effective response to a severely damaged area, immediate life-saving and life-sustaining measures entailing unique solutions will be required. Considering the earthquake risk in Dhaka City, Dhaka North City Corporation took the initiative to prepare for minimizing the damages and loss of lives through development of scenario-based Ward-level Spatial Contingency Plan Ward No. 11. The main purpose of this plan is to guide the ward-level stakeholders and decision makers especially, Ward Disaster Management Committee (WDMC) to prepare and response immediately in a coordinated and effective way to save maximum number of lives in case of an earthquake emergency in the ward.

The contingency plan consists of an introductory section comprising background, purpose, objectives, intended users and review and management system of the plan; multi-hazard risk in the ward; earthquake risk scenario; structure and responsibilities of WDMC; spatial contingency plan; and limitations of the plan. Considering the likely earthquake threat in Bangladesh, three different scenarios have been developed to identify the possible damage and losses in the ward. An earthquake of 7.5 Mw originated from Madhupur Fault at 2:00 AM (night time) is assumed as the worst case and considered for analyzing the potential damages and losses in the ward and for developing the contingency plan accordingly.

The spatial contingency plan section deals on operational strategy and the vital actions which must be implemented in the emergency phase of the response operations to meet the purpose and objectives of the plan including the responsible stakeholders and agencies to perform each action. An estimation of required resources as per scenario earthquake; available resources and capacities in and around the ward and with the responsible agencies including their contact details; and spatial locations of available resources to support the contingency plan are given in annexes.

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Acronyms

ADPC	Asian Disaster Preparedness Center
AFD	Armed Forces Division
BDRCS	Bangladesh Red Crescent Society
CDMP	Comprehensive Disaster Management Programme
DDM	Department of Disaster Management
DFID	Department for International Development
DNCC	Dhaka North City Corporation
DPDC	Dhaka Power Distribution Companies Ltd.
EU	European Commission
FSCD	Fire Service and Civil Defence
FIMA	Federal Emergency Management Agency
NIBS	National Institute of Building Sciences
NSET	National Society for Earthquake Technology
PWD	Public Works Department
RAB	Rapid Action Battalion
SOD	Standing Order on Disaster
UNDP	United Nations Development Programme
WASA	Water Supply and Sewerage Authority
WDMC	Ward Disaster Management Committee
WEOC	Ward Emergency Operation Center

SECTION 01: Introduction

1.1 Background

Over the past decades, urbanization in Bangladesh has been rapidly taking place without proper planning and guidance. As a result many of the urban centers have developed haphazardly. These urban centers are fast growing and influence the economic developments of the country. A major hazard (such as earthquake, flood, landslide, cyclone or fire) affecting these urban centers may result in widespread damage, high numbers of fatalities, destroying buildings and other physical infrastructure and facilities and may have disastrous consequences for the entire nation.

Bangladesh is located close to the boundary of two active plates: the *Indian Plate* in the west and the *Eurasian Plate* in the east and north. Several major active faults, e.g. the Plate Boundary Fault (the northern extension of subduction fault), Madhupur Fault and the Dauki Fault, are inferred in the country. In the past, there were several earthquakes (such as the 1548 earthquake, the 1664 earthquake, the 1762 earthquake, the 1869 Cachem earthquake with Mw 7.5, the 1885 Bengal earthquake with Mw 7.0, the 1897 Great Indian earthquake with Mw 8.4, and the 1918 Srimangal earthquake with Mw 7.6) in this region that caused severe damages to life and properties (Banglapedia, 2009; Oldham, 1883; Ambraseys, 2004; Bilham and Hough, 2006).

Due to the geographic location and historical earthquake events in this region, Dhaka is highly vulnerable to earthquake (CDMP, 2009). The risk in the city is increasing continuously due to the pace of haphazard development and the construction of buildings and infrastructure without consideration of underlying earthquake risk. A low to moderate earthquake may cause severe damages to the life and property in Dhaka City that may go beyond the existing response capacity of the city authorities. The conventional response efforts and capabilities may quickly be overwhelmed. For an effective response to a severely damaged area may require immediate life-saving and life-sustaining measures entailing unique solutions.

Realizing the ever-increasing earthquake risk in Dhaka City, Dhaka North City Corporation (DNCC) took the initiative to prepare for minimizing the damages and loss of lives in its jurisdiction through development of scenario-based Ward-level Spatial Contingency Plans. The plan preparation process was supported by Comprehensive Disaster Management Programme (CDMP) and technical assistance from Asian Disaster Preparedness Center (ADPC), Thailand.

1.2 Purpose and Context

It is assumed that a strong earthquake in DNCC area will have impact all over (or even beyond) its jurisdiction with huge damages and losses, and the response operations will severely strain the resources both public and private sectors. The DNCC authority and other first responder agencies might not be able to carry out the response operations in all affected wards immediately because of their operational priorities or limited capacities. The primary purpose of this contingency plan is to support with immediate local response initiatives to save maximum number of lives in case of an earthquake emergency in Ward No. 11 of DNCC, with a goal of stabilizing the event within the first 72 hours. The plan can be used in multi-hazard emergency situation. However, due to limited scope

of the study, the damages and losses scenarios, and subsequent estimation of resources and capacities requires to carry out the response operation for other hazards could not be included here.

This Plan is developed based on the concepts and procedures of existing Disaster Management Policies (Disaster Management Act 2012, National Plan for Disaster Management 2010-2015) and Emergency Operation Plans (Standing Orders on Disaster) of the country, as well as the framework of the Earthquake Contingency Plan of Dhaka City developed under CDMP-I.

1.3 Objectives of the Plan

The overall goal of the scenario based ward-level spatial contingency plan is to guide the ward-level stakeholders and decision makers to prepare for likely consequences and respond immediately in a coordinated and effective way in the aftermath of an emergency in the ward.

The specific objectives of the ward-level spatial contingency plan are to:

- Strengthen the ability of local stakeholders involved in disaster management, including the Ward Disaster Management Committee (WDMC), ward level stakeholders, urban community volunteers, and the community as a whole to respond immediately in a coordinated and effective way in the aftermath of an emergency.
- Establish effective vertical and horizontal coordination mechanisms that are functional both before and after an event.
- Promote a culture of periodic simulation exercises to increase the readiness of the community in responding to an emergency.

1.4 Intended Users of Plan

The primary user of the plan is the WDMC with active involvement and support from City Corporation Authority. Other first responding agencies, city-level government departments/ agencies with relevant responsibilities, non-government and private-sector agencies involved in emergency response activities, urban community volunteers residing in or assigned for duty in the ward, and other local agencies involved in disaster management will provide necessary support as per their own contingency plan in order to save human lives, provide humanitarian assistance and restore the critical facilities.

1.5 Review and Management of the Plan

- This plan will be reviewed and revised on an annual basis based on updated information.
- The operation plan may be modified as a result of post-incident analysis.
- It will require a major revision in every 5 years based on risk assessment in which the risk scenarios, spatial analysis, and maps are revised to reflect the current local situation.
- WDMC will initiate the revision/ modification process and will engage the support of City Corporation and other departments with relevant responsibilities.
- Each revision will be authorized by the City Corporation.
- Any change or revision to this plan will be circulated among relevant agencies.

SECTION 02: Multi-hazard Risk in the Ward

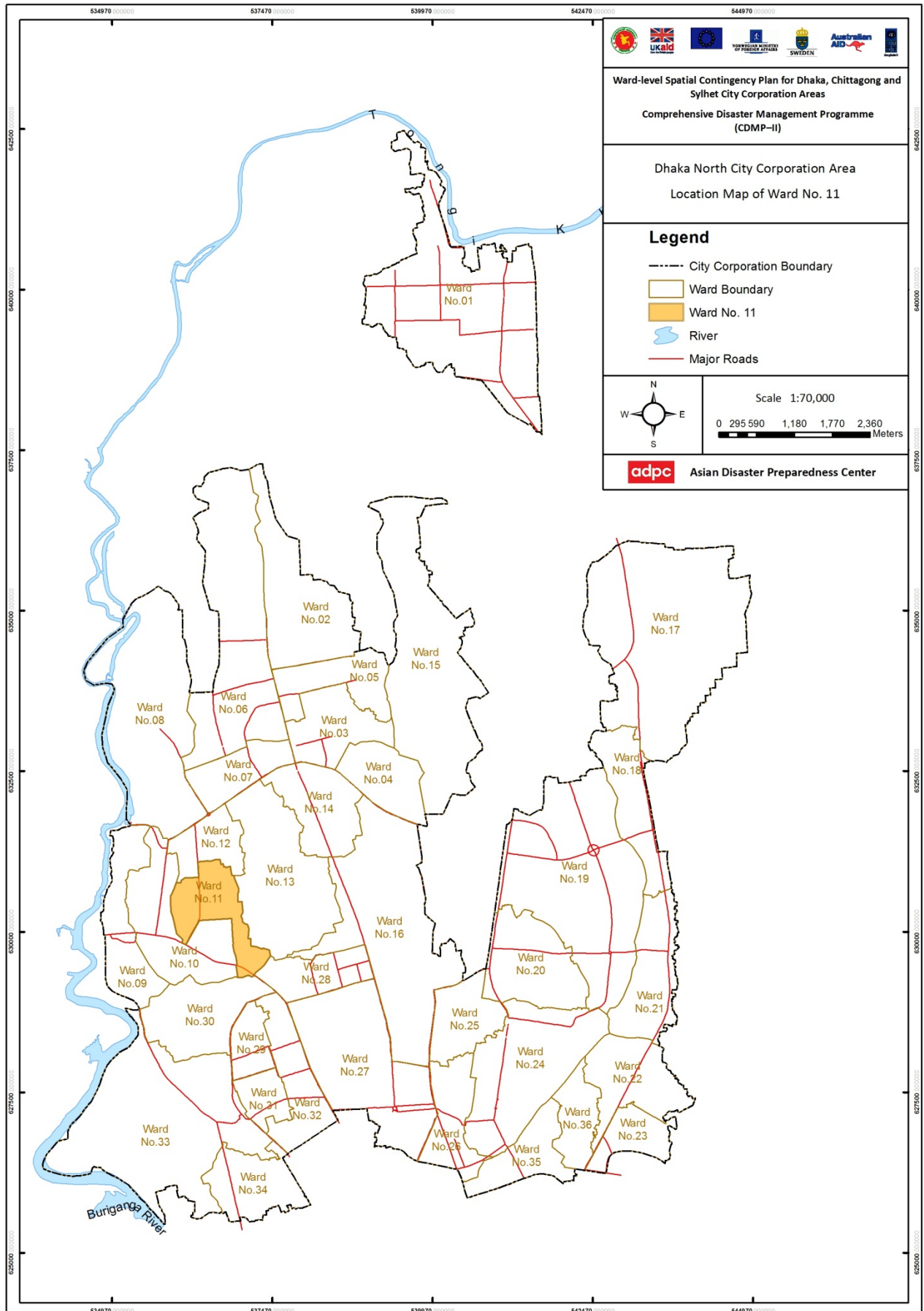
2.1 Physical Characteristics of the Ward

Ward No. 11 of Dhaka North City Corporation is located in Mirpur area on the north-western part of Dhaka City (**Map-1**). The total population of the ward is about 97,033 (BBS, 2011) and the total land area is about 1.19 sq. km (294 acres). The ward is fully urbanized and congested in nature with moderate population density compared to the surrounding wards (330 persons per acre). The total number of building structures in the ward is 3,101, comprising 42.17% pucca, 45.08% semi-pucca and 5.83% kutcha. The ward is predominantly residential and a small number of the buildings along the main road in the ward have a wide mix of commercial uses. Mirpur road - one of the main city arteries runs through the ward. 11. A major portion of the road network is unplanned and narrow (26 km out of the 29 km are less than 6m wide). The narrow road network hampers transportation mobility and often creates traffic congestion. **Table-1** shows the general demographic and infrastructure information for ward No. 11.

Table- 1: General demographic and infrastructure information of Ward No. 11

Features	Ward No. 11
Total population (2011)	97,033
Growth rate (2011)	-0.95
Total number (no.) of building structures	3,101
Total no. of hospitals/ private clinics	0
Total no. of educational institutions	17
Total no. of police stations	1
Total no. of fire stations	0
Total length of road (6m and above) – (km)	3.24
Total length of road (less than 6m) – (km)	25.83
Total length of water supply network – (km)	15.01
Total no. of water pumps	3
Total length of gas network – (km)	21.49
Total no. of electric poles	505
Total no. of telephone poles	89

Source: BBS, 2011; Physical features survey, 2008 and 2012



Map-1: Location of Ward No. 11 of DNCC



2.2 Multi-hazard Risk in the Ward

The ward is highly vulnerable to earthquake. The vulnerability assessment results (CDMP, 2009) of engineered buildings shows that about 68% of the engineered buildings have severe to high vulnerability level, whereas 13% buildings having a moderate vulnerability level. A rapid visual screening survey revealed that major vulnerability factors present in the engineered building in ward no. 11 are heavy overhang (51%), soft storey (40%), short columns (33%) and plan irregularities (17%). Moreover, 12% of buildings are in poor physical condition.

Other major hazards in the ward are flood and waterlogging, fire and health. The ward remained completely inundated for more than 3 months during the flood in 1988. Waterlogging is a common problem in the ward and some area gets waterlogged because of moderate to heavy rain. Main cause of waterlogging in the ward is poor drainage system.

Although there was no major fire occurrence, but the ward is highly vulnerable to fire because of high building density and very narrow road width.

Water and vector-borne diseases is a common throughout the year in the ward especially in slum areas. The main causes of these health problems stem from unhealthy environmental conditions, such as open drainage systems and improper solid waste management system. The problem increases during monsoon as the urban runoff mixes with garbage and sewage from drainage and sewerage systems and overflowing latrines and causes serious water pollution. Dengue is a common phenomenon in the ward. The City Corporation record shows that a total of 26 people in this ward suffered from dengue hemorrhagic fever from 2006-2011.

SECTION 03: Earthquake Risk Scenario in the Ward

3.1 Earthquake Risk Assessment and Developing the Scenarios

A comprehensive earthquake risk assessment for Dhaka City Corporation (later on divided into Dhaka North and Dhaka South City Corporations) area was conducted by CDMP in 2009. Considering the likely earthquake threat in Bangladesh, following three different scenarios have been developed to identify the possible damage to buildings, infrastructures, utility services and facilities and number of casualties in DNCC area:

Scenario-1	An earthquake of 7.5 Mw originated from Madhupur Fault
Scenario-2	An earthquake of 8.0 Mw originated from Plate Boundary Fault-2
Scenario-3	An earthquake of 8.5 Mw originated from Plate Boundary Fault-2

To quantify the potential number of casualties, the estimation was carried out for two times, i.e. 2:00PM (day time) and 2:00AM (night time). Among these, **scenarios-1** at 2:00 AM (night time) is estimated as the worst case and considered for analyzing the potential damages and losses in Ward No. 11 and for developing the contingency plan accordingly.

3.2 Potential Damages and Losses

Earthquake risk assessment result for Ward No. 11 shows that an earthquake of 7.5 Mw originated from *Madhupur Fault* at 2:00 AM (night time) may have following impacts:

- Out of total 3,101 buildings, at least 378 buildings will be moderately damaged and about 1334 building might be completely destroyed or be damaged beyond repair.
- About 22 school buildings will suffer from moderate to extensive damage out of which 5 might be completely damaged and 3 will be damaged with more than 50% functionality in day1 of the earthquake.
- The earthquake will results in multiple conflagrations immediately. There will be at least 2 ignitions that can burn out of control due to lack of water and delay of fire-fighting agency or limited access of to the affected areas.
- A total of about 503 thousand tons of debris will be generated as building collapse and search and rescue operation will face many challenges due to debris from collapse buildings.
- Approximately, 1,496 people will be trapped inside the collapsed buildings out of which 40% can be extricated with urban community volunteers (non-specialized search and rescue team) and remaining 60% (899) will require specialized search and rescue.
- About 1445 people might be killed immediately after the earthquake. More than 83 people will require hospitalization and can become life threatening if not promptly treated; about 330 people will require hospitalization but are not considered life-threatening; and about 1911 people will require medical attention like first aid or some kind of treatment.

- Essential infrastructures and facilities such as major hospitals and clinics, fire service stations, police stations, and other government and communal structures located within and nearby the ward will be damaged ranging from at least slight to moderate.
- There will be at least 5 breaks and 1 leak in water supply system.
- There will be at least 4 breaks and 1 leak in gas supply network.
- Public communication infrastructures and service both land phone and cell phone will be seriously disrupted.

SECTION 04: Ward Disaster Management Committee

4.1 Structure of Ward Disaster Management Committee

In Standing Orders on Disaster (SOD) 2010, there is no provision for WDMC. However, the local disaster management in urban settings largely depends on the involvement of local level organizations and coordination among them. Therefore, to ensure more effective disaster management system, efficient response during an emergency and stronger community awareness and participation, an active WDMC is important. The proposed structure of the WDMC is as follows:

(i)	Zonal Officer, Zone-4 of Dhaka North City Corporation (will be replaced by Councilor, Ward No. 11 once available)	1	Chairperson
(ii)	Female Councilor, Ward No. 10, 11, 12 of DNCC (once available)	1	Member
(iii)	Executive Engineer, Zone-4 of DNCC (in appropriate case)	1	Member
(iv)	Health Officer, Zone-4 of DNCC (in appropriate case)	1	Member
(v)	Conservancy Officer, Zone-4 of DNCC (in appropriate case)	1	Member
(vi)	Social Welfare Officer, Zone-4 of DNCC (in appropriate case)	1	Member
(vii)	Representative, Local Fire Service and Civil Defence Station	1	Member
(viii)	Representative, Local Teachers Community	1	Member
(ix)	Representative, Local Government Officials	1	Member
(x)	Representative, Local Business Association	1	Member
(xi)	Representative, Local Community Based Organizations	1	Member
(xii)	Representative, NGOs working in the Ward	1	Member
(xiii)	Socially Reputed Persons or Civil Society Representatives	1	Member
(xiv)	Representative, Local Imam Community	1	Member
(xv)	Representative, Other Religious Groups	1	Member
(xvi)	Representative, Urban Community Volunteer Group	1	Member
(xvii)	Secretary, Respective Ward of City Corporation	1	Member-Secretary

4.2 Responsibilities of WDMC

The main purpose of WDMC is to address effective disaster management at the ward level before, during and after a disaster while serving as the bridge between government agencies, stakeholders working on disaster management and community members. The specific roles and responsibilities of WDMC are discussed below:

Meetings

- During normal time, the committee will meet once in three months for carrying necessary planning and preparedness activities.
- During warning phase (in case of flood/ cyclone/ disease) and pre-disaster period, the committee shall meet more than one time in a week.



- During disaster period, the committee shall meet as and when needed (once daily).
- In recovery phase the committee will meet once a week.
- The committee can meet any time if needed or part of the committee can meet with the other local development committees bi-laterally or multilaterally.
- The committee can request any member(s) or specialist(s) of the locality to attend any particular meeting.
- Quorum will be constituted by 1/3rd members of the committee during normal period and post-disaster period. During warning phase and disaster period, quorum will be constituted by 1/4th members of the committee.
- An updated list of WDMC members will have to be submitted to City Corporation by 15th January of each year duly signed by the chairperson of the WDMC. After a new election of the City Corporation, the WDMC should be reconstituted and be submitted to City Corporation.

Responsibilities

Risk Reduction

- Arrange training and workshops on disaster management especially on earthquake issues by keeping the City Corporation informed.
- Identify community at risk based on age, sex, physical fitness, social status, profession and economic condition.
- Prepare short, medium and long-term vulnerability reduction and capacity building action plan for the high-risk people with the active participation of the community at risk.
- Organize regular meetings on developmental issues with organizations working at Ward level who have development programmes and who are providing services to take decisions for the implementation of short, medium and long term action plans.
- Establish effective coordination with utility services for immediate restoration of lifeline services and manage local fund for the implementation of risk reduction action plans.
- Prepare a comprehensive disaster management action plan, which will enable the local community, local authority of the City Corporation and local organizations to support the poor and vulnerable community for increasing their income and other abilities for risk reduction and for taking necessary security measures against any impending warnings and disaster.
- Ensure that the local people are kept informed and capable of taking practical measures for the reduction of risk at household and community levels and also disseminate widely the success stories among the local people about reducing risks at household and community levels.
- Arrange speedy and effective dissemination of forecasts relating to disasters (cyclone, heavy rainfall, flood, water logging, dengue, etc.) among individuals, volunteers and target organizations.
- Build the capacity of local institution, volunteers, and the community to adopt disaster resistant housing features.
- Determine specific safe center/shelter where the people of particular area will go at the time of disaster and assign responsibilities to different individuals and organizations – for providing various services and securities at the shelters.
- Ensure supply of safe drinking water and if necessary, other services from specific points near the shelter/center.
- Train the students, youth, local club members and volunteers on community based water purification techniques so that during disaster, they can supply safe drinking water in their own community during emergencies.

- Identify open space at ward to establish field hospitals & medical operations for mass casualties management. Keep stocks of emergency life-saving drugs and other support facilities at Ward level for use during disaster.
- Prepare relevant preparedness plans for search & rescue, primary relief operation, and local arrangement for rehabilitation of severely affected families.
- Arrange for rehearsals or drills on the dissemination of warnings/forecasts, rescue, evacuation, and primary relief operations (if necessary, committee can seek assistance from other agencies through City Corporation).

Emergency Response

Warning Period (in case of flood/ cyclone/ diseases)

- Disseminate warnings/forecasts, evacuate the vulnerable people as per evacuation plan, check the overall preparation for rescue operation and prepare the rescue team.
- Engage trained institutions, volunteers and people in the field for effective and speedy dissemination of early warnings/forecasts and to coordinate and monitor the whole warnings/forecasts dissemination system.
- Visit the pre-selected emergency safe centers/shelter and ensure that different organizations and individuals are alert and ready to provide essential services and security at the centers.
- Review and take alternative measures to ensure the supply of safe drinking water from the selected places nearby the shelter center.
- Take emergency measures to fill up the stock of life saving drugs after careful scrutiny of the stock of life saving drugs at Ward level.
- Prepare a checklist of emergency activities during disaster including the time schedule of the assigned personnel.

During Disaster Onset

- Operate emergency search and rescue work with the facilities locally available until the professional search and rescue teams arrive.
- Take emergency measures to prevent diarrhoea and other water borne diseases by preparing oral-saline and water purification tablets by the trained students, youths, club members and volunteers.
- Coordinate all relief activities in the Ward so that relief materials are distributed impartially.
- Ensure dissemination of correct information for protecting the people from being upset by rumour related to disaster.
- Ensure the overall security of women, children and persons with disability during disaster residing in safe centres/shelters and other places.
- Take necessary measures to protect environmental degradation by arranging quick funeral ceremonies of dead bodies and quick disposal of dead domestic animals.

Post Disaster Period

- Allocate and distribute on the basis of actual needs, the materials received from local sources or Department of Disaster Management/ other sources for relief and rehabilitation work according to the directives of City Corporation.
- Coordinate with the hospitals and other health related personnel to provide appropriate and adequate care to disaster affected people.
- Arrange workshop with the participation of concern institutions and individuals on the lessons learned during and after the disaster.



SECTION 05: Spatial Contingency Plan

5.1 Operational Strategy

In the immediate aftermath of a major earthquake and its impact on the ward, there will be huge task related to emergency response activities such as damage and need assessment, control of fire, search and rescue of trapped persons, treatment of injured, providing shelters and relief supplies to displaced people, restoration of critical facilities, etc. Experiences show that these response activities are much complicated and many agencies are involved in accomplishing them. At the same time, the community and its residents have critical roles to play in the form of assisting first responders, participating in mass care, coordinating their own family reunification, and cooperating with recovery efforts. Therefore, all these stakeholders need to work together in a systematic and coordinated manner so that their capacities and resources are best utilized for optimum and efficient response.

WDMC will play the lead role to support and coordinate the response operations in the ward with the active support of urban community volunteers. Detailed information of urban community volunteers to work for response activities in Ward No. 11 is given in the **Annex-A**.

WDMC will establish and activate a temporary Ward-level Emergency Operation Center (WEOC) within the ward immediately following a major earthquake or an emergency like, flood, cyclone, fire, diseases, etc. to support and coordinate the response operations. The major functions of WEOC will be but not limited to,

- Ensure effective management and coordination of all elements involved in emergency response operation.
- Establish communications with Zonal EOC, City Corporation, first responder agencies, other government agencies, hospitals and clinics, private construction companies and industries to support response operations with required equipment/ resources.
- Act as a focal point for the receipt, timely collection, analysis and dissemination of vital information concerning the event.
- Monitor and assess the progress of on-going response operations to provide a more complete operational picture to Zonal EOC, City Corporation, concerned government agencies, and media.

Since WEOC will be the crucial coordination center, it is essential to ensure that WEOC itself is an earthquake-resistant structure, with appropriate safety and security. It will be based in dedicated office facilities with adequate space for meeting. Ward-level city corporation office/ Councilor office is appropriate but other government agency office or school buildings can be suitable for WEOC. It will be equipped with uninterrupted communication facilities, including VHF, HF, mobile telephone, satellite telephone, landline telephone, fax facilities, internet connection, computers, and GIS as response kits and personal protective equipment. In addition, it will be stocked with necessary office supplies, adequate non-perishable food and water.

The WEOC will function for 24 hours a day and establish a staff roster system to ensure adequate personnel are available at all times. It will operate as per following structure:



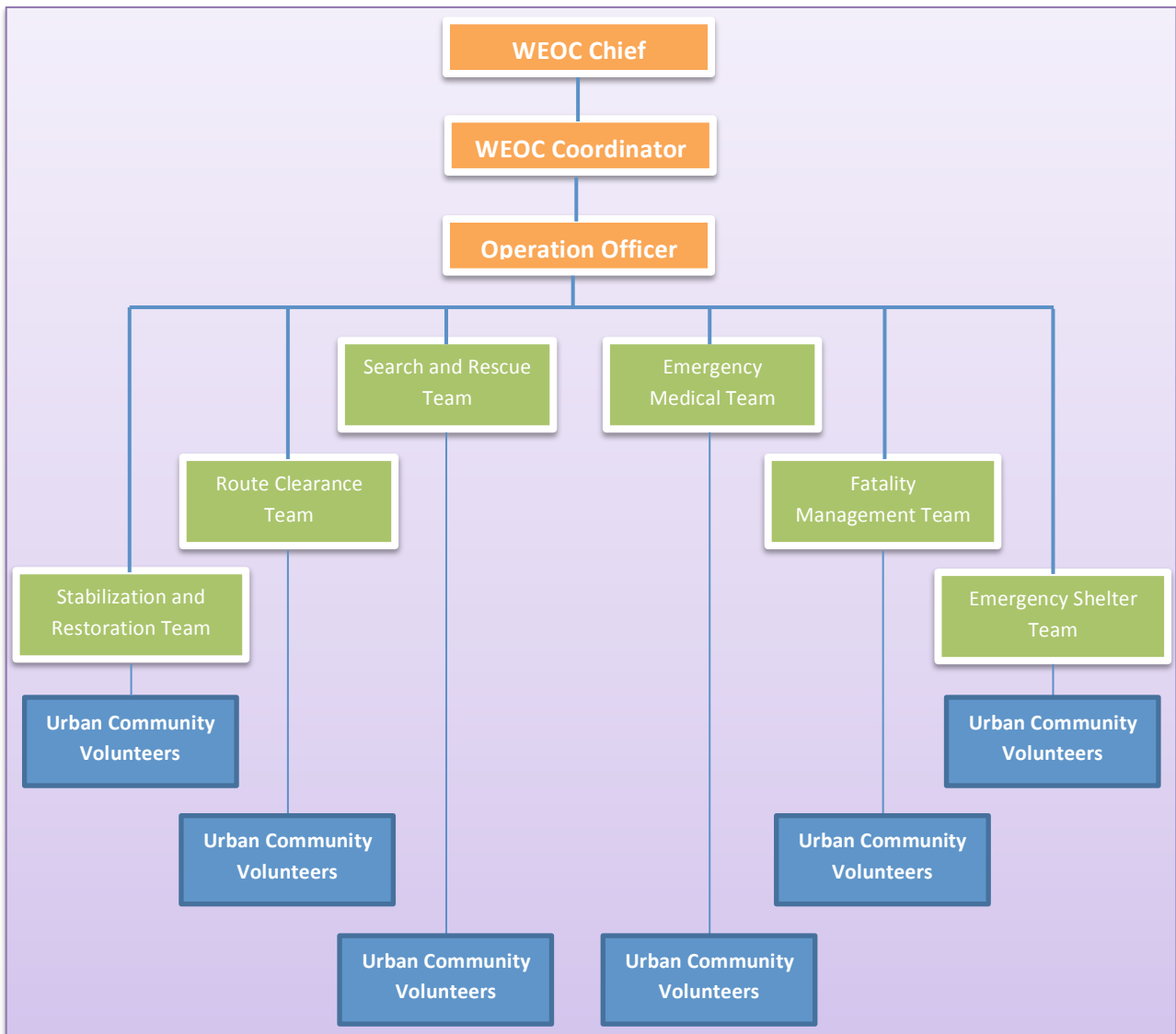


Figure-5.1: Operational structure of WEOC

<p>WEOC Chief</p>	<ul style="list-style-type: none"> • The chairperson of WDMC will act as the WEOC Chief and will lead the overall emergency operation. • He/ she is responsible for providing overall strategic and policy directions of the response operations, establishing unified actions across the whole ward by any means and coordinate unity of effort across WEOC, Zonal EOC, and City Corporation.
<p>WEOC Coordinator</p>	<ul style="list-style-type: none"> • The WEOC Coordinator is responsible for acting as a focal point for receiving all incoming information, including reports of damages, casualties, and needs from the affected areas and processing and analyzing the information and disseminating to the public and media. • He/ she is also responsible for coordinating and making request for additional support from Zonal Office, City Corporation, first responding agencies, other government agencies, and private sector agencies as needed from field-level technical response teams.
<p>Operation Officer</p>	<ul style="list-style-type: none"> • The Operation Office is responsible for operational implementation

	of response activities, including the overall coordination among field-level technical response teams, and ensuring operational continuity.
Search and Rescue Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably an individual with previous experience of search and rescue operation, and/ or with specialist training on the same. • The team is responsible for assisting search and rescue operations in order to save the maximum number of endangered lives in the shortest possible time.
Route Clearance Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably a staff member of conservancy department and/ or an individual with previous experience of route clearance. • The team is responsible for ensuring the access of search and rescue team and equipment and other means of transportation into the impacted areas to deliver the vital response services.
Emergency Medical Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably a Doctor or a staff member of health department and/ or an individual with specialized training on emergency medical services. • The team is responsible for assisting to provide immediate medical assistance and life-saving and life-sustaining medical services to the victims.
Fatality Management Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably a Doctor and/ or an individual with specialized training on fatality management. • The team is responsible for helping to provide fatality management services, including identification of deceased, returning to their loved ones and arrange for funeral of unidentified remains.
Stabilization & Restoration Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably an Engineer and/ or an individual with specialized training on building/ infrastructure stabilization and restoration. • The team is responsible for assisting to stabilize or eliminate buildings and infrastructures with sustained damaged to minimize health and safety threats to population in the impacted area as well as for helping to stabilize and repair/ restore the partially damaged essential infrastructures to functional condition.
Emergency Shelters Team	<ul style="list-style-type: none"> • A team of WDMC members and urban community volunteers headed by preferably an individual with previous experience of emergency shelter operations, and/ or with specialist training on the same. • The team is responsible for ensuring the temporary shelters, including provision of adequate food, water and sanitation facilities to the displaced population.

5.2 Operational Priorities and Response Strategies

Since the primary purpose of this ward-level spatial contingency plan is to support with immediate local response initiatives to save maximum number of lives in case of an emergency like building collapse or earthquake, with a goal of stabilizing the event within the first 72 hours, The priority response activities will be,

1. Delivering community search and rescue services and evacuate people to safe locations.
2. Ensuring the access of search and rescue teams and equipment to deliver the vital response services.
3. Providing immediate medical assistance and life-saving and life-sustaining medical services to the victims.
4. Providing fatality management services and returning deceased, to their loved ones.
5. Stabilizing or eliminating damaged buildings and infrastructures to minimize health and safety threats and stabilizing restoring the essential infrastructures to functional condition.
6. Ensuring temporary shelters, including provision of adequate food, water and sanitation facilities to the displaced population.

A. Search and Rescue Operations

Key assumptions:

In the immediate aftermath of a major earthquake, there will be numerous people requiring rescue from collapsed buildings, vehicles and other infrastructures. Search & rescue operations must be initiated immediately following a major earthquake as trapped individuals can quickly succumb to injuries. Those trapped in the debris, even without major injury, will also be at risk due to potential aftershocks.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> • Mobilize trained community volunteers immediately to carry out light search and rescue operations. <p>Divide the search and rescue volunteers and resources into two main teams, one is focusing on the rescue of those that are in the immediate path of volunteers and another is focusing on conducting area surveys to locate large concentrations of people trapped in schools, hospitals, office and apartment buildings, etc.</p>	WDMC, Urban Community Volunteers, FSCD, AFD, BDRCS
<ul style="list-style-type: none"> • Prioritize the search and rescue attempts based on: <ol style="list-style-type: none"> i) Number of people trapped in a particular sites; ii) Potential risk to search and rescue personnel; and iii) Probability of successful rescue. 	WDMC, Urban Community Volunteers, FSCD, AFD, BDRCS
<ul style="list-style-type: none"> • Identify and open potential sites for evacuation to assemble displaced population. <p><i>The available open spaces in Ward no. 11 that can be used for immediate evacuation purpose and their population holding capacities are given in Table-2 in Annex-B and shown in Map-2 in Annex-C.</i></p> <p><i>The available open spaces within the ward No. 11 are sufficient for immediate evacuation for the required number of displaced population. About 21,121 additional people can be accommodated in these spaces</i></p>	WDMC, Urban Community Volunteers

<p>for immediate evacuation purpose from surrounding wards. The list of available nearest open spaces in surrounding wards to be used for evacuation purpose and their population holding capacities are given in Table-3 in Annex-B and shown in Map-2 in Annex-C.</p>	
<ul style="list-style-type: none"> Identify the evacuation routes to carry out the search and rescue operation and transport the earthquake victims to the evacuation centers and casualty collection points. <p>The list of identified evacuation routes in Ward no. 11 are given in Table-4 in Annex-B and shown in Map-2 in Annex-C.</p>	WDMC, Urban Community Volunteers, FSCD
<ul style="list-style-type: none"> Make request to City Corporation, other government agencies, private construction companies and industries to supply search and rescue equipment/ resources, if locally available resources are insufficient. 	WDMC, City Corporation
<ul style="list-style-type: none"> Make request to deploy specialized search and rescue teams to enhance the local rescue capabilities as quickly as possible. <p>The specialized search and rescue capacity mainly exists with the Armed Forces Division (AFD) and Fire Services and Civil Defense (FSCD), Bangladesh Red Crescent Societies (BDRCS). Currently, there are 14 FSCD stations including FSCD Headquarter in Dhaka City. Mirpur FSCD Station is primarily responsible for controlling fire hazard in ward no. 11 would also be responsible for search and rescue operation during an emergency. The available resources and capacities of Mirpur FSCD Station and its required resources for effective operation of search and rescue during an emergency are given in Table-5 & 6 in Annex-B.</p> <p>The list of FSCD stations including their emergency contact number is given in Table-7 in Annex-B and their locations as well as the locations of AFD and BRCRCS are also shown in Map-3 in the Annex-C.</p>	WDMC, City Corporation
<ul style="list-style-type: none"> In preparing for the arrival of specialized search and rescue teams, <ul style="list-style-type: none"> Assist in determining appropriate search and rescue staging locations. Determine appropriate approach routes and provide road clearance to ensure the access of heavy search and rescue equipment in most affected areas where needed. <p>The list of possible approach routes in Ward no. 11 appropriate for movement of heavy search and rescue equipment are given in Table-8 in Annex-B and shown in Map-3 in Annex-C.</p> <ul style="list-style-type: none"> Provide security for staging locations and operations areas. 	WDMC, Urban Community Volunteers
<ul style="list-style-type: none"> Synchronize deployment of local, city, national and international search and rescue teams to ensure safe and coordinated operations. 	WDMC, Urban Community Volunteers, Police, RAB
<ul style="list-style-type: none"> Provide overall security and access control for the affected area and site security for search and rescue operations. 	WDMC, Urban Community Volunteers, Police, RAB

B. Route Clearance and Debris Removal

Key assumptions:

In the aftermath on an earthquake, the normal modes of travel to the impacted area will be severely disrupted and access to some areas may be impossible due to debris from damaged building. Search and rescue operation will face many challenges due to: extensive damage to buildings; damaged and blocked roads; and damaged to water and sewerage, gas, and electric networks. Many emergency services to the impacted people will rely on route clearance. Since initial response efforts will focus on saving lives, routes clearance for first responders will be top priority.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> Assess the condition of evacuation routes and identify the routes blockage, damage of bridges and culverts, sinkholes, and other areas that need to be cleared and repaired. 	WDMC, Urban Community Volunteers, City Corporation
<ul style="list-style-type: none"> Prioritize the evacuation route and begin to conduct route clearance operations to support response operation. <ul style="list-style-type: none"> First priority of road clearance will be focused on assessment and life safety/lifesaving operations. Second priorities will be on debris clearance and repair roads, bridges, culverts, sinkhole, etc. Further priorities will be placed on routes with hospitals, evacuation spaces, temporary shelters, water supply, electricity, communication services and facilities. 	WDMC, Urban Community Volunteers, City Corporation
<ul style="list-style-type: none"> Estimate the resource requirements both for staff and equipment and begin to conduct route clearance operations with locally available staff and equipment. <p><i>An estimation of number of truckload requires for removing the generated debris in Ward no. 11 due to the scenario earthquake is given in Table-9 in Annex-B.</i></p>	WDMC, Urban Community Volunteers, City Corporation
<ul style="list-style-type: none"> Make request for additional staff and heavy equipment for route clearance to City Corporation, other government agencies, private construction companies and industries. 	WDMC
<ul style="list-style-type: none"> First, stage the debris at nearest temporary sites as routes are cleared and later on remove it to designated disposal locations. 	WDMC, Urban Community Volunteers, City Corporation
<ul style="list-style-type: none"> Implement an access permit system to prioritize and limit the access to primary evacuation routes. Prioritize the access permit system according to: <ul style="list-style-type: none"> Life-safety uses (police, fire, and medical vehicles) Heavy equipment for emergency response support Food, water and medical supplies Debris removal 	WDMC, Urban Community Volunteers, Police, RAB
<ul style="list-style-type: none"> Use street barricades to limit the access to priority routes if adequate 	WDMC, Urban Community



traffic control personnel are not available.	Volunteers, RAB	Police,
<ul style="list-style-type: none"> Coordinate the release of public information regarding route restrictions and guidance to residents for reducing traffic impacts. 	WDMC, Community Volunteers, RAB	Urban Police,

C. Public Health and Medical Services

Key assumptions:

Numerous people will be injured with varying degree due to the impact of a major earthquake. Injuries will vary greatly depending on the time of the earthquake. Many hospitals, clinics, pharmacies and other health and medical facilities are expected to be severely damaged or destroyed. Need for treatment to the injured are also expected to be overwhelmed.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> Establish casualty collection points and field medical shelter (s) for on-scene treatment to the injured. 	WDMC, Urban Community Volunteers, Civil Surgeon Office
<ul style="list-style-type: none"> Mobilize community volunteers to provide medical assistance at casualty collection point (s) and field medical shelter(s) to the injured. 	WDMC, Urban Community Volunteers
<ul style="list-style-type: none"> Identify and triage people who have critical injury and medical conditions that require acute medical care and limit the on-scene treatment to non-acute care. <p><i>An estimation of potential number of injured people at different severity levels of injuries in ward no. 11 is given in Table-10 in Annex-B.</i></p>	Urban Community Volunteers, Civil Surgeon Office, Local Hospitals and Clinics
<ul style="list-style-type: none"> Assess the status of local hospitals, clinics and other health care facilities and identify resources for treatment of critically injured. <p><i>An estimation of number of bed requires for critically injured persons in Ward no. 11 and available beds in functional hospitals and clinics in the aftermath of the scenario earthquake is given in Table-11 in Annex-B.</i></p> <p><i>The list of available hospitals, clinics and other medical facilities within Ward no. 11 and nearest the ward and list of major hospitals and clinics in Dhaka City including their resources and capacities and emergency contact numbers are also given in Table-12 & Table-13 respectively in Annex-B. Their locations are also shown in Map-4 and Map-5 in Annex-C.</i></p>	WDMC, Urban Community Volunteers, Civil Surgeon Office
<ul style="list-style-type: none"> Mobilize ambulances or other means of transportation to move critically injured and persons requiring acute medical care to nearest functioning medical facilities. 	WDMC, Civil Surgeon Office, Local Hospitals and Clinics
<ul style="list-style-type: none"> Identify especially vulnerable groups and individuals (people with disability, children, aged people, women, etc.) and ensure that their needs are met. 	WDMC, Urban Community Volunteers, Civil



	Surgeon Office
<ul style="list-style-type: none"> Identify unmet needs of emergency health care with locally available medical facilities and ensure that external medical unit mobilizes appropriate emergency health services. 	WDMC, Urban Community Volunteers, Civil Surgeon Office
<ul style="list-style-type: none"> Identify and prepare optimum sites for installation of external medical units on arrival, to facilitate rapid start-up. 	WDMC, Urban Community Volunteers, Civil Surgeon Office
<ul style="list-style-type: none"> Gather and transmit information on the health impact of the disaster and on response activities to the City Corporation, City-level EOC and Civil Surgeon office. 	WDMC, Urban Community Volunteers

D. Fatality Management

Key assumptions:

A major earthquake would have devastating effects on the population and infrastructures that could damage or destroy thousands of structures and cause hundreds of deaths, imposing a massive requirement for handling the deceased.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> Designate temporary storage location(s) for deceased disaster victims. 	WDMC, Urban Community Volunteers
<ul style="list-style-type: none"> Identify body collection points and establish Family Assistance Center(s) to gather ante-mortem information and to provide a support system to the families and friends of the deceased. <p><i>An estimation of potential number of fatalities in ward no. 11 is given in Table-10 in Annex-B.</i></p>	WDMC, Urban Community Volunteers
<ul style="list-style-type: none"> Provide guidance and public messaging about the Family Assistance Center (s) and body collection points. 	WDMC, Urban Community Volunteers, Police, RAB, Media
<ul style="list-style-type: none"> Transport systematically the deceased disaster victims from temporary storage locations to the primary morgue site (s), where examination and evaluation will be conducted. 	WDMC, Urban Community Volunteers, Voluntary Organizations
<ul style="list-style-type: none"> Provide assistance to family members and volunteers/ voluntary organization to identify the deceased and facilitate their return to families for proper interment. 	WDMC, Urban Community Volunteers, Voluntary Organizations
<ul style="list-style-type: none"> Collect proper evidence to make sure the right kin of the deceased disaster victims as well as issue death certificate duly signed by Medical Officer and the Zonal Officer/ Councilor while releasing the deceased disaster victims to their kin. 	WDMC, Urban Community Volunteers, Civil Surgeon Office, City

	Corporation
<ul style="list-style-type: none"> Make arrangement for funeral of unidentified deceased disaster victims. 	WDMC, Urban Community Volunteers, Civil Surgeon Office, City Corporation
<ul style="list-style-type: none"> Develop a systematic database of the deceased disaster victims and provide to the City Corporation and Civil Surgeon Office. 	WDMC, Urban Community Volunteers

E. Stabilization and Restoration of Essential Infrastructure and Facilities

Key assumptions:

In the aftermath on an earthquake building will tilt, utility infrastructure will break causing obstructions, loss of pressure, leak, and the potential for ongoing harm, fires will break out because of electrical and natural gas infrastructure damage. Ongoing damage will occur if distribution systems are not shut down and repaired.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> Identify the vulnerable buildings or infrastructures threatening to impacted population and nearby communities that may be affected by cascading effects and secondary effects and take initiative to stabilize or eliminate immediately. 	WDMC, Urban Community Volunteers, City Corporation, PWD
<ul style="list-style-type: none"> Initiate safety assessments (usability and potential for secondary hazards) with help of experts on essential facilities such as fire stations, police stations, hospitals and clinics, government institutional buildings, markets, etc. that can be stabilize or restore to functional conditions quickly. 	WDMC, Urban Community Volunteers, City Corporation, PWD
<ul style="list-style-type: none"> Initiate safety assessments with the help of experts of other government and non-government institutional and communal buildings such as schools, colleges, community centers, etc. that can be stabilize or restore to functional conditions quickly and can be used for temporary shelters. 	WDMC, Urban Community Volunteers, City Corporation, PWD
<ul style="list-style-type: none"> Establish priorities for stabilizing and repairing essential infrastructures and facilities. 	WDMC, City Corporation, PWD
<ul style="list-style-type: none"> Identify the damages, breaks and leaks to utilities system such as water, wastewater, electricity, and natural gas and support to stabilize or repair to mitigate the harm from secondary effects. 	WDMC, Urban Community Volunteers, City Corporation, WASA, DPDC, Titas Gas
<ul style="list-style-type: none"> Coordinate with responsible agencies to provide reliable utilities (water, electricity, gas and sanitation services) to locations that are critical to the response operations such as hospitals, shelters, fire stations, WEOC, staging areas, police stations, etc. until regular service is restored. 	WDMC, Urban Community Volunteers, City Corporation, WASA, DPDC, Titas Gas

F: Temporary Shelters, Food and Nutrition and Water Supply and Sanitation

Key assumptions:

Following a major earthquake there will be a large number of the local population that will lose their homes. They will require shelters including blankets, clothing, food, water, and sanitation supplies. The demand for mass care services will be enormous; survivors will require a range of needs and priorities.

Response strategies:

Activities	Responsibility
<ul style="list-style-type: none"> Estimate number of displaced population who need temporary shelters. <i>The estimated number of families in Ward no. 11 requiring temporary shelters is given in Table-14 in Annex-B.</i> 	WDMC, Urban Community Volunteers
<ul style="list-style-type: none"> Identify potential open air sites appropriate for temporary shelters. <i>There is no bigger open space in Ward no. 11 that can be used for temporary shelters. The displaced populations of the ward need to be moved to nearest designated temporary shelters outside of the ward. The list of proposed temporary shelter including their capacities are given in Table-15 in Annex-B and shown in Map-6 in Annex-C.</i> 	WDMC, Urban Community Volunteers, City Corporation, DDM
<ul style="list-style-type: none"> Assess the condition of government and non-government institutional and communal buildings such as schools, colleges, community centers, etc. that can be used for temporary shelters. <i>The list of schools, colleges, community centers, etc. in Ward no. 11 that can be used for temporary shelter purposes and their capacities are given in Table-16 in Annex-B and shown in Map-6 in Annex-C.</i> 	WDMC, Urban Community Volunteers, City Corporation, PWD, DDM
<ul style="list-style-type: none"> Set-up and manage tented camps / community shelters and ensure the distribution of temporary shelter stock to the people of greatest need. 	WDMC, Urban Community Volunteers, DDM
<ul style="list-style-type: none"> Estimate and supply food and relief, and other essential household items need for cooking/ heating in the temporary shelters. <i>The requirements of food and nutrition for the displaced people of Ward no. 11 living in shelter camps in different locations are given in Table-17 in Annex-B.</i> 	WDMC, Urban Community Volunteers, City Corporation, DDM
<ul style="list-style-type: none"> Estimate and provide water and sanitation facilities needs in the temporary shelters. <i>The requirements of water and sanitation facilities for the displaced people of Ward no. 11 living in shelter camps in different locations are given in Table-18 in Annex-B.</i> 	WDMC, Urban Community Volunteers, City Corporation, DDM, WASA
<ul style="list-style-type: none"> Liaise with camp management team, to meet needs on an on-going basis. 	WDMC, Urban Community Volunteers, City Corporation,

SECTION 06: Limitations and Conclusion

6.1 Limitations of the Plan

The Plan should be considered in the context of the following limitations:

- The Plan cannot address all circumstances.
- The plan can be used in multi-hazard emergency situation. However, due to limited scope of the study, the damages and losses scenarios, and subsequent estimation of resources and capacities requires to carry out the response operation for other hazards could not be included here.
- The plan focuses on the immediate local initiative to save maximum number of lives in case of an emergency, with a goal of stabilizing the event within the first 72 hours. Long term recovery is beyond the scope of this plan.
- The plan can only be implemented effectively, if sufficient resources are allocated at the local level and trained urban community volunteers are engaged in response activities.

6.2 Conclusion

Overall the contingency plan has been prepared considering the possible earthquake scenario in Dhaka City which, if occurred, is supposed to claim widespread damages to buildings and physical infrastructures and big loss of human life. The main trust of the contingency plan is to enhance the capacities of ward-level stakeholders and decision makers in emergency response in Ward No. 11 so that they are better prepared and equipped to meet the immediate needs of the affected communities. It is believe that this contingency plan will help to carry out an effective response operation during a major earthquake scenario to save maximum number of lives if periodically updated and practiced through simulation exercise, and properly implemented with sufficient resources.

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ANNEX-A: List of Urban Community Volunteers

Ward no. 11 has a volunteer group of about 61 persons that has organized and trained by FSCD to provide immediate assistance to carry out light search and rescue operation and fast aid support to injured persons. The volunteers were trained and equipped with the support of CDMP. Detailed information of these urban community volunteers is given below:

Sl.	Name	Sex	Associate Fire Station	Contact no.
1	Md.Mmunue Rashid	Male	Mirpur Fire Station	01722959841
2	Md. Mashudur Rahman	Male	Mohammadpur Fire Station	01718126680
3	Robindra Chandra Mistry	Male	Mirpur Fire Station	01723307377
4	Md. Ibrahim Raju	Male	Mirpur Fire Station,	01826506895
5	Pijus Pandey	Male	Mohammadpur Fire Station	01718432136
6	Md. Sohanur Rahman	Male	Mirpur Fire Station	01937805633
7	Md. Sazedur Rahman	Male	Mirpur Fire Station	01737970852
8	Md. Fakruzzaman	Male	Mirpur Fire Station	01722805299
9	Md. Akhteruzzaman	Male	Mirpur Fire Station	01725403407
10	Md. Tariqul Islam	Male	Mirpur Fire Station	01710513827
11	Salauddin	Male	Mirpur Fire Station	01939559456
12	Md. Masud Rana Sawon	Male	Mirpur Fire Station	01671340445
13	Farid Uddin	Male	Mirpur Fire Station	01736256347
14	Md. Shah Alam	Male	Mirpur Fire Station	01680058954
15	Md. Saifuzzaman	Male	Mirpur Fire Station	01938290980
16	Asma	Female	Mirpur Fire Station	01927591393
17	Md. Sohag Sikder	Male	Mirpur Fire Station	01740649085
18	Md. Taj Uddin Ahmed	Male	Mirpur Fire Station	01677568174
19	Md. Shamim Reza	Male	Mirpur Fire Station	01722997735
20	Rubel Rana	Male	Mirpur Fire Station	01711961697
21	Md. Adil ja	Male	Mirpur Fire Station	01728961018
22	Kamal Hossain	Male	Mirpur Fire Station	01737104346
23	Md. Abdur Raman	Male	Mirpur Fire Station	01737104348
24	Md. Nur Islam	Male	Mirpur Fire Station	01723969138
25	Sohel Rana	Male	Mirpur Fire Station	01717905020
26	Moallem Hossain	Male	Mirpur Fire Station	01729527079
27	Md. Jahidul Islam	Male	Mirpur Fire Station	01726719330
28	Md. Malek Khan	Male	Mirpur Fire Station	01719971517
29	Md. Delower Hossain	Male	Mirpur Fire Station	01723228740
30	Md. Delwar Hossain	Male	Mirpur Fire Station	01712237023
31	Golam Mowla	Male	Mirpur Fire Station	01737104344
32	Md. Milon Sarker	Male	Mirpur Fire Station	01746734616
33	Md. Maidul Islam	Male	Mirpur Fire Station	01925582302
34	Md. Bipul Hossain	Male	Mirpur Fire Station	01748479520



Sl.	Name	Sex	Associate Fire Station	Contact no.
35	Md. Jamal Masud	Male	Mirpur Fire Station	01739972893
36	Md. Shamim Reza	Male	Mirpur Fire Station	01745075140
37	Miss. Lovely Aktar	Female	Mirpur Fire Station	01753975014
38	Md. Azharul Hossain	Male	Mirpur Fire Station	01917373184
39	S.M Abu Tolha Reezvi	Male	Mirpur Fire Station	01715849859
40	Tanmoy Ahmed	Male	Mirpur Fire Station	01675676167
41	Injamam Ul Huq	Male	Mirpur Fire Station	01675920494
42	Md. Miraz Ali	Male	Mirpur Fire Station	01735866968
43	Nisu	Female	Mirpur Fire Station	01939669751
44	Golam Mortoga	Male	Mirpur Fire Station	01913806120
45	Jebunnesa	Female	Narayangonj Fire Station	01199408092
46	Md. Shohidul Islam	Male	Narayangonj Fire Station	01840689504
47	Md. Azaaz Munshi	Male	Sadarghat Fire Station	01672203991
48	Maharunnassa Tuli	Female	Mohammadpur Fire Station	01727064704
49	Safrina Islam	Female	Mohammadpur Fire Station	01931195355
50	Sayedra Farzana Hossain Sharna	Female	Mohammadpur Fire Station	01937647629
51	SK. Habibur Rahman	Male	Mohammadpur Fire Station	01713091934
52	Kazi Zafor Sadek Babu	Male	Tejgaon Fire Station	01924484979
53	Aminur Rahman	Male	Lalbag Fire Station	01725312598
54	Md. Omar Faruq	Male	Siddique Bazar Fire Station	01552304257
55	Md. Salek Mia	Male	Khilgaon Fire Station	01717186190
56	Rakib Rocky	Male	Khilgaon Fire Station	01671359093
57	Kazi Bashirul Alam	Male	Mirpur Fire Station	01937250953
58	Hiran Mia	Male	Mymensingh Firer Station	01937913513
59	Md. Imran Al Rashid	Male	Mirpur Fire Station	01714111067
60	Md. Maruf Billah	Male	Kurmitola Fire Station	01675466710
61	Mahmuda Khatun	Female	Mirpur Fire Station	01929001778

ANNEX-B: Resources and Capacities

Table-2: List of available open spaces within ward no. 11 to be used for immediate evacuation

Name of the open space	Location of the open spaces	Area of the open space (m ²)	Population holding capacity (@1m ² / person for immediate evacuation)	Total population from extensive and complete damage building in the ward	Surplus (can be used by population from other wards for immediate evacuation)
Moddhya Paikpara Field	Ward no. 11	1,971	1,971	16,808	21,121
Paikpara Govt. Colony (D-Type) Field	Ward no. 11	4,978	4,978		
Moddhya Paikpara Field	Ward no. 11	3,306	3,306		
Tolarbagh Playground	Ward no. 11	9,227	9,227		
Govt. Bangla College	Ward no. 11	18,447	18,447		
Total		37,929	37,929		

Note: The open spaces available in Dhaka City include smaller areas ranging in hundreds square meters to the bigger areas ranging in thousands of square meters. The smaller areas are appropriate only for immediate evacuation (assembly immediately after an earthquake) whereas only bigger ones (larger than 25,000 square meters which can accommodate approximately 500 families) are considered as appropriate for temporary shelter purpose. Open spaces/ playgrounds available within the educational institutions and other institutional areas are very small in size and are not included in the list.

Table-3: List of available open spaces in surrounding wards to be used for immediate evacuation

Name of the open space	Location of the open spaces	Area (m ²)	Population holding capacity (@1m ² / person for immediate evacuation)
Playground	Ward no. 12	1,285	1,285
Mirpur Stadium	Ward no. 07	22,046	22,046
Mirpur Stadium	Ward no. 07	11,206	11,206
Playground	Ward no. 07	6,062	6,062
Playground	Ward no. 07	3,420	3,420
Playground	Ward no. 07	2,067	2,067
Playground	Ward no. 07	3,265	3,265
Playground	Ward no. 16	2,873	2,873
Playground	Ward no. 16	3,282	3,282
SOS Shishu Palli	Ward no. 41	2,738	2,738
Playground	Ward no. 43	935	935



Table-4: Identified evaluation routes to immediate evacuation spaces

Name of the road	Type of the road	Width (meter)	Connecting road
Dar-Ur-Salam Road	Bituminous	33	Mirpur Road, Mazar Road, Zoo Road
Gabtali Road	Bituminous	26	Mazar Road
Mirpur Road	Bituminous	30	Sayed Mahabub Morshed Sharani, Begum Rokeya Sharani, Gabtoli Road, Sahabuddin Road

Note: Only the roads with 6m and above wide are considered as the safe evacuation routs. Because, the other smaller roads inside the ward will have higher possibilities of blockage due to the roads damage itself or due to the debris from damaged buildings.

Table-5: Available capacity and resource of Mirpur FSCD Station

Vehicles/Tools	Purpose	Number
Water Tender	All	2
Tana Gari	All	2
Ambulance	All	1
Two wheeler	All	1
Hosepipe pipe	Fire	55
Succession Hosepipe	Fire	15
Succession range/key	Fire	6
Portable Generator	All	3
Smoke ejector	All	2
Breathing apparatus	All	10
Face mask	All	5
Lock cutter	Rescue	3
Brunch pipe	Fire	8
Foam making brunch pipe	Fire	2
Spreader	Rescue	1
Ram jack	Rescue	2
Air lifting bag	Rescue	6
Rotary rescue saw	Rescue	6
Rotary hammer drill	Rescue	3
Ladder	Rescue	3
Portable Pump	All	5
Foam trolley	Fire	1
Strainer	Fire	7
Fireman exe	All	4
Fireman suit	Fire	24
Hit protective suit	Fire	6
Gum boot	All	16
Helmet	All	26
Extinguisher	Fire	5
Search light	All	2



Table-6: Emergency tools required for Mirpur FSCD Station

SL	Essential Emergency Tools
1	Breathing air compressor
2	Gas detector
3	Thermal imaging camera
4	Hydro vision search camera

Table 7: Locations and Capacities of Fire Stations in Dhaka

Sl. No.	Name of Fire Station	Fire Fighting Capacity		Emergency Contact Number
		Total Number of Manpower	Total Number of Equipment	
1	FSCD Station, Notun Bazar	26	322	8827397, 01730002245
2	FSCD Station, Palashi	29	324	8628688, 01730002219
3	FSCD Station, Lalbagh	29	230	8619981, 01730002218
4	FSCD Station, Postagola	26	263	7440771, 01730002216
5	FSCD Station, Kurmitola	22	248	8713399, 01730002232
6	FSCD Station, Mirpur	39	485	9001055, 01730002229
7	FSCD Station, Khilgaon	36	265	7218329, 01730002225
8	FSCD Head Quarter, Fulbaria	266	626	9555555, 01713038182
9	FSCD Station, Tejgaon	38	514	8870314, 01730002226
10	FSCD Station, Mohammadpur	42	387	9112078, 01730002227
11	FSCD Station, Sadarghat	20	421	7119759, 01730002210
12	FSCD Station, Buriganga			7454055, 01730002214
13	FSCD Station, Demra			7500111, 01730002301
14	FSCD Station, Secretariat			9515555

Table-8: Possible approach routes for movement of heavy search and rescue equipment

Name of the road	Type of the road	Width (meter)	Connecting road
Dar-Ur-Salam Road	Bituminous	33	Mirpur Road, Mazar Road, Zoo Road
Gabtali Road	Bituminous	26	Mazar Road
Mirpur Road	Bituminous	30	Sayed Mahabub Morshed Sharani, Begum Rokeya Sharani, Gabtoli Road, Sahabuddin Road

Note: Only the roads with 6m and above wide are considered as possible approach routes for movement of heavy search and rescue equipment. Because, the other smaller roads inside the ward will have higher possibilities of blockage due to the roads damage itself or due to the debris from damaged buildings.



Table-9: Total debris generation and required truckloads

Total debris (thousand ton)	Average capacity per truck (ton)	Total required truckload
503	25	12,575

Table-10: Potential number of injured people in Ward no. 11

Severity level of injuries	Injury description	Potential number of injured people
Severity 1	Injuries requiring basic medical aid that could be administered by paraprofessionals. These types of injuries would require only bandages or observation. Injuries of less severity that could be self-treated are not estimated here.	1,911
Severity 2	Injuries requiring a greater degree of medical care and use of medical technology such as x-rays or surgery, but not expected to progress to a life threatening status.	330
Severity 3	Injuries that pose an immediate life threatening condition if not treated adequately and expeditiously.	83
Severity 4	Instantaneously killed or mortally injured	1,544

Table-11: Number of requiring hospital beds for injured people of Ward no. 11

Total people need to be hospitalized	Number of hospitals beds will be available	Number of remaining injured need to be provided by field hospitals
413	188	225

Note: The estimation for Dhaka City reveals that the total number of available beds on the first day of the scenario earthquake in different major hospitals in different locations is 24,242. However, this total will not actually be available for earthquake victims, because some of these will be pre-occupied by regular patients. Assuming that 50% will already be occupied by regular patients; actual available number of beds for earthquake victims is 12,121. Hence, a total of 14,521 beds still need to be provided by alternate means for example by field hospitals. The number of requiring hospital beds for injured people of ward no. 11 is calculated based on this assumption.

Table-12: List of major hospitals/clinics within and nearest the ward and their capacities

Sl. No.	Name of Hospital	Location	Capacity					Other Available Facilities	Name of the emergency contact person and contact number
			No. of Beds	Doctors	Nurses	Paramedics Staff	Other Staff		
1	Delta Hospital Limited	Section-1, Mirpur	216	250	120	0	550	Operation Theater (4), X-Ray, ICU & Pathological Lab	02-8017151-52
2	Dhaka Eye Hospital	Section-1, Mirpur	60	09	06	06	90	Operation Theater, X-Ray & Pathology Lab	01736042045
3	Bushra Clinic	Section-1, Mirpur	0	18	0	0	12	Operation Theater, X-Ray & Pathology Lab	01191903870
4	Bushra General Hospital	Block – F, Section-1, Mirpur	45	20	07	0	35	Operation Theater, X-Ray, MRI & Pathology Lab	01750217759, 01197148744
5	Selina General Hospital and Diagnostic	Mirpur	72	28	32	0	32	X-Ray, Blood Bank	
6	Bangladesh National Blind Association	Mirpur	60	7	6	7	13	X-Ray	
7	Kidney Foundation Hospital & Research Institute	Section-2, Mirpur	69	30	40	0	170	Operation Theater, X-Ray, ICU & Pathological Lab	02 – 8055827
8	OSB eye Hospital	Section-2 Mirpur	16	12	05	02	24	Operation Theater & Pathological Lab	01819-436775
9	Institute of child health & Solution Sasthya foundation hospital	Section-2, Mirpur	35	29	36	0	80	Operation Theater, X-Ray, Pathological Lab & Blood Bank	01772683056
10	Bapsha Model Reproductive health Clinic	Section-2, Mirpur	15	06	04	02	36	Operation Theater, MRI, ICU & Pathological Lab	01911-683970



Table 13: List of Major Hospitals and Their Capacities

Sl. No.	Name of Hospital	Location	Capacity						Name of the emergency contact person and contact number
			No. of Beds	Doctors	Nurses	Paramedics Staff	Other Staff	Other Available Facilities	
1	Dhaka Medical College	Shahbag	1741	400	638	86	724	XRAY,CT Scan,Blood Bank	02-9668690
2	Salimullah Medical College & Hospital	Old Dhaka	600	350	320	18	338	XRAY,CT Scan,Blood Bank	01774400058
3	Dhaka Sishu Hospital	Sher-e-Bangla Nagar	520	41	180	18	198	XRAY,Blood Bank	02-8114571-2
4	Z. H Sikder Women's Medical College & Hospital	Manika Estate, West Dhanmondi	500	134	65	0	65	XRAY,CT Scan,Blood Bank	02-8115951, 02-8113313
5	Shahabuddin Medical College Hospital	Gulshan	500	160	80	15	95	XRAY,CT Scan,Blood Bank	02-9863387, 9884501
6	B M S R I Medical College Hospital	Uttara	460	156	162	13	175	XRAY,CT Scan,Blood Bank	02-9118202, 9120792-3, 9124619, 8115843
7	Bangladesh medical College Hospital	Dhanmondi	350	76	300	110	410	XRAY,Blood Bank	
8	Salauddin Specialized Hospital	Tikatuli	300	68	80	12	92	XRAY,CT Scan	9591771, 9591772, 9591773,9591774
9	Gonoshastho Nagar Hospital	Dhanmondi	250	62	112	0	112	XRAY,CT Scan,Blood Bank	02-7708003, 7708336
10	Dhaka Community Medical College & Hospital	BaroMaghbazar	250	17	47	250	297	XRAY	02-9351190-1, 8314887
11	Appolo Hospital	Bashundhara	227	171	272	159	431	XRAY,CT Scan,Blood Bank	02-8401661
12	Samorita Hspital Ltd	Pantho Path	172	24	124	10	134	XRAY,CT Scan	02-9131901



13	Lab Aid Cardiac	Dhanmondi	153	30	2004	0	200	XRAY,CT Scan,Blood Bank	02-8835981, 8835982-4, 8858943
14	IBN Sina Hospital	Dhanmondi	150	50	165	0	165	XRAY,CT Scan	01824666536
15	National Institute of Mental Health	Sher-e-Bangla Nagar	150	32	37	6	43	XRAY,CT Scan	02-9118171
16	City Hospital Ltd	Lalmatia	150	23	60	15	75	XRAY,CT Scan,Blood Bank	02-8143312, 8143437, 8143166, 8143167, 9124436
17	Lab Aid specialized	Dhanmondi	130	23	207	5	212	XRAY,CT Scan,Blood Bank	02-8610793-8, 9670210-3, 8631177
18	National Institute of Kidney Diseases & Urology	Sher-e-Bangla Nagar	116	27	75	0	75	XRAY,Blood Bank	02-9134022
19	Northern International Medical College & Hospital	Dhanmondi	105	11	24	0	24	XRAY	02-8156914, 8156839, 9133505, 9111381; 01674058435
20	Japan Bangladesh Friendship Hospital	Dhanmondi	85	24	80	10	90	XRAY	02-9672277, 9676161, 9664028, 9664029 01711647877
21	Z. H. Sikder Women's Medical College	Gulshan-2	82	12	30	7	37	XRAY,Blood Bank	02-8115951, 02-8113313
22	Selina General Hospital and Diagnostic	Mirpur	72	28	32	0	32	XRAY,Blood Bank	
23	Comfort Nursing Home Pvt. Ltd.	Green Road	63	14	44	0	44	XRAY,CT Scan	8953797-8
24	Bangladesh National Blind Association	Mirpur	60	7	6	7	13	XRAY	
25	Peoples Hospital	Lalmatia	55	15	15	2	17	XRAY	
26	BDM Hospital and Diagnostic Center	Mohammadpur	51	161	38	0	38	XRAY	
27	Green Life	Green Road	50	23	51	0	51	XRAY	02-9612345-54, 9615412, 8628820-1
28	Panorama	Dhanmondi	50	8	15	3	18	XRAY	02-8613168, 9668961-3



29	Aichi Sishu Hospital	Uttara	50	29	65	0	65	XRAY	02-8916290, 02-8920156
30	Medi Aid Hospital Ltd	Kalabagan	50	23	30	1	31		8118456, 8117043, 9112076
31	Trauma Center & Orthopedics	Shaymoly	50	6	20	20	40	XRAY	8116969, 8130508, 9111038
32	Bangladesh Hospital Services Pvt Ltd	Dhanmondi	50	12	48	3	51	XRAY	



Table-14: Temporary shelter needs for displaced population of Ward No. 11

Population from extensive damage residential buildings	Population from complete damage residential buildings	Total displaced population requiring immediate evacuation (50% from extensive damage and 100% from complete damage buildings)	Total population requiring temporary shelters (50% of total displaced population)	Total families requiring shelter in camps (@4.8 as the household size)
5,381	14,117	16,808	8,404	1,751

Note: Generally, all the population from buildings with extensive to complete damage may not require temporary shelters provided by the government agencies. It is assumed that approximately 50% households (out of the total households those lost their houses) will take shelter at their relatives' and friends' houses, or may rent out spaces in undamaged buildings and remaining 50% households will require shelters.

The SPHERE standard for shelter provision is 45 square meter of surface area per person. However, realizing the scarcity of open spaces in Dhaka city, 45 square meters per family is used as the required minimum standard to calculate the space need for shelter. Using the average household size in Dhaka city is 4.8 persons (Statistical Pocket Book Bangladesh, 2008) the possible shelters requirement is calculated for the displaced population.

Table 15: List of proposed temporary shelters (open spaces) in Dhaka city and their capacities

Name of the Open Space	Area of Open Space (square meters)	Population Holding Capacity (@45m ² / family for temporary shelter)
Gandaria Graveyard	64,157	1,425
Old Christian Cemetery	59,836	1,330
Osmani Uddayan	81,509	1,810
Ramna Park & Sorwardi Uddan	677,244	15,050
Lalbagh Sahi Moshjid & Madrasa Math	60,265	1,340
Azimpur Old Graveyard	128,245	2,850
Abahani Play Ground	119,715	2,660
Sangshad Bhaban	809,639	17,995
Gulshan Tank Park	31,132	690
Banani Catholic Church	25,125	560
Institute of Science trade and Technology Field	145,079	3,225
Al Modina Jame Moshjid Math	32,601	725
Baitulla Mouza	44,054	980
Total	2,278,600	50,640

Table-16: List of institutional and communal buildings that can be used for temporary shelters

Name of the institution	No. of building	Total Floor Area (in sq. m)	No. of family holding capacity
Govt. Bangla College	7	5,615	126
Din K G School	1	699	15
Kallyanpur Laboratory High School	1	572	13
Kollyanpur Model Government Primary School	1	688	15
Kollyanpur Girl's School & College	3	1,556	34
Prime Pre-Cadet School	5	1,200	26
PWDB School	4	1,128	25
Shisu Kallyan Junior School	3	852	19
Total		12,310	273

Table-17: Requirement of food for displaced population of Ward no. 11 in temporary shelters

Population	Tentative daily quantity of most common food items in Metric Tons (based on gm./person/day)				Tentative Monthly Quantity of Most Common Food Items in Metric Tons			
	Wheat Flour (@100gm)	Rice (@250gm)	Lentils (@150m)	Vegetable Oil (@35gm)	Wheat Flour	Rice	Lentils	Vegetable Oil
8404	0.84	2.10	1.26	0.30	25.20	63.04	37.82	8.82

Note: As per the SPHERE Standard, the nutrition requirements is 2,100 kcal/person/day during emergencies out of which 10%-12% is to be provided by protein and 17% to be provided by fat. In Bangladesh, four types of food items such as wheat flour, rice, lentil and vegetable oil; are taken as the most common foods. These are also appropriate food for storage and distribution during earthquake disasters.

Table 18: Requirement of emergency water and toilet for Ward no. 11 in shelter camps

Population (@4.8 persons per family)	Water requirement in the shelter camp (m ³) (@15 lt. per capita per day)		Required number of Toilets (max 20 person per toilet)
	Daily	For 3 days	
8404	126.06	378.18	421

Note: As per SPHERE Standard, average at least 15 liters of water per person per day requires for drinking, cooking and personal hygiene and one toilet for each 20 people in an emergency shelter. Assuming this as a minimum requirement, the requirements of water and sanitation is calculated.

ANNEX-C: Contingency Plan Maps

Map-2: Location of immediate evacuation spaces and evacuation routes

Map-3: Location of specialized search and rescue agencies

Map-4: Location of major hospitals/ clinics in and around the ward

Map-5: Location of other major hospitals/ clinics in Dhaka City

Map-6: Location of open spaces that can be used for temporary shelter purposes

Map-7: Location of educational institutes and other communal buildings in the ward that can be used for temporary shelter purposes



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