



Rangpur City Corporation

Scenario-based Earthquake Contingency Plan of Rangpur City Corporation Area

November 2014



Scenario based Earthquake Contingency Plan of
Rangpur City Corporation Area

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Abbreviations

| | |
|---------|--|
| ADPC | Asian Disaster Preparedness Center |
| AIT | Asian Institute of Technology |
| BBS | Bangladesh Bureau of Statistics |
| BDRCS | Bangladesh Red Crescent Societies |
| BGB | Border Guard Bangladesh |
| BIWTC | Bangladesh Inland Water Transport Corporation |
| BP | Bangladesh Police |
| BPDB | Bangladesh Power Development Board |
| BR | Bangladesh Railway |
| BRTC | Bangladesh Road Transport Corporation |
| BTCL | Bangladesh Telecommunication Company Ltd. |
| CBOs | Community Based Organizations |
| CDMP | Comprehensive Disaster Management Programme |
| CSO | Civil Surgeon Office |
| CSOs | Civil Society Organizations |
| DC | Deputy/ District Commissioner |
| DDM | Department of Disaster Management |
| DoF | Department of Food |
| DPHE | Department of Public Health Engineering |
| DRRO | District Relief and Rehabilitation Office |
| DSW | Department of Social Welfare |
| EOC | Emergency Operation Center |
| EU | European Union |
| FSCD | Fire Service and Civil Defence |
| HAZUS | Hazard of United States |
| ICS | Incident Command System |
| INGOs | International Non-Government Organizations |
| INSARAG | International Search and Rescue Advisory Group |
| LGED | Local Government Engineering Department |

| | |
|-------|--|
| MoDMR | Ministry of Disaster Management And Relief |
| NGOs | Non-Government Organizations |
| NSET | National Society of Earthquake Technology |
| CCDMC | City Corporation Disaster Management Committee |
| PWD | Public Works Department |
| RAB | Rapid Action Battalion |
| RHD | Roads and Highway Department |
| SOP | Standard Operation Procedure |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| VDP | Village Defence Party |

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 strong earthquake affecting a major urban center in Bangladesh may result in widespread damage; high numbers of fatalities; destroying buildings, other physical infrastructure and facilities; and may have disastrous consequences for the entire nation. In the aftermath of a catastrophic earthquake and subsequent aftershocks there will be a massive requirement of response efforts. The conventional response efforts and available capabilities will be quickly overwhelmed. For an effective response to a severely damaged area, immediate life-saving and life-sustaining measures entailing unique solutions will be required. In these circumstances, a city-level Contingency Plan is needed to ensure better response towards earthquake hazard. Contingency Planning is a management tool used to analyze the impact of potential crises so that adequate and appropriate arrangements are made in advance to respond in a timely, effective and appropriate way to the need of affected populations.

Realizing this, Comprehensive Disaster Management Programme (CDMP) under the Ministry of Disaster Management and Relief of the People's Republic of Bangladesh has taken initiative to reduce the ever increasing earthquake risk in the country and minimize the damages and loss of lives through proper preparedness and mitigation measures. Under CDMP Phase-I (2006-2010), earthquake risk assessment was carried out in three major cities- Dhaka, Chittagong and Sylhet. The corresponding preparedness activities mainly the scenario based earthquake Contingency Plans were also prepared (National, City-level for Dhaka, Chittagong and Sylhet, and Nine Agency-level) with the aim to create an efficient and effective collaborative approach to emergency response and management with the participation of all level stakeholders. After the successful completion of the first phase, CDMP has initiated its phase-II (CDMP-II) for carrying out similar earthquake risk and damage assessment and subsequent development of scenario based Contingency Plan for Rangpur, Dinajpur, Mymensingh, Tangail, Bogra and Rajshahi Municipalities/ City Corporations areas as well as to develop scenario based ward-level spatial Contingency Plan for Dhaka, Chittagong and Sylhet City Corporation areas. The programme is supported 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 (NSET), Nepal; 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 Contingency Plans for these Municipalities/ City Corporations areas.

1.2 Need of Earthquake Contingency Plan for Rangpur City

Rangpur City is the divisional headquarter of newly formed Rangpur Division and located in North-western part of Bangladesh (**Map-1**). Rangpur Municipality was established in 1869 with an area of 50.66 sq. km. In 2012, the municipality has been upgraded to City Corporation covering an area of

approximately 203.19 sq. km and divided into 33 wards. The old municipality area has an estimated present population of 294,265 and growing at a rate of 1.24 percent (BBS, 2011).

Since becoming a District Headquarters, the city has established itself as a significant market town. It has already turned into a trade center feeding the locality as well as Dhaka City. Because of good communication network with Dhaka after constructions of the Jamuna Multipurpose Bridge, Rangpur serves as a collection and distribution of daily necessities of in and around the area. Commercial and business activities are rapidly growing in this town because of additional improvement of various sectors. A considerable number of important institutions are situated in and around Rangpur City. These are Begum Rokeya University, Carmichael University College, Rangpur Medical College, Rangpur Cadet College and numbers of private Colleges and other govt. & non-govt. institutions etc. In addition, some medium and small size industries (textile, garments) have been established and the large industries have also been established within and around the town area. It is also famous for its socio-economic and cultural heritage. The renowned visiting places are Rangpur Zoo, Tajhat rajbari, Dimlaraj Kali Mondir, Parjatan Motel, Karamotia Mosque, Mahiganj Shah Jalal Mazar, Mahiganj Paresnath Mondir and Rangpur Museum etc.

In the generalized tectonic map of Bangladesh, Rangpur City is located in the medium risk zone thus vulnerable to earthquake. There are many evidences big damages in the city during the Great Indian Earthquake of 8.4 Mw in 1897. The earthquake risk of the city is growing with every passing moment because of the unabated growth of human settlement and establishment of many administrative and economic activities, educational institutions. The rapid increase in vulnerability of the city is evident from rapid urbanization, population growth; population migration and establishment of divisional headquarter as well as City Corporation. Major causes behind such ever increasing earthquake risk are the haphazard urbanization and sub-standard construction of buildings, residential houses and other infrastructures without any consideration of underlying earthquake risk. The geotechnical and geophysical investigation under CDMP- II shows that almost 90% of the soil in Rangpur City Corporation area is dense/ stiff soil and rest 10% is loose/ soft soil which has high to very high liquefaction susceptibility. The foundations and supports of structures built on this highly liquefiable sediment can fail, causing damage or destruction during major earthquakes in city. In these circumstances, a Contingency Plan is needed for ensuring better response towards earthquake hazard.

1.3 Purpose

The Rangpur City Corporation Earthquake Contingency Plan establishes a coordinated strategy to ensure that adequate decisions and preparations are made for an anticipated earthquake. The purpose of the plan is to increase the efficiency and effectiveness of disaster response management in Rangpur City through the clarification of goals, operational frameworks, coordination mechanisms, procedures, roles, responsibilities, and actions. It also aims to ensure the participation of all city-level stakeholders and maximum utilization of available resources, optimization of efforts by first responder agencies in order to save lives; provide humanitarian assistances; and restore the lifeline facilities to bring normalcy within fastest possible time.

While developed before an earthquake, the plan focuses on immediate emergency response activities typically taking place within the first 72 to 96 hours following a damaging earthquake.

The Plan describes the “who, what, where, when, and how” of a holistic response framework activated at the city-level. It also provides a structure for coordination and optimum utilization of national resources.

1.4 Goals and Objectives

The ultimate goal of this earthquake Contingency Plan is to minimize the adverse effects (e.g. loss of lives, damage of property, and the disruption of critical facilities and services) of potential earthquakes in the country or in the Rangpur City by establishing and implementing a holistic response framework.

The following objectives were set to achieve this goal:

Objective 1: Strengthen the ability of city-level first responder agencies involved in disaster management to effectively and efficiently prepare, respond, and recover from disasters by clarifying roles and responsibilities, developing an organizational structure, and building capacity.

Objective 2: Establish effective vertical and horizontal coordination mechanisms that are functional both before and after a disaster.

Objective 3: Strengthen the city-level response framework including integral components such as the Emergency Operations Center, the cluster system, and urban community volunteers.

Objective 4: Use scenarios and spatial analysis during the Contingency Planning process to identify probable risk, forecast future need, and anticipate gaps in capacity.

Objective 5: Promote a culture of community readiness and preparedness through city-level plan advocacy and institutionalization.

Objective 6: Establish and maintain a fully operational Contingency Planning process including plan development, implementation, monitoring and evaluation, and maintenance.

1.5 Intended Users of the Plan

The primary users of this Contingency Plan will be the city-level agencies, departments and organizations these are responsible for saving human-lives, providing humanitarian assistance, and restoring the lifeline facilities and utility system, protecting properties and preserving the environment. These agencies can be grouped into First Responder, Second Responder, and Other Support agencies.

'First Responder' refers to those agencies and individuals who are responsible to save life, protect property and preserve environment in the early stages of an incident, including emergency service providers i.e. response management, search and rescue, fire safety, public health, clinical care, shelters, relief and supplies, and other skilled support personnel (such as equipment operators) that provide immediate support services during emergency operations. For this Contingency Plan, following agencies are identified as first responder agencies in Rangpur City:

- Rangpur City Corporation
- Fire Service & Civil Defence (including urban community volunteers), Rangpur
- Bangladesh Army, Rangpur Cantonment
- Civil Surgeon Office, Rangpur and Rangpur Medical College Hospital
- Department of Disaster Management (at DC Office), Rangpur

'Second Responder' consists of utility and life line agencies/ departments (water supply, electricity, gas supply, telecommunications, waste disposal etc.), transportation systems agencies (road, rail and air), and security, law and order function agencies. These include,

- Water Supply and Sewerage Authority (Rangpur City Corporation)
- Bangladesh Power Development Board, Rangpur
- Bangladesh Telecommunication Company Ltd., Rangpur
- Roads and Highway Department, Rangpur
- Bangladesh Police, Rangpur
- Ansar and VDP, Rangpur

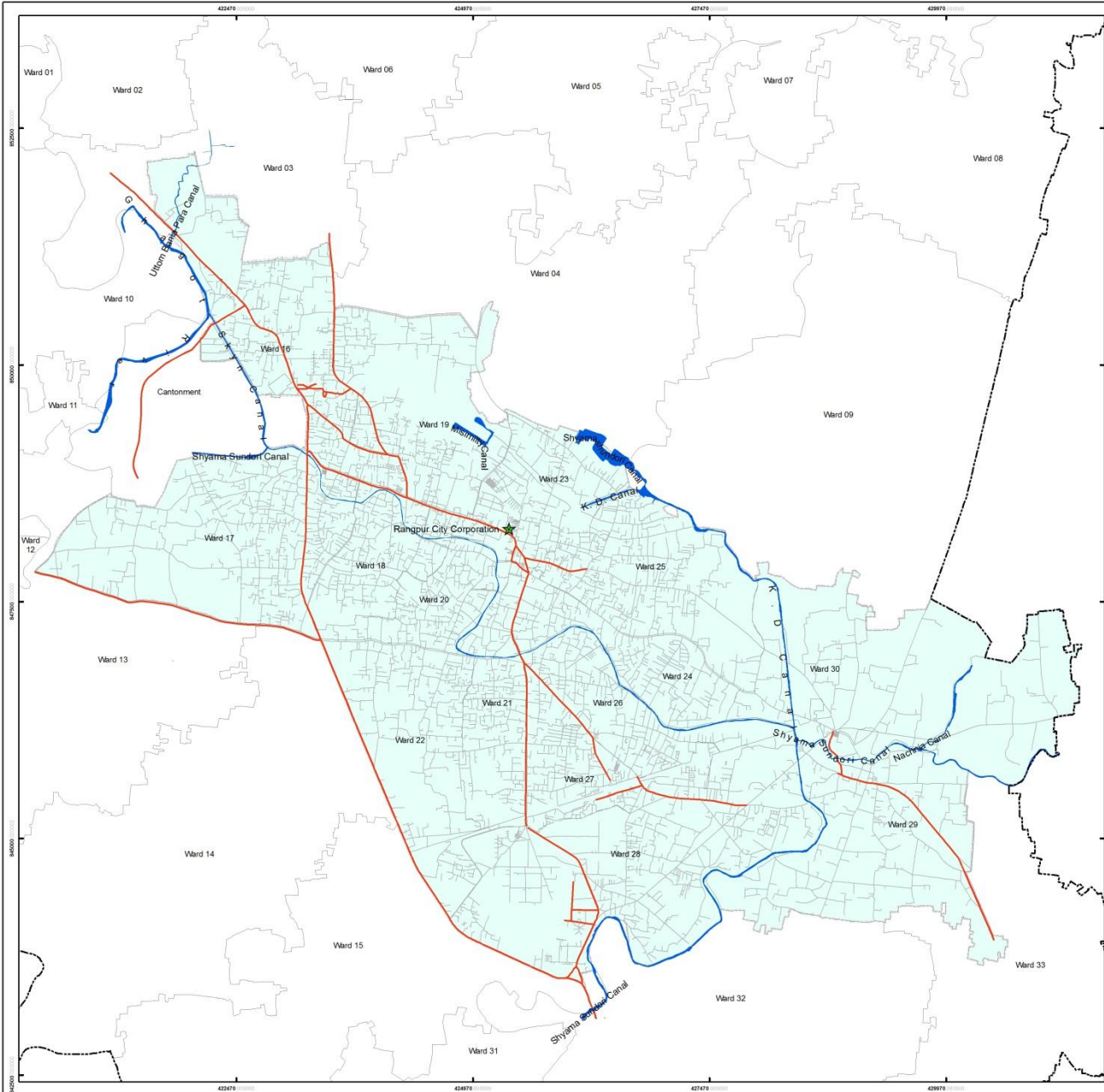
Other agencies such as Govt. Agencies and Departments, Public Works Departments, NGOs and INGOs working in the area, Electronic and Print Media, Community Based Organizations (CBOs), Civil Society Organizations (CSOs), Academia, Development Partners, Private sectors, etc. will provide support for plan implementation.


The ultimate beneficiaries of this plan would be the communities at risk in Rangpur City Corporation area.

1.6 Plan Limitations

The earthquake Contingency Plan has following limitations:

- The Rangpur City Corporation Earthquake Contingency Plan will not, and cannot, address all circumstances.
- The plan assumes that the involved agencies will have adequate authority and capacity to deal with assigned tasks as granted through appropriate policies and legal instruments.
- Agencies involved in Contingency Plan implementation process may need additional resources in terms of qualified manpower, technical as well as financial resources to undertake assigned tasks.
- The contingency management process in this plan is linked to a specified time lag to become fully functional as an integrated system.
- Capable and committed staff with appropriate financial resources, facilities, equipment and supplies is required to implement an effective, long-term program based on the Action Plan.





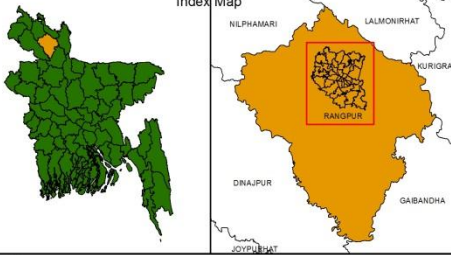
Spatial Contingency Plan for Rangpur City Corporation
Comprehensive Disaster Management Programme (CDMP-II)

Rangpur City Corporation Area

Legend

- City Corporation Boundary
- Old Pourashava Boundary
- Ward Boundary
- River / Canal
- Major Road
- Urban Road
- ★ Rangpur City Corporation


Index Map

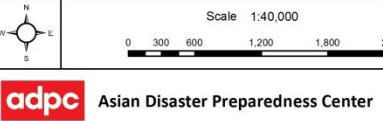


Map History

This map was prepared under CDMP 2 Project of Ministry of Disaster Management and Relief on the basis of 50cm resolution world View2 image (Image Acquisition date: Nov 7, 2011) and verified through physical feature survey conducted during June - December 2012 directly in digital format with BTM projection with the help of RTK-GPS and Total Station. For physical feature survey SOB BM (SOB-GPS-1833) was used as reference for vertical adjustment.

Scale 1:40,000





Map 1 Rangpur City Corporation Area

Section 02: Plan Development, Implementation and Maintenance

2.1 Legal Provisions, Authority and Planning Responsibility

The Disaster Management Act 2012 grants the Government of Bangladesh the authority to formulate the National Disaster Management Policy to elaborate the provisions of the Act. Within the National Disaster Management Policy, the Ministry of Disaster Management and Relief (MoDMR) is granted the overall responsibility for coordinating disaster management efforts across all agencies. One of the priority activities listed in the National Disaster Management Policy to establishing a Contingency Planning framework. With this authority, the MoDMR with the involvement of city-level stakeholders through CDMP has developed this Earthquake Contingency Plan for Rangpur City Corporation Municipality.

2.2 Plan Context

The Earthquake Contingency Plan for Rangpur City Corporation is developed under the Comprehensive Disaster Management Programme, Phase II, in 2014. The plan is developed to complement the existing national disaster management policies, plans including the National Disaster Management Policy; the Disaster Management Act 2012; the National Plan for Disaster Management 2010-2015; the Standing Orders on Disaster 2010; and National Earthquake Contingency Plan 2009 (revised in 2012). The National Earthquake Contingency Plan provides the broader framework to address the response activities during an earthquake emergency in the country, while the Earthquake Contingency Plan for Rangpur City Corporation Municipality aims to minimize the adverse effects of potential earthquakes by establishing and implementing a holistic response framework at town level.

2.3 Planning Assumptions

This Contingency Plan for Rangpur City Corporation Municipality has been developed with following assumptions in the background:

- Earthquakes are impact type events and provide no warning preventing any pre-event response activities.
- Earthquakes within the town will cause large numbers of deaths and injuries and extensive damage and destruction of buildings, emergency facilities and infrastructures.
- There is likelihood of secondary effects following an earthquake or aftershocks which may include fire, flood, liquefactions, subsidence, damming of rivers, and dam failure, release of hazardous and toxic chemicals, etc.
- Strong aftershocks will continue for several days resulting in further damages and losses
- Large numbers of displaced people will be in need of shelter, welfare, relief assistance, medical care, etc.
- Access to affected areas will be severely restricted due to debris, road damage, bridges and culverts collapse, etc.

- Many national and international response and humanitarian organizations other than the government institutions will also be involved during response and recovery to earthquake disaster.

2.4 Planning Process

The Earthquake Contingency Plan for Rangpur City Corporation is developed under CDMP-II through a collaborative effort among city-level disaster management and first responder agencies as well as other relevant agencies, departments and organizations. Several formal and informal meetings were held during which key stakeholders were identified and invited to participate in the Contingency Planning Process. Plan contributors include:

- Rangpur City Corporation
- Department of Disaster Management (at DC Office), Rangpur
- Fire Service and Civil Defence, Rangpur
- Bangladesh Army, Rangpur Cantonment, Rangpur
- Civil Surgeon Office, Rangpur
- Bangladesh Power Development Board, Rangpur
- Bangladesh Telecommunication Company Ltd., Rangpur
- Bangladesh Police, Rangpur
- Bangladesh Ansar and VDP, Rangpur
- Public Works Department, Rangpur

Early in the planning process an Orientation Meeting was organized under the leadership of the City Corporation that plays key roles in earthquake disaster risk management. During the orientation meeting, a Working Group comprising technical experts and representatives from city-level main stakeholder agencies was formed to lead the Contingency Plan preparation process as well as plan updates and regular monitoring of its implementation.

In March 2014, the City Corporation organized a Training Workshop on Preparation of Contingency Plan with regard to Earthquake for Rangpur City Corporation in participation of the Working Group members. On the first day of the training workshop, the group was trained about the step-by-step earthquake Contingency Plan preparation process, and on the second day, the group participated in a day-long workshop and drafted the Contingency Plan for Rangpur City Corporation. The results of the earthquake risk assessment and potential losses and damages for Rangpur City Corporation area conducted under CDMP-II and the city-level Contingency Planning template developed under CDMP-I in 2009 and revised under CDMP-II in 2012 were supplied to the group in the workshop.

A validation/sensitization workshop was organized under the leadership of the City Corporation in participation of all city-level stakeholders to ensure that the plans addressed all emergency activities and issues concerns as well as to sensitize stakeholders about the Contingency Plan activities and facilitate their wider involvement and participation in emergency response. Then the draft plan was revised and finalized by incorporating the feedbacks from sensitization workshop.

2.5 Implementation Strategy

Responsibility

The Rangpur City Corporation shall undertake the leadership responsibility for implementation of the Earthquake Contingency Plan. The City Corporation Disaster Management Committee and City Corporation Disaster Response Coordination Group will be the operational arm of the City Corporation tasked with coordinating operations for achieving the Plan's goal and objectives. The City-level Emergency Operation Center (EOC), first responder agencies, and clusters (as described in **Section 4**) will also play key roles in plan implementation.

Timeframe

Different portions of the Plan are meant to be implemented at different phases of the disaster management cycle:

Preparation Phase (before a disaster strikes): The Plan was developed during "blue skies" so that there was ample time to make sound decisions without the chaos of an emergency situation. Regular updates should take place cyclically according to the Periodic Review and Update Process as described in **Section 2.6**. Additionally, the action strategies included in **Section 5** and the actions to support the plan implementation as described in **Section 7** should be implemented before a disaster.

Immediate Response Phase (typically the initial 72 to 96 hours after a major earthquake event): The Plan will be activated when there is an earthquake emergency. At this time the Operational Framework will be activated and the City-level EOC will assume its Response Phase roles as described in **Section 4**. First responder agencies and cluster leads will be responsible for implementing the action strategies described in **Section 5**. Once the immediate response has stabilized and focus has shifted from the operational priorities as described in **Section 6**, the City Corporation will deactivate the plan.

Later Response and Recovery Phases (after 72 hour of a major earthquake event): Although the Plan is no longer activated, it should be updated after a major earthquake event. Monitoring and evaluation of the plan may also continue into the Recovery Phase. Additionally, some city level advocacy and plan institutionalization should be implemented at this time.

2.6 Monitoring and Evaluation

Regular monitoring and evaluation enables changes in direction, refinement of approaches and elimination of unproductive activities. Monitoring and evaluation of the plan as a whole should be done annually under the leadership of the City Corporation and following any earthquake events during which the plan is activated. Benchmarks and/or evaluation criteria developed during "blue skies" and then revised shortly after a declaration of a state of disaster would be useful tools for monitoring the progress and success of response activities.

2.7 Periodic Review, Update and Management

The Contingency Plan may need not to be activated, unless the anticipated situation does arise. However, the plan may become outdated due to social, economic, organizational and other changes. Contingency Plan is a living document and should be updated on a regular basis to ensure that the

information is current. During rapidly changing situations, plans will need to be updated more frequently; whereas under normal circumstances, less frequent updating will be sufficient. Keeping the Contingency Plan current and relevant is a challenging task, but can be achieved by scheduling regular reviews.

- The plan should be reviewed and revised, as necessary, on an annual basis to ensure that the information is current.
- Every 5 years the plan should receive a major revision based on earthquake risk assessment in which the risk scenarios, spatial analysis, and maps are revised to reflect the current local situation.
- Plan should receive a major update after an earthquake event during which the plan was activated.
- The City Corporation should initiate the revision/ modification process and will engage City Corporation Disaster Management Committee and other agencies/departments with relevant responsibilities.
- Each revision of the plan should be authorized by the City Corporation and any change or revision to this plan should be shared with relevant responsible agencies/ departments.

Section 03: Earthquake Scenarios and Planning Assumption

3.1 Earthquake Threat in Bangladesh

Geographically 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 Madhupur fault, the plate boundary fault (the northern extension of subduction fault) and the Dauki Fault, are also inferred in Bangladesh. These faults may generate large earthquakes over Ms 8. However, the nature, detailed location, and the faulting history on these faults are not well known yet (Morino, 2009). In the past, there were several earthquakes that caused severe damages to life and properties in this region. Some of the major earthquakes around the region includes the 1548 earthquake, the 1664 earthquake, the 1762 earthquake, the 1869 Cachem earthquake (Ms 7.5), the 1885 Bengal earthquake (Ms 7.0), the 1897 Great Indian earthquake (Ms 8.4), and the 1918 Srimangal earthquake (Ms 7.6) (Banglapedia; Oldham, 1883; Ambraseys, 2004; Bilham and Hough, 2006; etc.). Although, Bangladesh did not experience with any major earthquake since more than 100 years but the geological settings and the historical evidences of earthquake may mean that Bangladesh has a high risk of major earthquake occurrence in near future (CDMP, 2009).

3.2 Earthquake Risk Assessment and Developing the Scenarios

Under CDMP-II, probabilistic earthquake risk assessment was carried out for Rangpur City Corporation area (old Municipality area) using HAZUS model for analyzing potential damages and losses from different earthquake scenarios. HAZUS is a regional loss estimation model that was developed by the United States' Federal Emergency Management Agency (FEMA) and National Institute of Building Sciences (NIBS).

Considering the likely earthquake threat in Bangladesh, following three different scenarios (**Table-3.1**) have been developed based on different return periods(both short and longer) to identify the possible damage to buildings, infrastructures, utility services and facilities and casualties in Rangpur City Corporation area under CDMP-II.

Table 3.1: Selected earthquake scenarios

| Scenario | Description |
|------------|---|
| Scenario-1 | An earthquake of 43 years return period originated from Dauki Fault with 7.9 Ms |
| Scenario-2 | An earthquake of 475 years return period originated from Dauki Fault with 7.9 Ms |
| Scenario-3 | An earthquake of 2475 years return period originated from Dauki Fault with 7.9 Ms |

3.3 Impact of Probable Earthquakes and Loss Estimation

Building Damage

Table 3.2: Expected damage to buildings in Rangpur City Corporation due to three scenarios

| Scenarios | Total Number of Buildings | Number of Building Damage | | |
|------------|---------------------------|---------------------------|-----------|----------|
| | | Moderate | Extensive | Complete |
| Scenario-1 | 76,427 | 2,909 | 326 | 38 |
| Scenario-2 | 76,427 | 16,985 | 3,895 | 345 |
| Scenario-3 | 76,427 | 27,594 | 12,180 | 1,601 |

It is estimated that about 38 buildings of Rangpur City Corporation area will completely be damaged due to an earthquake of 43 years return period originated from Dauki Fault. During the event, about 326 buildings will likely be extensively damaged and 2,090 (3.80%) moderately damaged. About 345 buildings will likely be completely damaged due to an earthquake of 475 year return period originated from same fault. An earthquake of 2475 years return period originating from Dauki Fault will likely completely damage about 1,601 buildings which is more than 2% of the total building stock in the City Corporation. The possible concrete and masonry building damage due to scenario-2 earthquake are shown in **Map B-1&Map B-2** in the **Annex-B**.

Casualties and Injuries

The estimates of the number of people that will likely be injured and killed by the earthquake are broken down into four severity levels that describe the extent of the injuries. The levels are described as follows:

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated
- Severity Level 4: Victims are killed by the earthquake

The casualty estimates are provided for two times of day: 2:00 AM (night-time) and 2:00 PM (day-time). These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum and the 2:00 PM estimate considers that the educational, commercial, and industrial sector loads are maximum.

Table 3.3: Expected casualties and injuries in Rangpur City Corporation area due to three scenarios

| Scenarios | Time | Level of Injuries | | | |
|------------|---------|-------------------|---------|---------|---------|
| | | Level-1 | Level-2 | Level-3 | Level-4 |
| Scenario-1 | 2:00 AM | 164 | 15 | 1 | 17 |
| | 2:00 PM | 185 | 19 | 1 | 21 |
| Scenario-2 | 2:00 AM | 965 | 112 | 11 | 263 |
| | 2:00 PM | 1,101 | 138 | 19 | 282 |
| Scenario-3 | 2:00 AM | 2,639 | 343 | 52 | 1,362 |
| | 2:00 PM | 3,067 | 437 | 74 | 1,468 |

During scenario-1 earthquake at night-time, about 17 people will likely be killed immediately in Rangpur City Corporation area. About 1 people will likely be required to hospitalize and can become life threatening if not promptly treated, and about 15 people will likely be required to hospitalize but are not considered life-threatening. Another 164 people will likely be required medical attention such as first aid or some kind of treatment. Similarly about 263 people will likely be killed, 1 people will likely be needed to hospitalized on a critical condition, 112 people will likely be needed to hospitalize on moderate injuries, and about 965 people will likely be required medical attention if the scenario-2 earthquake occurred during night-time. Scenario-3 at night-time will likely to kill 1,362, about 52 people will likely be needed to hospitalize on a critical condition, about 343 people will likely be required to take admission in hospital with moderate injuries, and about 2,639 people will likely be required primary medical attention.

Essential Facilities Damage

During the scenario earthquakes, essential facilities such as major hospitals and clinics, educational institutions, fire service stations, police stations, and other government and communal structures located within the City Corporation will likely be damaged ranging from at least slight to complete. The expected damage to the buildings of essential facilities due to three scenario earthquakes is given in **Table 3.4**.

Table 3.4 Expected damage to building of essential facilities due to three scenario earthquakes

| Scenarios | Essential Facilities | Total Structure | At Least Moderate Damage | Complete Damage | With 50% functionality on day1 |
|-------------------|----------------------|-----------------|--------------------------|-----------------|--------------------------------|
| Scenario-1 | School | 315 | 1 | 0 | 261 |
| | Hospital | 169 | 3 | 0 | 148 |
| | Fire Station | 1 | 0 | 0 | 0 |
| | Police Station | 32 | 0 | 0 | 29 |
| Scenario-2 | School | 315 | 164 | 0 | 22 |
| | Hospital | 169 | 104 | 0 | 2 |
| | Fire Station | 1 | 1 | 0 | 0 |
| | Police Station | 32 | 11 | 0 | 0 |
| Scenario-3 | School | 315 | 291 | 1 | 0 |
| | Hospital | 169 | 165 | 3 | 0 |
| | Fire Station | 1 | 1 | 0 | 0 |
| | Police Station | 32 | 32 | 0 | 0 |

The estimation shows that in Rangpur City Corporation area, about 1 educational and 3 hospital/clinic buildings will likely be moderate damaged and about 261 educational and 148 hospital/clinic buildings will likely be damaged with more than 50% functionality on day-1 in the aftermath of scenario-1 earthquake. Due to scenario-2, about 164 educational, 104 hospital/clinic, 1 fire station and 11 police station buildings will like be moderate damaged. Similarly, about 291 educational, 165 hospital/clinic, 1 fire station and 32 police station buildings will likely be moderate damaged due to scenario-3 earthquake in the City Corporation area. None of the buildings of essential facilities will likely be damaged with at least 50% functional on day1 due to Scenario-3. The probability of functionality of education, health and other critical facilities at day-1 due to scenario-2 earthquake are shown in **Map B-3, Map B-4 & Map B-5** in the **Annex-B**.

Transportation and Utility System Damage

Transportation system and utility facilities such as highway, railway, bus terminal, ferry terminal, electrical power, communication, etc. located within Rangpur City Corporation will likely be damaged ranging from at least slight to complete due to all three scenario earthquake. The expected damage to transportation system and utility facilities within the City Corporation due to three scenario earthquakes is given in **Table 3.5**. The probability of functionality of road network and transportation facilities at day-1 due to scenario-2 earthquake is shown in **Map B-6 & Map B-7** in the **Annex-B**.

Table 3.5 Expected damage to transportation and utility system due to three scenario earthquakes

| Scenarios | System | Component | Total | Moderate Damage | Complete Damage | At least 50% Functional | |
|---------------|------------------|------------|-------|-----------------|-----------------|-------------------------|-------|
| | | | | | | Day 1 | Day 7 |
| Scenario-1 | Highway | Segments | 5,139 | 0 | 0 | 5,109 | 5,109 |
| | | Bridges | 42 | 0 | 0 | 42 | 42 |
| | Railway | Segments | 24 | 0 | 0 | 24 | 24 |
| | | Facilities | 5 | 0 | 0 | 5 | 5 |
| | Bus Terminal | Facilities | 28 | 0 | 0 | 28 | 28 |
| | Ferry Terminal | Facilities | 0 | 0 | 0 | 0 | 0 |
| | Potable Water | | 12 | 0 | 0 | 6 | 6 |
| | Electrical Power | | 299 | 0 | 0 | 0 | 0 |
| Communication | | 108 | 9 | 0 | 108 | 108 | |
| Scenario-2 | Highway | Segments | 5,139 | 0 | 0 | 5,109 | 5,109 |
| | | Bridges | 42 | 0 | 0 | 42 | 42 |
| | Railway | Segments | 24 | 0 | 0 | 24 | 24 |
| | | Facilities | 5 | 1 | 0 | 5 | 5 |
| | Bus Terminal | Facilities | 28 | 6 | 0 | 27 | 28 |
| | Ferry Terminal | Facilities | 0 | 0 | 0 | 0 | 0 |
| | Potable Water | | 12 | 3 | 0 | 3 | 6 |
| | Electrical Power | | 299 | 0 | 0 | 0 | 0 |
| Communication | | 108 | 93 | 0 | 64 | 108 | |
| Scenario-3 | Highway | Segments | 5,139 | 0 | 0 | 5,109 | 5,109 |
| | | Bridges | 42 | 7 | 0 | 35 | 42 |
| | Railway | Segments | 24 | 0 | 0 | 24 | 24 |
| | | Facilities | 5 | 5 | 0 | 0 | 5 |
| | Bus Terminal | Facilities | 28 | 25 | 0 | 15 | 28 |
| | Ferry Terminal | Facilities | 0 | 0 | 0 | 0 | 0 |
| | Potable Water | | 12 | 6 | 0 | 0 | 5 |
| | Electrical Power | | 299 | 0 | 0 | 0 | 0 |
| Communication | | 108 | 104 | 9 | 13 | 91 | |

The expected damage to utility pipelines within the City Corporation due to three scenario earthquakes is given in **Table-3.6**. The assessment shows that there will likely to occur 8 leaks and 20 breaks to water supply pipelines due to scenario-1 earthquake. In case of scenario-2 earthquake, there will likely to occur 40 leaks and 87 breaks. Similarly, there will likely to occur 79 leaks and 130 breaks to water supply pipelines due to scenario-3 earthquake.

Table 3.6 Expected damage to utility pipelines due to three scenario earthquakes

| System | Scenario 1 | | | Scenario 2 | | | Scenario 3 | | |
|---------------|----------------------------|--------------|---------------|----------------------------|--------------|---------------|----------------------------|--------------|---------------|
| | Total Pipeline Length (km) | No. of Leaks | No. of Breaks | Total Pipeline Length (km) | No. of Leaks | No. of Breaks | Total Pipeline Length (km) | No. of Leaks | No. of Breaks |
| Potable Water | 191 | 8 | 20 | 191 | 40 | 87 | 191 | 79 | 130 |
| Waste Water | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Earthquake-Induced Fires

Fires often occur after an earthquake. Several fire incidents may occur after a major earthquake in Rangpur City Corporation area which can burn out of control. **Table-3.7** provides the number of ignitions and probable damage due to earthquake-induced fires in different scenarios.

Table 3.7: Expected earthquake-induced fires and probable damage

| Scenarios | Probable Impacts | | |
|------------|------------------|----------------------------|--------------------------------|
| | No. of Ignition | Population to be Displaced | Economic Damage (thousand USD) |
| Scenario-1 | 2 | 1,063 | 3000 |
| Scenario-2 | 4 | 2 | 0 |
| Scenario-3 | 4 | 4 | 0 |

In Rangpur City Corporation, it is estimated that scenario-1 will likely to cause 2 ignitions and both scenario-2 and scenario-3 will likely to cause 4 ignitions. About 1,063 people will likely be displaced and caused economic damage of about 3 million USD due to scenario-1 earthquake. However, number of population will likely be displaced and possible economic damages due to scenario-2 and scenario-3 earthquakes are very little.

Debris Generation

In the aftermath of the scenario earthquakes, huge volume of debris will likely be generated due to damage of buildings and infrastructures. **Table-3.8** shows the expected debris generation in Rangpur City Corporation due to three scenario earthquakes.

Table 3.8: Expected debris generation in the City Corporation area due to scenario earthquakes

| Scenarios | Debris Generation | | |
|------------|----------------------|----------------------|-----------------------------|
| | Total (Thousand Ton) | % Concrete and Steel | % of Brick, Wood and Others |
| Scenario-1 | 80 | 44 | 56 |
| Scenario-2 | 510 | 60 | 40 |
| Scenario-3 | 1,350 | 70 | 30 |

In Rangpur City Corporation area, around 80 thousand tons of debris will likely to be generated from Scenario-1. In case of Scenario-2 and Scenario-3 earthquakes, there will likely to generate about 510 thousand tons and about 1350 thousand tons of debris respectively.

3.4 Estimation of Resource Needs and Analysis of Resources Availability

As an earthquake of 475-years return period represents the parameters of design-based earthquake, **Scenarios-2** at 2:00 AM (night-time) has been taken as the basis for estimating the resource needs, spatial analysis of available resources and capacities, and preparing the Contingency Plan.

Search and Rescue

Approximately, 980 people will likely be trapped (both in injured and dead condition) inside collapsed buildings out of which some will come out by themselves, some will be assisted by community volunteers, and some may require medium to highly specialized search and rescue. As per the INSARAG Guidelines, approximately 490 victims (50%) can be extricated by the community themselves or with the light search and rescue teams, whereas another 50% (approximately 490) victims will likely to require assistance of specialized search and rescue teams.

The specialized search and rescue capacity mainly exists with the Bangladesh Army, Fire Services and Civil Defense (FSCD) and Bangladesh Red Crescent Societies (BDRCS). Currently, there is only one FSCD stations within Rangpur City Corporation area which will primarily be responsible for conducting specialized search and rescue operation along with Rangpur Cantonment and BDRCS during an earthquake emergency in the city. The available resources and capacities of FSCD Rangpur are given in **Table A-1** and **Table A-2** in **Annex-A**. The Urban Community Volunteer trained by FSCD for Rangpur City will provide all support to the specialized team for search and rescue operation. List of these volunteers with detailed information is given in **Table A-3** in **Annex-A**. The location of FSCD and other key emergency agencies in Rangpur City is shown in **Map C-1** in **Annex-C**.

Immediate Evacuation Spaces

It is estimated that about 6,904 populations will likely be displaced due to building collapse. These populations will need to be evacuated immediately to the nearest open spaces. Total 6,904 sq. m. spaces will be required (considering @ 1 sq. m. /person as standard) to accommodate the displaced people for immediate evacuation purpose (assembly after the scenario earthquake).

The open spaces available in Rangpur City Corporation include smaller areas ranging from hundreds to thousands sq. m. The smaller spaces are appropriate only for immediate evacuation purposes, whereas only bigger ones (larger than 5,000 sq. m. which can accommodate more than 100 families) are considered as appropriate for temporary shelter purpose. Currently, there is about 303,206 sq. m. of open spaces within Rangpur City Corporation area that can be used for immediate evacuation purpose. The lists of these open spaces that can be used for immediate evacuation purposes and their population holding capacities are given in **Table A-4** in **Annex-A** and their locations are shown in **Map C-2** in **Annex-C**. The smaller open spaces/ playgrounds available within the compound of educational institutions and other institutional areas are not included in the list.

The available open spaces within the City Corporation area are sufficient for immediate evacuation for the required number of displaced population. About 296,302 additional people can be accommodated in these spaces for immediate evacuation purpose from surrounding areas of the City Corporation.

Evacuation Routes

The list of proposed evacuation routes that can be used for safe evacuation of the population from different areas are given in **Table A-5 in Annex-A** and shown in **Map C-3 in Annex-C**. Only the roads of 6m and above width are usually considered for safe evacuation, because other smaller urban roads inside the City Corporation will likely to have higher possibilities of blockage due to road damage itself or due to falling debris from damaged buildings. However, the existing road network of 6m and above width within Rangpur City Corporation area is not evenly distributed and not well connected. Therefore, the existing of 4m to 6m width are also considered as evacuation routes that can be used for operating small vehicles, ambulance and small equipment to ensure the search, rescue and evacuation operation at every corner of the City Corporation.

Fire Control

The analysis shows that that Senario-2 earthquake will result in multiple conflagrations immediately. There will likely be at least 4 ignitions that can burn out of control due to insufficient capacity of FSCD, delay of fire-fighting agency and/or limited access to the affected areas, and lack of water sources. The locations of water supply sources within the City Corporation are shown in **Map C-4 in Annex-C**.

In the aftermath of the earthquake and subsequent aftershocks there will be a massive requirement of response efforts from FSCD for both fire-fighting and search and rescue operation. The conventional response efforts and capabilities of only one FSCD station within Rangpur City Corporation will likely to be overwhelmed.

Health Facilities

Currently, there are 49 major hospitals and clinics within Rangpur City Corporation area with total 3,519 hospital beds available for use. The list of hospitals, clinics and other medical facilities and their capacities are given in **Table A-6 in Annex-A** and locations are shown in **Map C-5 in Annex-C**. Scenario-2 earthquake will likely to cause moderate to severe damage to many hospital buildings that would result in only 1,795 hospital beds (51%) being available on the first day of the earthquake. However, this total will not actually be available for earthquake victims, because some of these will be pre-occupied by regular patients. Assuming 50% will be already occupied by regular patients; actual available number of beds for earthquake victims will be 897.

The estimation shows that approximately 123 people will require hospitalization immediately after the Scenario-2 earthquake. Hence, a total of 774 more beds will be available for the treatment of other regular patients and other injured.

Emergency Shelters

It is estimated that approximately 6,905 populations of Rangpur City Corporation will likely be displaced due the Scenario-2 earthquake. However, all these displaced population may not require shelters to be provided by government and relief organizations. Part of them will take shelter at their relatives' and friends' houses, or may rent out spaces in remaining buildings (undamaged for partially damaged). It is assumed that approximately 50% of the displaced population will manage their shelters by their own. Remaining 50% population will require shelters provided by government and relief organizations.

According to SPHERE standard for emergencies (2011), 45 sq. m. per person surface area is required for emergency shelter purpose. However, realizing the scarcity of open spaces in cities and towns of Bangladesh, 45 sq. m. per household is used as the required minimum standard to calculate the space need for shelter. Using the average household size in the country is 4.8 persons (BBS, 2008,) the possible shelter requirement is calculated for the displaced population. Hence, total 32,400 sq. m. shelter spaces for approximately 720 households will need to be provided by government and relief organizations.

After an earthquake, open spaces such as parks, playgrounds, recreational centers etc. are potential shelter areas for the homeless population. Available open spaces (bigger than 5000 sq. m. which can accommodate more than 100 families) are proposed for emergency temporary shelter purpose. The list of these proposed shelter sites and their capacities are given in **TableA-7** in **Annex-A** and locations are shown in **Map C-6** in **Annex-C**.

Existing educational buildings (e.g. school, college, universities, etc.) and communal buildings (e.g. community centers, auditorium, etc.) can also be used as temporary sheltering purpose depending on the season as well as their level of functionality after the earthquake. The locations of educational and communal buildings available within Rangpur City Corporation area are shown in **Map C-7** in **Annex-C**.

Relief Services (food, nutrition and other relief)

The requirements of food and other relief items for the people living in shelter camps in different locations of Rangpur City Corporation have been calculated for daily and monthly requirement using the SPHERE standards for emergencies (2011) and given in **Table A-8** in **Annex-A**. Based on current production 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.

Water Supply, Sanitation and Hygiene

Average water use for drinking, cooking and personal hygiene in any household is at least 15 liters per person per day. Likewise, for excreta disposal purpose, one toilet is required for a maximum of 20 people. Assuming this as a minimum requirement, the total quantity of water and total number of toilets required in different shelter camps is calculated and given in **Table A-9** in **Annex-A**.

Transportation

One of the immediate actions related to road transportation network, after an earthquake, is to open some key roads facilitating urban search and rescue. Search and rescue equipment are needed to be transported to different locations for the effective rescue of the trapped people. The direct damage to the road network and the heavy damage to the buildings indicate that most of the roads get either directly damaged or get blocked due to debris.

In Rangpur City Corporation area, around 510 thousand tons of debris will likely be generated from Scenario-2 earthquake. If the debris tonnage is converted into an estimated number of truckloads, it will require about 20,400 truckloads (@25 tons per truck) to remove the debris. The location of fuel re-filling stations within the City Corporation that can be used for vehicle re-fueling purpose are shown in **Map C-8** in **Annex-C**.

Security and Welfare

General security to the affected area as well as emergency shelter camps is also needed to be provided according to the national standards and the capacity of the police, RAB and Ansar in the city.

The estimation shows that during Scenario-2 earthquake at night-time, about 263 people will likely be killed immediately in Rangpur City Corporation area. These dead bodies need to be managed properly at proper locations and as per the proper cultural and religious norms.

Section 04: Operational Framework

4.1 Overview of Operational Framework

The earthquake response operation in the city will be carried out through a city-level response framework to standardize the activities of first responder agencies. The basis of this response framework will be the establishment of a multi-tiered City-level Emergency Operation Center (EOC) and functional response cluster system.

Establishment and Activation of EOC:

A City-level Emergency Operation Center (EOC) will be established and activated to support and coordinate the emergency response activities.

Box 4.1: Requirements for establishment of a City-level EOC

- An EOC is a physical location where disaster response and recovery activities are authorized, coordinated, and monitored during and after a disaster event.
- A dedicated office space in the City Corporation building is the best suitable place for EOC.
- The EOC should be equipped with uninterrupted communication facilities, including VHF, HF, mobile telephone, satellite telephone, landline telephone, fax facilities, internet connection, computers, and GIS capability as well as response kits and personal protective equipment.
- It will function for 24 hours a day and establish a staff roster system to ensure adequate personnel are available at all times.

The major functions of the EOC are:

- Ensure effective management and coordination of all elements involved in emergency response operation.
- Establish communications with National EOC, first responder agencies, other government agencies, hospitals and clinics, private sector agencies, national and international NGOs, and donor agencies to support response operations with required physical and financial 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 and recovery activities to provide a more complete operational picture to National EOC, concerned government agencies, and media.

Functional Response Cluster System:

In the immediate aftermath of a major earthquake and its impact in the city, there will be huge tasks related to emergency response, such as damage and need assessment, control of fire, search and rescue of trapped population, treatment of injured, providing shelters and relief supplies to displaced people, restoration of critical facilities, public security and welfare, etc. Experience shows that many of these response activities are complex and need to be implemented by a number of

different agencies. 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.

Because of this, the earthquake response and recovery activities that are being implemented at EOC will be organized in accordance to the functional cluster system which has been used by the United Nations since the early 2000s. This system is used to assign leadership, strengthen partnerships, and ensure more predictability and accountability in disaster response by clarifying the division of labour among agencies and better defining their roles and responsibilities within the key sectors of the response. During the Contingency Planning Process, several formal and informal small consultative meetings were held with key stakeholders to discuss modifying the standard UN clusters to suit Bangladesh’s unique disaster management framework. The modified clusters include:

- Command and Coordination
- Search, Rescue and Evacuation
- Healthcare Services
- Logistics Support and Relief Services (Food, Nutrition and Other Relief)
- Shelter (Including camp management)
- Water Supply, Sanitation and Hygiene
- Transportation (Road, Rail, Air and Sea)
- Security and Welfare
- Immediate Recovery - Restoration of Urban Services

4.2 Phases of EOC Operations

The capacity of the City-level EOC will fluctuate throughout the different disaster phases. During the non-emergency phase (preparation phase) the EOC will have limited permanent staff who will be responsible for maintaining the physical EOC space and equipment. The permanent staff will also be responsible for organizing drills and simulations for first responder agencies so that they are familiar with the EOC structure and prepared to relocate operations there at the on-set of a disaster. Once there is an emergency, the capacity of the EOC will expand and representatives from first responder agencies will move to the EOC to manage their agencies’ and relevant cluster’s response activities. During the recovery phase as response activities taper off, the EOC will again resize and different personnel may be stationed there to lead recovery activities.

The priorities of the EOC personnel during the different disaster phases include:

| Disaster Phases | Priority Activities |
|---------------------------|---|
| Pre-disaster Phase | <ul style="list-style-type: none"> ● Maintaining the physical EOC space and equipment ● Monitoring and evaluation for ensuring readiness among first responder agencies through a readiness reporting system ● Capacity building of agencies/individuals ● Resource mobilization and distribution to cope up with the resource constraints of first responder agencies ● Managing the plan for EOC expansion in a disaster situation ● Maintaining a database of manpower, resources, equipment, etc. for use in emergency situations ● Maintenance of web-based emergency response plan updating system |

| | |
|-------------------------------------|---|
| <p>During Disaster Phase</p> | <ul style="list-style-type: none"> • Emergency coordination, command, and response management • Providing technical assistance to first responder agencies and cluster leads to ensure an efficient recovery mechanism • Conducting damage assessment and need analyses • Keeping records (on damages, losses, and response needs) in order to meet the needs of the affected and provide necessary information for assistance (including cash appeals) to external agencies • Implementing disaster response activities • Reviewing and monitoring of progress of disaster response activities and reporting to Government authorities |
| <p>Post-disaster Phase</p> | <ul style="list-style-type: none"> • Developing a plan for phasing out response activities when no longer necessary and then phasing out response activities when appropriate • Implementing a plan for phasing out response activities undertaken by first responder agencies • Undertaking priority actions in partnership with service agencies (such as gas, electricity, water, telecom, etc.) for the restoration of critical facilities and urban services • Preparing to hand over functional responsibilities in relation to coordination, command, and management to agencies responsible for recovery activities • Developing a structure for handing over management to permanent recovery planning agencies • Reviewing and monitoring the progress of response activities • Carrying out an evaluation of response management so that shortcomings can be integrated in the review process of the National Earthquake Contingency Plan |

4.3 Leadership and Operational Structure of City-level EOC

The City-level EOC will be operated under the leadership of the City Corporation with the full support and active participation of City Corporation Disaster Management Committee (CCDMC) and the City Corporation Disaster Response Coordination Group as stated in the Standing Order on Disaster.

The EOC will be led by the City Mayor as the EOC Chief/Commander and assisted by the Coordinator, Operation Officer, Panel of Technical Experts and Administrative System.

The operational function of the EOC will be organized under the responsibility of following desks:

| Desk | Responsibilities |
|------------------------|--|
| <p>Planning</p> | <ul style="list-style-type: none"> • The Planning Desk is primarily involved in evaluating the disaster situation, determining objectives, providing overall strategic and policy directions, establishing unified actions across the city, deciding which resources should be used to achieve disaster response in the most efficient and cost-effective manner, and liaison with CCDMC, City Corporation, National EOC and international agencies (if necessary). |

| | |
|-----------------------------------|--|
| Coordination | <ul style="list-style-type: none"> The Coordination Desk is responsible for acting as a focal point for receiving all incoming information, including reports of damages, casualties, and requirements from the affected areas, processing and analyzing the information, and disseminating to the public and media. |
| Operation | <ul style="list-style-type: none"> The Operation Desk is responsible for conducting tactical field operation to carry out response activities as per the plan, including the overall coordination among field-level technical response clusters, and ensuring operational continuity. |
| Logistic | <ul style="list-style-type: none"> The Logistic Desk provides support to supply resources and all other logistic services needed to meet the incident needs. It is also responsible for coordinating and making request for additional support from National Authorities, first responder agencies, other government agencies, and private sector agencies as needed from field-level technical response teams. |
| Finance and Administration | <ul style="list-style-type: none"> This desk monitors costs related to incident management. It provides accounting, procurement, time recording, and cost analyses. |

These desks and the EOC administrative system are responsible for maintaining the operations of the EOC and sustaining an environment which enables the clusters to implement the response and recovery activities. The EOC will provide situational information to the clusters as it becomes available. It will also exchange information with National EOC on a regular basis.

During emergency, the EOC will house a number of technical team as per the functional response clusters. Each team will lead by a first responder agency with relevant mandates, and consisting of selected members (trained and experienced in respective fields of response or support activities) from support agencies/departments as well as urban community volunteers. Cluster leadership and membership has been designated and actions are outlined in **Section 5**.

4.4 Role and Organization of Urban Volunteers

Fire Service and Civil Defence (FSCD) is one of the lead government agencies which remain alert for 24 hours a day to manage any disaster in Bangladesh. However, the total manpower of FSCD is not adequate in respect of necessity. Considering the earthquake risk in the country, FSCD with the support of CDMP has initiated to train the community volunteers on disaster management especially on earthquake so that they can serve the people in case of any disaster before the arrival of professionals even they can assist the professionals after their arrival. Rangpur City has a trained volunteer group of about 220 persons to provide immediate assistance to carry out light search and rescue operation and fast aid support to injured persons. As a local resource, this volunteer group will be used in a number of support roles to augment emergency operations. Detailed information of urban community volunteers to work for response activities in Rangpur City is given in the **Table A-3** in **Annex-A**.

4.5 Coordination with Internal Agencies

During an emergency, in the interest of speed and simplicity in disaster response management, coordination should be carried out at the lowest possible level of the government organization, with minimum reorganization of local disaster management committees. Hence, to decentralize the responsibilities during an earthquake emergency, coordination among town-level government organizations will be carried out as per the structure of Local Disaster Coordination Group (City Corporation and District) as placed in the Standing Order on Disaster (SOD).

While not physically present at the EOC, supporting agencies play a critical role in disaster management at the city-level. They are cluster members and work with the first responder agencies who serve as cluster leaders to implement response and recovery activities. Close coordination within the clusters (vertically among leadership and members and horizontally among members) is imperative to prevent both gaps in service and redundancy. Relationships between cluster members should be fostered during the preparation phase and continued throughout response and recovery phases. Each cluster should form its own system of communication and meeting structure which should be tailored to the level of coordination needed. Some supporting agencies may be responsible for a variety of tasks which necessitate membership in more than one cluster. These agencies will be obligated to meet the requirements of cluster membership for each and should designate staff to participate accordingly.

In addition to activities undertaken by cluster-specific lead and support agencies, private sector plays a critical role in emergency management. These roles may include being an impacted organization, a response resource, a partner in preparedness, and/or a component of the economy. There should be communication and coordination with the private sector to provide support through public-private partnerships, associations, and contractual agreements in responding to and recovering from a major earthquake

4.6 Coordination with External Agencies

The City-level EOC will notify the National EOC of any shortfall of resources and support needed. The National EOC will direct resources available at national, divisional and other city-level to assist the affected city.

Section 05: Action Strategies

Cluster-wise action strategies comprising detailed activities before, during and after a major earthquake in Rangpur City Corporation area and responsible lead and support agencies are described below:

CLUSTER 1: COMMAND AND COORDINATION

| Lead Agency | Rangpur City Corporation | |
|---------------------------------|---|--|
| Support Agencies | DC Office, Army, FSCD, DDM, BP, RAB, Ansar & VDP, BGB, Media, CSO, PDB, BTCL, PWD, RHD, BR | |
| Primary Objectives | <ul style="list-style-type: none"> To prepare a framework for integrated response efforts by formulating a well-coordinated system for reduction of impacts of potential earthquake events | |
| | Activities | Support Agencies |
| Pre-Disaster Phase | Development of Standard Operation Procedure (SOP) | FSCD, Army, BP, Ansar & VDP, RAB, BGB |
| | Establishment of City level 24/7 Emergency Operation Centre and participate in EOC operations and reporting of readiness | FSCD, Army |
| | Setting up earthquake Incident Command Systems (ICS) in place(establishment, training and capacity building) where appropriate | FSCD, BP, Ansar & VDP, RAB, BGB |
| | Organizing ICS training and nominate representatives to participate in ICS established at various levels | FSCD, BP, Ansar & VDP, BGB |
| | Development of a disaster event response reporting system by stakeholder agencies (impacts, resource needs, actions by them for reducing the impact, difficulties, opportunities etc.) during earthquake | DC Office, BP, Ansar & VDP, RAB, BGB |
| | Promotion of informal education on earthquake Contingency Plan operations at all levels and conduct simulations | NGO's |
| | Development of guidelines for media agencies on reporting disaster events, procedures for public information dissemination related to emergency declaration, announcements and warnings on aftershocks, and disseminate public awareness and advocacy material to support Contingency Planning and implementation | DC Office, National and Local Electronic and Print Media |
| Emergency Response Phase | Facilitating mobilization of earthquake incident command system where necessary under the command of Army and networking with organizations under ICS | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Executing operation surveillance continuously covering all the earthquake affected areas | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Mobilization of ICS teams at lower level command structure | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL, Local Newspapers |
| | Facilitating coordination of logistic supply management | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Assisting authorities for communications with media in relation to information dissemination on welfare of victims, missing and found, results on damage assessment surveys, results on need assessment surveys and | DC Office, DDM, National and Local Electronic and Print Media |

| | | |
|-----------------------------|--|--|
| | facilitate media coverage by media agencies on reporting earthquake event | |
| | Facilitating public information dissemination related to emergency declaration, announcements and warnings on aftershocks and repeat of occurrences of other collateral hazards due to aftershocks | DC Office, DDM, National and Local Electronic and Print Media |
| Early Recovery Phase | Coordinating Operation Surveillance to reduce impacts due to aftershocks | AFD, FSCD, DRR, Office of Civil Surgeon, BPDB, Office of Deputy Commissioner |
| | Facilitating coordination of logistic supply management and deployment of resources to affected areas, IDP camps etc. | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Conducting Post disaster Evaluation of performance of <ul style="list-style-type: none"> • earthquake incident command system and recommend improvements • performance of National EOC and improvement where necessary | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Facilitating continuation of EOC operations and periodic reporting during early recovery period to EOC on involvement of all first responder organizations in earthquake event management and for necessary assistance | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |
| | Facilitating media coverage by media agencies on reporting of post-earthquake disaster event situation analysis and facilitate public information dissemination related to emergency declaration, announcements and warnings on aftershocks and possible impacts due to collateral hazards | Local electronic and print media |
| | Assisting authorities for communications with media in relation to information dissemination on welfare of victims, Missing and found, results on damage assessment surveys, results on need assessment surveys | DC Office, DDM, Local Electronic and Print media |
| | Review of the Contingency Plans under the Cluster - Emergency Operations- Overall Command and Coordination and revise the same to include suitable modifications to improve the performance | DC Office, FSCD, Army, DDM, Office of Civil Surgeon BP, BR, BPDB, BTCL |

CLUSTER 2: SEARCH, RESCUE AND EVACUATION

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| Lead Agency | Fire Service and Civil Defence (FSCD), Rangpur | |
| Support Agencies | DC Office, Army, FSCD, DRRO, BP, RAB, Ansar & VDP, BGB, Media, CSO, PDB, BTCL, PWD, RHD, BR, BDRCS | |
| Primary Objectives | <ul style="list-style-type: none"> To prepare effective plan for emergency services (search, rescue, evacuation, first aid, fire safety etc.) by ensuring inter-agency coordination at city level To build capacity of concerned agencies and develop guidelines in the light of national and international practice | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Developing guidelines for urban search and rescue | Army, FSCD, BP, DC Office |
| | Cataloguing/procurement of equipment for special search & rescue, and develop procedure for ensuring access | FSCD, Army, Office of Civil Surgeon, BDRCS |
| | Capacity building for creating special units for urban search and rescue from collapsed buildings, infrastructure, medical first response | FSCD, Army, Office of Civil Surgeon, BDRCS |
| | Capacity building of community first responder groups in search and rescue operations, medical first response | FSCD, Army, Office of Civil Surgeon, BDRCS |
| | Developing medico-legal procedure for identification and tagging of dead bodies with health group | FSCD, Army, Office of Civil Surgeon, BDRCS, NGOs |
| | Ensuring fire safety preparations (through pre-positioning of fire hydrants, fire stations, developing data base of sources of water, storage of material etc.) | FSCD, DC Office, BPDB, BTCL |
| | Pre-positioning of tools, equipment and accessories, get the civil authorities to develop inventories of such equipment available for use during earthquakes | Army, FSCD, DC Office, RHD, BR, BPDB, BTCL |
| | Preparing resource inventory (equipment, tools, accessories and manpower etc.) and Procurement of necessary tools and equipment for urban search and rescue operations to fill the agency level gaps | FSCD, Army, Office of Civil Surgeon, DDM, BP, Ansar & VDP, BR, BPDB, BTCL |
| | Preparing guidelines for logistic supply management and deployment of resources | FSCD, Army, Office of Civil Surgeon, DDM, BP, Ansar & VDP, BR, BPDB, BTCL |
| Capability assessment of agencies who could be involved in search and rescue operations | Army, FSCD, Office of Civil Surgeon, BDRCS, BP | |
| Em erg | Carry out the inter-agency coordination to optimize the efforts of search and rescue teams by providing necessary guidance and inputs. | FSCD, Army, BP, Ansar & VDP, BDRCS |

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| | Coordination with national and international teams engaged in search and rescue and coordination of information supply and feedback | FSCD, Army, Office of Civil Surgeon, BDRCS, DC Office |
| | Mobilizing special teams of search and rescue from collapsed buildings and infrastructure | FSCD, Army, Office of Civil Surgeon, BDRCS, DC Office |
| | Mobilizing necessary additional manpower, tools and equipment for search and rescue operation from other stations located outside the affected area | FSCD, Army, Office of Civil Surgeon, BDRCS, BP |
| | Mobilizing community based social volunteer networks and trained first responders from unaffected areas to support the search and rescue parties | FSCD, Ansar & VDP |
| | Make arrangements to obtain resource inventory and data base for search and rescue operations and provide information based on the spatial data on rapid loss estimation | FSCD, Army, Office of Civil Surgeon, BP, DDM |
| Early Recovery Phase | Networking with organizations and mobilize support for search and rescue operations in areas which are difficult to reach | FSCD, Army, Office of Civil Surgeon, BP, DDM, NGOs |
| | Mobilizing community based social volunteer networks and trained community first responder groups to assist special units mobilized for search and rescue from collapsed buildings and infrastructure | FSCD, BP, BDRCS, Ansar & VDP, Office of Civil Surgeon |
| | Make arrangements to access resource inventory items for search and rescue operations and mobilize support of external groups for search and rescue operations | Army, DDM, NGOs, Office of Civil Surgeon |
| | Monitoring and evaluation of <ul style="list-style-type: none"> • Post disaster performance evaluation of special units mobilized for search and rescue from collapsed buildings and infrastructure • Inter-agency coordination functions • All relevant emergency services in operation in earthquake affected areas aiming at reducing the human casualties | FSCD, AFD, Office of Civil Surgeon, DDM, BP, Ansar & VDP |
| | Review of the Contingency Plan under the Cluster - Search Rescue and Evacuation and revise the same to include suitable modifications to improve the performance | FSCD, AFD, Office of Civil Surgeon, DDM, BP, Ansar & VDP |

CLUSTER 3: HEALTH SERVICES

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| Lead Agency | Office of Civil Surgeon, Rangpur | |
| Support Agencies | City Corporation, Army, FSCD, DDM, BP, BDRCS, Hospital and Clinic Authorities, Medical College, Civil Societies, Media, NGOs | |
| Primary Objectives | <ul style="list-style-type: none"> To minimize human casualties by establishing an efficient medical first response system in areas with high seismic risk To enhance the hospital emergency medical care through development of hospital preparedness plans To build capacity for setting up a well-organized mass casualty treatment system To develop epidemic surveillance system to prevent outbreak of epidemics during post-earthquake period | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Hospital preparedness planning and training on Hospital Preparedness for emergency operations | City Corporation, BDRCS, NGOs |
| | Methodology development for handling of dead and missing during earthquakes and emergencies | Army, BDRCS, City Corporation |
| | Developing networks with private & government hospitals within the area and in the neighborhood for support during emergencies like earthquakes | Army, City Corporation, Hospitals and Clinics |
| | Developing alert system for hospital staff including doctors to report for work during emergencies such as earthquakes | Army, City Corporation, Hospitals and Clinics |
| | Setting up of 24/7 State of the art ambulance services | Army, FSCD, City Corporation, Hospitals and Clinics |
| | Identifying needs for pre-positioning of medicine, temporary hospitals etc. and obtain the necessary resources | Army, FSCD, City Corporation, NGOs |
| | Methodology development for epidemic surveillance and control | Army, FSCD, BDRCS |
| | Conduct operation surveillance training for all First Responder Organization for quick mobilization in earthquake events | |
| | Impart training to community medical first responders within the city and develop a database | Army, FSCD, BDRCS |
| | Methodology development for estimation of casualty and human injury | Army, FSCD, City Corporation |
| Methodology development for estimation of livestock, number of injured people and casualty | Army, FSCD, City Corporation | |
| Emergency Response Phase | Mobilizing health teams for providing emergency medical care to displaced persons. | Army, FSCD, DDM, NGOs |
| | Activating the alert system for hospital staff and voluntary groups to report to hospitals and medical centers as planned | Hospital and Clinic authorities, Medical Colleges |
| | Mobilizing health teams to provide first aid to displaced and injured when and where necessary | FSCD, NGOs, BDRCS |
| | Mobilizing health teams for setting up of temporary hospitals in suitable locations, when and where necessary to treat injured and sick after the earthquake | Army, City Corporation |
| | Mobilizing pre-positioned medical facilities , Mobile Hospitals etc. to treat injured and sick | Army, FSCD, City Corporation |

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| | Mobilizing support from other hospitals (Private hospitals, hospitals located elsewhere etc) when and as needed and coordinate with private and International Medical Teams to optimize their contributions to national efforts in saving lives and treatment of critically injured. | Hospital and Clinic authorities, FSCD, NGOs |
| | Mobilizing medical first responders within the city to assist field medical teams, Hospitals and Medical Clinic authorities | Hospital and Clinic authorities, Army, FSCD, SCC |
| | Mobilizing trained Triage teams to affected city wards and control points, transportation of injured to hospitals | Hospital and Clinic Authorities, City Corporation |
| | Mobilizing ambulance services to transport sick and injured | Hospital and Clinic authorities, Army, FSCD, City Corporation |
| | Mobilize health teams for tagging of dead bodies and locating missing during the earthquake | Army, BP, FSCD |
| | Get assistance from qualified professionals to conduct rapid damage assessment of all health infrastructure within the city and identify suitability for usage for treatment of injured and sick | Army, FSCD, City Corporation |
| | Establishing counseling centers | City Corporation, NGOs |
| Early Recovery Phase | Continue providing emergency medical care to displaced persons. | Army, DDM, City Corporation |
| | Conduct the M&E and performance evaluation of Health cluster activities and introduce necessary modifications to improve the performance | Army, FSCD, DDM, BDRCS, NGOs |
| | Conducting evaluation of performance of medical first responder groups and improve the methodology for training and simulations | NGOs, Medias |
| | Conducting the evaluation of ambulance services to transport sick and injured during emergencies and introduce modifications to improve the services | NGOs, Hospital and clinic authorities |
| | Continue assistance to authorities in mortuary services(such as identifying dead & missing, issue of death certificates for disposed and inventorying and maintenance of records etc) | Army, FSCD, DDM, NGOs, BDRCS |
| | Follow medico-legal procedure for identification and tagging of bodies, disposal of dead bodies | BP, Army, FSCD, City Corporation, NGOs |
| | Conducting evaluations of the level of preparedness & performance during emergency by all hospital and medical institutions | Army, Medias, Civil Society |
| | Conducting review of the Contingency Plan for the Health Cluster agencies and revise to integrate the improvements | Army, FSCD, DDM, City Corporation |

CLUSTER 4: LOGISTICS SUPPORT AND RELIEF SERVICES (FOOD, NUTRITION AND OTHER RELIEF)

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| Lead Agency | Rangpur City Corporation | |
| Support Agencies | DC Office, Army, DDM, DoF, District Food Office, BP, Ansar and VDP, BGB, BDRCS, FSCD, NGOs, INGOs | |
| Primary Objectives | <ul style="list-style-type: none"> To conduct survey for assessing and analyzing damages and estimating needs To ensure provision of necessary essential facilities for displaced population after emergencies To ensure provision of food and nutrition, logistic supply to displaced population based on need assessment To coordinate with international and local NGOs, donor agencies to supplement the government welfare assistance to IDPs | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Networking with various stakeholders and development of system for reporting the stocks of supplies and resources (funding agencies, NGOs & INGOs for identification of resources, improved coordination relief material distribution) and maintain a database | DDM, DoF, BDRCS |
| | Developing guidelines, data formats and carry out capacity building for damage analysis and need assessment | DC Office, Army |
| | Developing guidelines and disseminate information on <ul style="list-style-type: none"> Logistic supply management and deployment of resources Maintaining of temporary or permanent emergency shelters Distribution of welfare items and food Quality assurance for food and nutrition Setting up welfare camps by all agencies | Army, BDRCS |
| | Developing guidelines for community mobilization to increase the community participation in relief distribution and camp management | DDM, FSCD, Army, BDRCS, Ansar & VDP |
| | Establishing warehouses for store of government supplies of welfare items food and supplementary items | DC Office, Army, DDM |
| | Ensuring government resources for buying additional welfare items food and supplementary items | DC Office, DDM |
| | Developing guidelines for rehabilitation of physically handicapped disabled and vulnerable groups | DDM, NGOs |
| | Developing inventory of agencies within the city who possess stocks of welfare items, food and nutrition, temporary shelter and camps, water purification plants, generators, cooking facilities etc. to be used in case of emergencies | DC Office, DDM, Army, BDRCS |
| Emergency | Preparation of necessary documentation for preparation of flash appeals in collaboration with NEOC | Army, DDM, BDRCS |
| | Conducting damage analysis and need assessment survey in affected areas and preparation of estimates of items and other urgent needs for obtaining donor support for external contributions. Networking with various stakeholders (funding agencies, NGOs & INGOs for mobilization of contributions, improved | DC Office, DDM, Army, FSCD, NGOs |

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| | coordination of relief material distribution) | |
| | Setting up temporary camps to house IDPs and provide other essential items (such as Food, Nutrition and other Relief), Mobilize support from NGOs, INGOs for providing assistance to IDPs | DC Office, DDM, Army, BDRCS, NGOs |
| | Mobilization of community social volunteer groups through Local Governments, CBOs and NGOs to assist setting up of camps for IDPs ,maintenance of camps etc. | Army, DDM, Ansar & VDP, BDRCS |
| | Networking with ministries, departments, district authorities, donor agencies, NGOs and INGOs for mobilization of support for supply and distribution of relief material and welfare items. Supply of food and supplementary items through DC, government departments, other district authorities for distribution to victims. Conduct surveys for quality assurance for food and distribution | DC Office, Army, DDM, Ansar & VDP, BGB |
| | Liaise with relevant govt. agencies, line departments, district authorities, civil society agencies to ensure welfare of other victims(those who are living in their own, those who are with friends and relatives etc.) and food supply | DC Office, Army, Ansar & VDP |
| | Assisting other stakeholder agencies such as NGOs and INGOs for supply of food and supplementary items to displaced when and where necessary through assistance in national level procurement, import of items, custom clearance, transportation to affected areas etc. | Army, DC Office |
| Early Recovery Phase | Evaluating of overall performance of Cluster - Relief Services (Food, Nutrition and other Relief) | Army, DDM, BP |
| | Networking with ministries, departments, district authorities, donor agencies ,NGOs & INGOs and assistance for efficient coordination for distribution of relief material welfare items | DDM, DC Office |
| | Conducting routine surveys for quality assurance for food and nutrition distributions carried out by government and non-government agencies | DDM, DC Office, Army |
| | Periodic Stock taking of central Godowns to carry out qualitative and quantitative assessment of food items and facilitate efficient distribution | DC Office, DDM, District Food Office, NGOs, INGOs |
| | Periodic visits to welfare camps and monitoring and evaluation of compliance of guidelines for maintenance of welfare camps by all agencies | DDM, DC Office, Army |
| | Providing necessary assistance in documentation, tax payment if applicable and custom clearance etc. to other stakeholder agencies such as NGOs and INGOs for continues supply of food and supplementary items to displaced located in camps for IDPs | DDM, DC Office, Army |
| | Assisting all agencies providing welfare , food and nutrition support for transportation and distribution of supplies to victims when and where necessary | DDM, Army, INGOs |
| | Reviewing Contingency Plan for the Cluster - Relief Services (Food, Nutrition and other Relief) and revise if necessary to introduce measures to improve performance | DDM, Army, NGOs, INGOs, BDRCS |

CLUSTER 5: SHELTER

| Lead Agency | Rangpur City Corporation | |
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| Support Agencies | DC Office, Army, DDM, DoF, District Food Office, BP, Ansar and VDP, RAB, BGB, PWD, Department of Social Welfare (DSW), NGOs | |
| Primary Objectives | <ul style="list-style-type: none"> To ensure temporary shelter for displaced after disaster events such as Earthquakes and provision of basic facilities to the same | |
| Activities | | Support Agencies |
| Pre-disaster Phase | Preparing plan for temporary shelter provision and management | DDM, Army, DC Office, BP |
| | Identification of potential open air sites appropriate for temporary shelters for displaced population and conduct capacity assessment of these open air sites | DDM, Army, DC Office, BP |
| | Identification of earthquake-resistant educational buildings (school, college, universities, etc.) and communal buildings (community centers, auditorium) that can be used as temporary shelters, and conducting capacity assessment of these buildings | PWD, DDM, Army, DC Office |
| | Determining the ownership of these sites and buildings and enter into pre-agreements if relevant | PWD, DDM, Army, DC Office |
| | Assessing the need for pre-positioned family tents, communal kitchen materials and utility services (water supply, electricity, toilet facilities, etc.) for identified temporary shelters, and maintain stocks of standby emergency shelter items/equipment for quick mobilization during establishment of temporary shelter | DDM, Army, DC Office, BP |
| | Determination of special need and maintain the provision for most vulnerable group (gender, children, disable and elderly people). | DDM, Army, DC Office, BP, DSW |
| | Preparing security plan for temporary shelter camps | BP, DDM, Army, DC Office |
| Emergency Response Phase | Activating the plan for temporary shelter provision and management | BP, DDM, Army, DC Office |
| | Estimating the number of homeless due to earthquake, according to all available sources who need temporary shelters. | DDM, Army, DC Office, BP |
| | Determining immediate needs in terms of shelters to include: open air sites, educational and communal buildings and other specific needs according to season. | DDM, Army, DC Office, BP |
| | Assessing the condition of identified shelter sites and buildings after earthquake that can be used for temporary shelters. | PWD, DDM, Army, DC Office, BP |
| | Setting up and manage tented camps / community shelters and ensure the distribution of temporary shelter stock to the people of greatest need. | DDM, Army, DC Office, BP, NGOs |
| | Estimating the needs in terms of essential household items, fuel for cooking, relief items, water supply, sanitation and hygiene and ensure the supply according to the need | DDM, Army, DC Office, BP, NGOs |
| | Ensuring the special needs for most vulnerable group (gender, children, disable and elderly people). | DDM, Army, DC Office, BP, DSW |
| | Implementing the shelter security plan | BP, RAB, Ansar and VDP, BDB |

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| | Liaise with camp management team, to meet the needs on an on-going basis and obtain periodic situation reports and review the progress on shelter management | DDM, Army, DC Office, BP |
| Early Recovery Phase | Conducting survey of temporary shelter set up for IDPs for qualitative improvement | DDM, Army, DC Office, BP |
| | Review of on-going shelter requirements for medium and long term (number of homeless, state of buildings, coping strategies of beneficiaries, specific needs according to time of the year, etc.) | DDM, Army, DC Office, BP |
| | Establishing plan for medium/ long term needs including time frame and transition strategy | DDM, Army, DC Office, BP |
| | Developing early recovery Plans for setting up new Settlement programs and rehabilitation of partially damage settlement and housing for supply of permanent shelter for affected. | DDM, Army, DC Office, BP |
| | Reviewing performance of Cluster - Shelter and introduce modifications to the Contingency Plan for better performance in future. | DDM, Army, DC Office, BP |

CLUSTER 6: WATER SUPPLY, SANITATION AND HYGIENE

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| Lead Agency | Rangpur City Corporation | |
| Support Agencies | DPHE, Army, FSCD, DDM, DC Office, Office of Civil Surgeon, NGOs, INGOs | |
| Primary Objectives | <ul style="list-style-type: none"> To provide safe drinking water, sanitation facilities and hygiene services during earthquake disaster. To restore the water supply system immediately after earthquake disaster. To control epidemics and provide immunization | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Developing procedure for vulnerability assessment of water supply system and other infrastructure facilities, sewerage & drainage systems by respective managers | DPHE |
| | Developing Contingency Plans for water and sanitation sector, waste management systems at all levels covering earthquake prone agencies by respective managers | DPHE |
| | Identification of water sources and other infrastructure elements most likely to survive earthquake | DPHE |
| | Pre-positioning of water supply deep wells to be used during emergencies | DPHE |
| | Developing minimum standards for drinking water supply and issue guidelines to public, NGOs, INGOs and other civil society organizations | DPHE |
| | Developing guidelines for close surveillance in epidemic outbreak and conduct of preparedness measures such as immunization programs, awareness programs to prevent epidemic outbreaks | Office of Civil Surgeon, Army, FSCD |
| | Developing guidelines with water and sanitation group for minimum sanitation levels to be maintained in temporary shelter set up for IDPs | DPHE |
| | Facilitating alternate systems for emergency water supplies such as transportation by container trucks, bowsers etc. | DPHE, FSCD |
| Promoting household level long term water conservation methods such as rain water harvesting, water softening and SODIS techniques for water purification | DPHE | |
| Emergency Response Phase | Activating the Contingency Plans for water and sanitation sector at all levels covering earthquake affected areas | DPHE, Army, FSCD |
| | Observe the emergency water supply needs and communicate to relevant stakeholders | DPHE, Army, FSCD |
| | Conducting close surveillance in epidemic outbreak in affected areas due to problems connected with water and sanitation and make remedial actions | DDM, Army, FSCD, Civil Surgeon Office |
| | Conducting rapid damage assessment of water supply, sewerage & drainage system and initiate actions for restoration | DPHE, DDM, Army, FSCD |
| | Assisting authorities to maintain water supply and sanitation facilities within welfare camps set up for | DPHE, DDM, Army, FSCD |

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| | victims | |
| | Implementing sanitation management system in the temporary shelter for the benefit of victims in affected areas | DPHE, DDM, Army, FSCD |
| | Arrangements for quality check of water sources, bottled water and disposable water containers | Army, DPHE, NGOs, INGOs |
| Early Recovery Phase | Carrying out performance evaluation of response actions under Cluster -Water Supply, Sanitation and Hygiene and introduce suitable modifications to Contingency Plan to improve the performance | Office of Civil Surgeon, DDM, DPHE |
| | Observing and facilitating the emergency water supply needs and communicate to relevant stakeholders | DPHE, DC Office |
| | Conducting close surveillance in epidemic outbreak in affected areas due to problems connected with water and sanitation and make remedial actions | Office of Civil Surgeon, DPHE |
| | Conducting Damage Assessment survey for water supply facilities and develop plans to restore and rehabilitate the facilities at all levels covering earthquake affected areas | DPHE |
| | Conduct periodic quality check of water sources, portable water containers and disposal of waste | DPHE |

CLUSTER 7: RESTORATION OF CRITICAL FACILITIES AND UTILITY SERVICES

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| Lead Agency | Rangpur City Corporation | |
| Support Agencies | PWD, BPDB, BTCL, DPHE, DC Office, DDM, Army, FSCD, Office Civil Surgeon, Universities, NGOs, Private Sectors | |
| Primary Objectives | <ul style="list-style-type: none"> • To identify the critical urban services and facilities vulnerable to earthquakes and strengthening the same to a higher safety level • To ensure efficient restoration of utilities and services after earthquakes such as supply of water, telecommunication facilities, electricity, and, waste disposal etc. • To ensure provision of basic facilities to the temporary shelters for displaced population after earthquake events • To prevent outbreak of fire due to malfunctioning of utilities such as electricity supply etc. • To ensure prevention of environmental disorder due to release of hazardous waste and material | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Conducting scenario based need assessment survey for emergency services in earthquake prone urban areas and report to authorities | DDM, PWD, Office of Civil Surgeon, BPDB, BTCL, DPHE |
| | Developing methodology for vulnerability assessment of buildings and infrastructures and loss estimation to identify high risk areas | DDM, PWD, Office of Civil Surgeon, BPDB, BTCL, DPHE |
| | Developing procedure for restricting or preventing entry into damaged buildings | BP, Ansar & VDP, RAB, BGB |
| | Conducting vulnerability assessment of important government buildings, critical facilities, infrastructures and utility systems | DDM, PWD, Office of Civil Surgeon, BPDB, BTCL, DPHE |
| | Preparing location maps and collect other information related to pre-positioned essential facilities to be used during earthquakes | DDM, PWD, Office of Civil Surgeon, BPDB, BTCL, DPHE |
| | Developing guidelines for spatial planning & land use control (for emergency evacuation and provision of temporary shelters both in developed & undeveloped areas) and revise land use Plans to create/preserve open spaces within urban areas, create more parks, recreational areas, green areas suitable for emergency evacuations, create essential facilities such as water, electricity, telecommunication, gas, etc. | PWD, LGED, DC Office, DDM |
| | Developing guidelines for recovery planning at various levels based on sector needs and special vulnerable groups (gender, elder persons, children, etc.) through integration of earthquake risk management principles | DDM, PWD, Office of Civil Surgeon, BPDB, BTCL, DPHE, NGOs |
| | Identification of evacuation routes in high risk areas and take actions to improve access to inaccessible areas for S&R actions | FSCD, Army, BP |
| | Conducting meetings with utilities sub-committee for enhanced preparedness measures to be undertaken by utility agencies to minimize impacts and to prevent malfunctioning of services during emergencies | BPDB, BTCL, DPHE |
| | Maintenance of stocks of most essential spare parts and service personnel for attending to large scale emergencies such as earthquakes | BPDB, BTCL, DPHE |

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| | Developing guidelines for vulnerability assessment of utilities and conduct training for utility sector staff for undertaking vulnerability assessments | BPDB, BTCL, DPHE |
| | Capacity building of utility sector for Contingency Planning and planning for restoration of facilities and implement Response Capacity Assessment programs for reduction of impacts on utility sector and develop efficient response capacity | BPDB, BTCL, DPHE |
| | Designing and implementing projects for pre-positioning of emergency water, electricity, gas supply, and telecommunication services for critical areas | BPDB, BTCL, DPHE |
| | Developing procedure for post-earthquake damage assessment of all essential utilities within the city | BPDB, BTCL, DPHE |
| | Provisions of utility services for buildings identified as temporary shelters, and maintain stocks of standby emergency shelter items/equipment for quick mobilization during establishment of temporary shelter(stand-by generators, temporary camps etc.) | BPDB, BTCL, DPHE |
| | Identification of all possible sources of hazardous waste/hazardous material release during emergencies and conduct awareness programs to prevent environmental and societal impacts due to release of hazardous substance during emergencies such as earthquakes | Relevant Industries, Business enterprises |
| | Holding discussion with Private institutions(Business sector, Industries etc.) to create awareness on Contingency Planning to reduce losses and casualties in work places and provide necessary technical assistance and conducting mock drill etc. for Contingency Planning | Relevant Industries, Business enterprises |
| Emergency Response Phase | Immediately activating the plan for shut off of all supplies of gas, electricity, waste disposal etc. at all shut off points. | BPDB, BTCL, DPHE |
| | Mobilizing pre-positioned/stand by essential emergency support units and facilities (boreholes for emergency water supply, search and rescue stores at community level, stand-by generators, mobile kitchens, water supply and purification units, mobile hospitals, etc.) | BPDB, BTCL, DPHE, Office of Civil Surgeon, Army, FSCD, BP, Ansar & VDP |
| | Carrying out rapid damage assessment of critical facilities like city buildings and suitability check for using as temporary offices | PWD, Army, FSCD |
| | Facilitating provision of basic facilities to temporary camps set up for IDPs | BPDB, BTCL, DPHE |
| | Mobilizing teams for rapid damage assessment of housing units and dwellings and issue certificate for occupation after earthquake event | PWD, DC Office, DDM |
| | Providing assistance for rapid damage assessment of buildings belong to first responder agencies such as Army, FSCD, Hospitals, Critical Government Buildings to prevent occupation of unsafe buildings | PWD, DC Office, DDM |
| | Liaise with private institutions (Business sector, Industries etc.) for activating the Contingency Plans to conduct rapid damage assessments to work places and provide necessary technical assistance | Relevant Industries, Business enterprises |

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| | Undertaking restoration work and actions by utility agencies to re-establish supply of power, gas, etc. to critical agencies(hospitals, AFD, Police, evacuation camps so on) | BPDB, BTCL, DPHE, Army, FSCD, School, College, Universities, DDM |
| | Conducting rapid damage assessment survey of utility supply systems and restoration of supply to critical facilities (such as hospitals, police, Army, Fire Service, etc.) Organize project teams to conduct rapid damage assessment of all essential utilities within the city by utility managers | BPDB, BTCL, DPHE, Army, FSCD, Universities, DDM |
| | Mobilizing pre-positioned emergency utility supply services for critical areas | BPDB, BTCL, DPHE, Army, FSCD, DDM, NGOs |
| | Obtaining periodic situation reports and review the progress on activation of Contingency Plans and restoration of services by utility agencies | BPDB, BTCL, DPHE |
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| Early Recovery Phase | Conducting survey of temporary shelter set up for IDPs for qualitative improvement of shelter for IDPs | DDM, Army |
| | Developing early recovery Plans for setting up new settlement programs and rehabilitation of partially damaged settlement and housing for supply of permanent shelter for affected. | DDM, PWD, DC Office |
| | Conducting damage assessment survey of all utilities and prepare plans to restore and rehabilitate supply of power, water, gas, to affected areas | BPDB, BTCL, DPHE, Universities |
| | Integrating mitigation and preparedness programs in recovery planning by utility agencies for reduction of future earthquake impacts during restoration of facilities | BPDB, BTCL, DPHE |
| | Assisting restoration of all essential utilities and services within the city by utility managers | BPDB, BTCL, DPHE |
| | Providing periodic situation reports on the status of restoration of services and review the progress | BPDB, BTCL, DPHE |
| | Reviewing of the Performance of Cluster – Restoration of critical facilities and utility services and introduce modifications to the Contingency Plan for better performance in future. | DDM, PWD, BPDB, BTCL, DPHE |
| | Phase by phase restoration of disrupted electricity, gas, water supply and telecommunication through assessment of degree of damage | BPDB, BTCL, DPHE |
| | Conducting rapid damage assessment survey and issue of certificates to house owners and owners of other buildings (business enterprises, shops, commercial centers, inductees, garment factories, hotels, etc.) for ensuring suitability for occupation after the earthquake | PWD, DC Office |
| | Carrying out planning operations for systematic cleaning, removal and transportation of debris, identify dump sites | Private Sectors |
| Conducting a review of performance of the Cluster - Restoration of critical facilities and utility service and revise the Contingency Plan accordingly | Universities | |

CLUSTER 8: TRANSPORTATION

| Lead Agency | | Rangpur City Corporation | |
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| Support Agencies | | RHD, LGED, BRTC, BIWTC, BR, DDM, FSCD, Army, BP, Office of Civil Surgeon | |
| Primary Objectives | | <ul style="list-style-type: none"> To identify vulnerabilities of transportation infrastructures to earthquakes and strengthening the same to a higher safety level To restore the transport system immediately after earthquake events for mobilization of resources to the affected areas | |
| | | Activities | Support Agencies |
| Pre-disaster Phase | | Developing guidelines for vulnerability assessment of transport systems and conduct vulnerability assessment and strengthen transportation system and transport infrastructure | RHD, LGED, BRTC, BIWTC, BR |
| | | Developing emergency teams for restoration of facilities | RHD, LGED, BRTC, BIWTC, BR |
| | | Studying alternate transport arrangements in case of earthquakes and develop route map | RHD, LGED, BRTC, BIWTC, BR |
| | | Developing coordination arrangements between different transport authorities(road, air, sea) to function during emergencies | RHD, LGED, BRTC, BIWTC, BR |
| | | Developing Contingency Plans for city level transportation systems to avoid high risk areas | RHD, LGED, BRTC, BIWTC, BR, BP |
| | | Making arrangements for storage of essential spare parts | RHD, LGED, BRTC, BIWTC, BR |
| | | Making arrangements to fabricate temporary bridges | Army, RHD, LGED |
| Emergency Response Phase | | Taking action by transport authorities to restore the transportation systems to reach critical areas for search and rescue teams and supply of relief | RHD, LGED, BRTC, BIWTC, BR, DDM, FSCD, Army, BP, Office of Civil Surgeon |
| | | Conducting rapid damage assessment survey and reporting by transport authorities for obtaining cooperation of other agencies for restoration of transportation systems. | RHD, LGED, BRTC, BIWTC, BR, DDM |
| | | Mobilization of resources for activation of alternate transport arrangements | RHD, LGED, BRTC, BIWTC, BR, DDM, BP, Ansar & VDP |
| | | Notification of accessible routes after the earthquake event based on the rapid assessment and issue of updates regularly after restoration of additional routes | RHD, LGED, BRTC, BIWTC, BR, DDM, BP, Ansar & VDP |
| Early Recovery Phase | | Conducting damage assessment survey of transport systems due to impact of occurrence of earthquake and collateral hazards and develop Plans for restoration of transport systems to higher seismic safety. | RHD, LGED, BRTC, BIWTC, BR, DDM |
| | | Assisting actions by transport authorities to identify alternate routes for transportation of essential relief supplies, food stocks, welfare items etc. | RHD, LGED, BRTC, BIWTC, BR, DDM, Army |
| | | Commencing rehabilitation of damaged transport infrastructure and facilities, rail, roads, main roads, river ports | RHD, LGED, BRTC, BIWTC, BR |
| | | Reviewing of the performance of Cluster - Transportation during the emergency response period and revise the Contingency Plan to improve the performance | RHD, LGED, BRTC, BIWTC, BR, DDM |

CLUSTER 9: SECURITY AND WELFARE

| | | |
|---------------------------|---|--|
| Lead Agency | Bangladesh Police, Rangpur | |
| Support Agencies | DC Office, DSW Army, FSCD, Ansar & VDP, RAB, BGB, City Corporation | |
| Primary Objectives | <ul style="list-style-type: none"> • To maintain the law and order situation during earthquake emergencies • To arrange security during emergencies to ensure safety of citizens and protection of properties • To control the movement of population and traffic during emergencies | |
| | Activities | Support Agencies |
| Pre-disaster Phase | Developing a comprehensive plan for security arrangements for citizens and protection of properties, business and industries as well as for maintenance of law and order to be adopted during earthquake emergencies | Army, Ansar & VDP, RAB, BGB, City Corporation |
| | Developing a comprehensive plan for traffic control during emergencies | Ansar & VDP, RAB, BGB, City Corporation |
| | Developing guidelines for control of entrance into damaged buildings, and restrict access to affected areas by unauthorized persons | FSCD, Ansar & VDP, RAB, BGB, City Corporation |
| | Developing guidelines for evaluation of security planning and operations for maintenance of law and order during emergencies | DC Office, FSCD, Ansar & VDP, RAB, BGB, City Corporation |
| | Assisting development of procedures for handling of destitute and orphans | DC Office, City Corporation, NGOs, DSW |
| | Assisting in promotion of social security systems (insurance Schemes, micro credit, etc.) | DC Office, DSW, NGOs, Life Insurance companies |
| | Developing guidelines for integrating fire hazard management as a component of earthquake response and early recovery actions especially concerning temporary shelter, government buildings, private buildings, business enterprises, and utilities services | City Corporation, Army, DDM, NGOs |
| | Developing procedures for management and maintenance of information on dead and missing | City Corporation, DC Office, DSW, Army, FSCD, Office of Civil Surgeon |
| | Developing procedures for burial of dead, funeral rights, mortuary services etc. | City Corporation, DC Office, DSW, Army, FSCD, Office of Civil Surgeon, Ansar & VDP, RAB, BGB |
| Emergency | Activating the security plan for citizens and protection of properties, business and industries as well as for maintenance of law and order | Army, Ansar & VDP, RAB, BGB, City Corporation |
| | Activating the Plan for traffic control during emergencies | Ansar & VDP, RAB, BGB, City Corporation |

| | | |
|-----------------------------|--|---|
| | Exercise control of entrance into damaged buildings, and restrict access to affected areas by unauthorized persons | FSCD, Ansar & VDP, RAB, BGB, City Corporation |
| | Conducting periodic monitoring and evaluation of security operations for maintenance of law and order during emergencies | DC Office, Army, FSCD, Ansar & VDP, RAB, BGB, City Corporation |
| | Activating the Plan for handling of destitute and orphans | DC Office, City Corporation, DSW, NGOs |
| | Assisting in documentation and fulfillment of other needs to benefit the beneficiaries of social security systems such as insurance Schemes, micro credit, etc. | DC Office, DSW, NGOs, Life Insurance companies |
| | Carrying out the Plans for prevention and control of fire hazard due to main shock and aftershocks in temporary shelters, government buildings, private buildings, business enterprises, utilities & Services | City Corporation, Army, DDM, NGOs |
| | Carrying out the plan for management and maintenance of information on dead and missing | City Corporation, DC Office, Army, FSCD, Office of Civil Surgeon |
| | Carrying out the procedures for burial of dead, funeral rights, mortuary services etc. | City Corporation, DC Office, Army, FSCD, Office of Civil Surgeon, Ansar & VDP, RAB, BGB |
| Early Recovery Phase | Reviewing the performance of implementation of Security Plan and arrangements during earthquake emergency for safety of citizens and protection of Government & Private Property, Business and Industries as well as for maintenance of law and order to be adopted during emergencies such as earthquakes | Army, Ansar & VDP, RAB, BGB, City Corporation |
| | Reviewing the performance of implementation of plan for traffic control during emergencies | Ansar & VDP, RAB, BGB, City Corporation |
| | Carrying out evaluation of security planning and operations for maintenance of law and order during Earthquake emergency | DC Office, Army, FSCD, Ansar & VDP, RAB, BGB, City Corporation |
| | Conducting review of the Contingency Plan under Cluster – Security and Welfare and introduce suitable modifications in revising the Plan to improve the performance | DC Office, DSW, Army, FSCD, Ansar & VDP, RAB, BGB, City Corporation |

Section 06: Operational Priorities

6.1 Initial Response Goals and Objectives (First 72 hours)

The primary response goal is to save maximum number of lives in case of an earthquake and stabilize the event within first 72 hours. The priority objectives are,

- Delivering immediate search and rescue services and evacuate people to safe locations.
- Providing immediate medical assistance and life-saving and life-sustaining medical services to the victims.
- Providing fatality management services and returning deceased to their loved ones.
- Stabilizing or eliminating damaged buildings and infrastructures to minimize health and safety threats and stabilizing and restoring the essential infrastructures to functional condition.
- Ensuring temporary shelters, including provision of adequate food, water and sanitation facilities to the displaced population.
- Providing overall safety and security and maintaining law and order.

6.2 Priority Actions by Timeframe

a. Priority actions at the Initial Response Phase (First 4 and 8 hours)

| First 4 hours | | Respond to the immediate known effects of the earthquake |
|--------------------------|---|--|
| Responsible Clusters | Priority Actions | |
| Command and Coordination | <ul style="list-style-type: none"> • Activate Emergency Operation center (EOC) | |
| | <ul style="list-style-type: none"> • Identify potential sites for evacuation centers to accommodate displaced population while emergency shelters are being opened. | |
| | <ul style="list-style-type: none"> • Identify at-risk populations, notify them and begin to evacuate if warranted. | |
| | <ul style="list-style-type: none"> • Assess the condition and status of critical facilities such as City Corporation office, DC office, fire service offices, hospitals and clinics, police stations, etc. | |
| | <ul style="list-style-type: none"> • Identify vulnerable buildings or infrastructures that are threatening to impacted area and nearby community that may be affected by cascading effects and secondary hazard and take initiative to stabilize or eliminate immediately. | |
| | <ul style="list-style-type: none"> • Assess the condition of emergency communication system. | |
| | <ul style="list-style-type: none"> • Begin public information dissemination regarding personal protection actions, safe congregation points, and community assistance needed. | |
| | <ul style="list-style-type: none"> • Complete an initial damage assessment of the city, identifying areas affected, major incidents, and operational status of critical services. | |
| | <ul style="list-style-type: none"> • Create consolidated situation assessment and declare a state of emergency. | |

| | |
|------------------------------|---|
| Search Rescue and Evacuation | <ul style="list-style-type: none"> • Mobilize specialized search and rescue team including urban community volunteer and assist immediate life-saving rescue operations. |
| | <ul style="list-style-type: none"> • Direct and suppression of existing fires and anticipated fire spread based on conditions. |
| Health Services | <ul style="list-style-type: none"> • Deploy emergency medical services to major incidents. |
| | <ul style="list-style-type: none"> • Establish casualty collection points and field medical camps for on-scene treatment |
| | <ul style="list-style-type: none"> • Identify and triage people who have critical injury that require acute medical care and limit the on-scene treatment to non-acute care. |
| Security and Welfare | <ul style="list-style-type: none"> • Deploy law enforcement resources to support response and maintain law and order. |
| | <ul style="list-style-type: none"> • Provide overall security and access control for the affected area and security for search and rescue operation. |

| First 12 hours | | Assemble resources for sustained response and for providing basic services to the community |
|--|--|---|
| Responsible Clusters | Priority Actions | |
| Command and Coordination | <ul style="list-style-type: none"> • Assess critical resource shortfalls and begin requesting support through National EOC. | |
| | <ul style="list-style-type: none"> • Open evacuation centers/ spaces. | |
| | <ul style="list-style-type: none"> • Initiate a regular status reporting and resource requesting process between local EOC, major incident commands, and National EOC. | |
| | <ul style="list-style-type: none"> • Monitor and address challenges regarding patient load balancing between hospitals and the related patient transport system. | |
| Shelter | <ul style="list-style-type: none"> • Assess conditions at designated emergency shelter sites and estimate the number of displaced population who need emergency shelters. | |
| | <ul style="list-style-type: none"> • Set up tented camps and ensure the distribution of emergency shelter stock to the people of greatest need. | |
| | <ul style="list-style-type: none"> • Assess conditions of educational and communal buildings that can be used for emergency shelter purpose based on the requirements and season. | |
| Relief, Food and Nutrition, Water Supply and Sanitation, Restoration of Utility Services | <ul style="list-style-type: none"> • Begin to supply beds, food, water and sanitation, medical support, cooking facilities, electricity and telecommunication facilities in emergency shelters. | |
| Transportation | <ul style="list-style-type: none"> • Assess condition of transportation system and identify alternatives for moving critical resources into the city. | |
| | <ul style="list-style-type: none"> • Designate primary evacuation routes, implement debris clearance and recover routes. | |
| Security and Welfare | <ul style="list-style-type: none"> • Establish perimeter control around unsafe areas and security at critical facilities. | |

| | |
|--|--|
| | <ul style="list-style-type: none"> Implement an access permit system to prioritize and the limit the access and traffic control system. |
| | <ul style="list-style-type: none"> Identify people with special support requirements (people with disability, children, aged people, female, etc.) and ensure that their needs are met. |
| | <ul style="list-style-type: none"> Determine if a curfew should be established. |

b. Priority actions at the Intermediate Response Phase (Through 24, 48 and 72 hours)

| Through 24 hours | | Consolidate system for sustaining emergency response operations |
|-----------------------------|---|--|
| Responsible Clusters | Priority Actions | |
| Command and Coordination | <ul style="list-style-type: none"> Commit resources to support public safety by assisting incoming employees and gathering/distributing convergent resources from less-affected parts and national resources. | |
| | <ul style="list-style-type: none"> Conduct outreach for situation status and resource needs for affected facilities needing support including ancillary medical institutions, educational institutes, commercial buildings, and sites of historic/cultural significance. | |
| | <ul style="list-style-type: none"> Initiate regular news briefings to inform residents on response operations, steps that can be taken, services available to them, ongoing rumor control efforts, and ways in which the community can help. | |
| Shelter | <ul style="list-style-type: none"> Designate staging areas and begin planning to accommodate support personnel. | |
| Transport | <ul style="list-style-type: none"> Ensure that an adequate system is in place to fuel and maintain generators for providing power to critical facilities. | |
| Security and Welfare | <ul style="list-style-type: none"> Establish temporary morgues and begin process of collecting remains. | |
| | <ul style="list-style-type: none"> Establish Family Assistant Centers and provide guidance and public messaging about the Family Assistance Centers and dead body collection points. | |

| Through 48 hours | | Stabilize support for affected areas and secure unaffected areas for resumption of services |
|-----------------------------|---|--|
| Responsible Clusters | Priority Actions | |
| Command and Coordination | <ul style="list-style-type: none"> Process ongoing logistical resource requests for emergency services needs to support incident management. | |
| | <ul style="list-style-type: none"> Make arrangements for the EOC to assume responsibility for supporting incoming aid and convergent resources, relieving field-level public safety workers to focus on providing sustained rescue, firefighting, paramedic, and law enforcement services. | |
| | <ul style="list-style-type: none"> Anticipate and support initial damage assessment visits by National officials wanting to confirm the immediate and long-term recovery needs of the city for their out-of-area resources. | |
| Relief, Food and Nutrition, | <ul style="list-style-type: none"> Establish a distribution network for drinking water and food for | |

| | |
|--------------------------------------|--|
| Water Supply, Sanitation and Hygiene | persons who are not residing in mass care facilities but are without basic services. |
| Water Supply, Sanitation and Hygiene | <ul style="list-style-type: none"> Implement the emergency drinking water plan. |

| Through 72 hours | | Begin transition from immediate emergency response efforts to sustained operations. |
|-----------------------------|--|--|
| Responsible Clusters | Priority Actions | |
| Command and Coordination | <ul style="list-style-type: none"> Re-evaluate mass care needs in light of any ongoing aftershocks and subsequent damage. | |
| | <ul style="list-style-type: none"> Establish the Donations Management Branch and the Human Resources Branch in the logistics section of the EOC to facilitate the handling of volunteers and donations. | |
| | <ul style="list-style-type: none"> Participate in discussions with Department of Disaster Management and MoDMR on assessing services that residents will require to recover from the disaster. | |
| | <ul style="list-style-type: none"> Review incident status reports to prioritize incident commands that can begin suspending emergency response operations and transition to sustained response and recovery operations. | |
| Health Services | <ul style="list-style-type: none"> Support hospital and other medical facility re-supply efforts. | |
| Shelter | <ul style="list-style-type: none"> Establish shelter support coordinator teams and evaluate the shelter sites to identify site damage, site security, critical support requirements including shelter management personnel, adequacy of feeding and medical care arrangements, shelter demographics (gender, children, medical needs, language barriers, disability needs). | |
| Security and Welfare | <ul style="list-style-type: none"> Establish plans for how to provide care for people with special support requirements that cannot be met in congregate care shelters. | |
| | <ul style="list-style-type: none"> Review and enhance security plans to maintain public order. | |

c. Priorities actions at the Initial Recovery Phase (After 72 hours but before end of first week)

Days 3 through 7 at the initial recover phase, EOC will perform following activities outlined below. Some of these actions may occur immediately or in phases; actions must be identified and prioritized based on overall need and resources available to respond.

- Establish plan and begin widespread safety/damage assessment of public infrastructure, such as roads and sidewalks, bridges, tunnels and retaining walls.
- Establish teams to visit shelters to identify people that require special support that need to be relocated into other types of care facilities and to identify site modifications that should be made to better accommodate residents with sight, hearing, mobility or other limitations.
- Begin locating and opening relief supply and food distribution points other than the evacuation centers/shelters.
- Establish and implement mental health counseling for people whose relatives have been killed and homes have been damaged.

- Establish portable toilet sanitation stations around the city and related cleaning and pumping program.
- Coordinate with the business community regarding the time of their business resumption activities.
- Begin widespread safety/damage inspections of homes and businesses.
- Produce, regularly update, and distribute a disaster “Fact Sheet” to the media, people in shelters, field response personnel, and residents.
- Ensure that air quality, hazardous materials spills, and other environmental situations are monitored and risks are addressed.
- Evaluate the need to designate specific routes into the city for critical relief supplies.
- Ensure that all the food at emergency shelter/evacuation centers, feeding sites, and disaster kitchens are safe and hygienic.
- Begin planning for the relocation of displaced population.
- Implement a process to allow limited entry (where safe) for recovery of personal items.

6.3 Sustained Operations

As the third 24-hour period concludes, the EOC should be supporting three primary areas of operation:

- Ongoing rescue operations and other emergency measures.
- Transitioning near-complete response efforts to sustained emergency operations, typically addressing remaining earthquake effects that do not require public safety technical skills.
- Preparing for ongoing major recovery efforts focusing on restoration of services.

Section 07: Actions to Support Plan Implementation

Preparing Contingency Plans should not be viewed as a static activity with a defined start and finish. It should be an on-going process integrated into the agencies' daily strategies and tasks. To ensure the Contingency Plan as a useful tool that enables quick and appropriate decision-making during disasters, capacity building and public awareness should be continued in order to:

- i) Familiarize the people with the plans;
- ii) Inspire acceptance of in the documents; and
- iii) Prepare agencies and population to implement the plans in response to a major earthquake.

7.1 Capacity Building/ Training

In reference to this Contingency Plan, capacity building refers to increasing the ability of responsible agencies, departments, organizations, and individuals to successfully implement the plan and respond to a major earthquake in timely manner. It also includes ensuring that there is adequate and capable manpower that considers maintaining the plan a priority. **Table-7.1** includes a number of training and education programs aimed at a variety of audience who play a critical role in earthquake response. These audiences include administration and technical personnel, field officers, NGOs, business community, selected community leaders and volunteers. Introducing and continuing to engage these parties in earthquake management concepts can help ensuring that this Contingency Plan will be successfully implemented in the event of a major earthquake.

Table-7.1: List of training and education programs for building capacity to implement the plan

| Activity | Target Group | Delivery Method | Responsible Departments/ Agencies/ Ministries |
|------------------------------|---|---|--|
| Contingency Plan Development | First Responder Agencies | Training Workshops | Respective Departments/ Agencies and Ministries |
| | Utility services agencies and lifeline agencies | Training workshop/Guidelines | Respective Departments/ Agencies and Ministries |
| | Other agencies | Issue Guideline for Contingency Planning | DDM, Respective Departments/ Agencies and Ministries |
| | Ward/Community level | Issue Guideline for Contingency Planning and training to undertake planning at ward level | City Corporation, DDM |

| Activity | Target Group | Delivery Method | Responsible Departments/ Agencies/ Ministries |
|--|--|--|---|
| | Private sector institutions, banks, industries, factories | Issue Guideline for Contingency Planning | DDM |
| Training in EOC functions | DDB, Other government agencies | Issue SOPs | DDM |
| Training on Incident Command System (ICS) | Army, Stakeholders within City Corporation area | City level Training workshops | City Corporation, DDM |
| Training on Damage assessment and need analysis(DANA) | City Corporation, DRRO, other city level relevant stakeholders | City level Training workshops | DDM |
| Earthquake Response simulations/table top exercises | Health Service, FSCD, Army, DRRO, City Corporation | City level Training workshops | City Corporation, DDM, Respective Departments/ Agencies |
| Professional First responder courses (Collapse Building Search & Rescue, Medical First Responder training) | Army, FSCD, Auxiliary forces | Training | DDM, Respective Departments and Ministries |
| Hospital Preparedness for emergencies | Health services and city level hospitals | Training | Civil Surgeon Office, DG Health Services, Respective Ministry |
| Community level first responders | Community Volunteer groups in the city | FSCD training course on community first responders | FSCD |
| Restoration of Utility services | Field teams attached to utility agencies | Training programs designed by utility agencies | Respective Departments/ Agencies and Ministries |
| Restoration of life line facilities | Field teams attached to lifeline agencies | Training Workshops | Respective Departments/ Agencies and Ministries |

7.2 Exercises and Simulations

It is important that the Earthquake Contingency Plan is exercised prior to a disaster event so that first responder agencies are familiar with their roles and responsibilities and are comfortable coordinating with one another. Exercise and simulations are useful tools that can provide an example of working in a stressful post-disaster environment with time constraints. The after-action reviews of exercises and simulations provide an excellent opportunity to evaluate both the strengths and weaknesses of a plan. The lessons learned from exercise and simulations can be incorporated

into the Contingency Plan with necessary updates and modifications for improvement of the plan. It is also a useful way of keeping plans fresh, especially during extended disaster-free periods. Exercise and simulations of the Earthquake Contingency Plan could also be helpful in the development of agency level plans because they would inspire agencies to think further about their own individual actions.

7.3 Public Awareness and Education

Family members, neighbours and community people are always the first to arrive on the scene when a disaster occurs. Lack of awareness or low understanding of risk can be the result of inadequate capacity of local community to understand the risk environment and inefficient response. Educating those whose lives or homes might be at risk during a disaster is a critical component of Contingency Planning. Public awareness campaigns generate community support for the implementation of earthquake Contingency Plans, and encourage those who are engaged in response activities at community level and to mobilize community support.

Through a variety of public education programs, those threatened by a potential disaster will learn about what to expect and what they will be asked to do, or how they may participate during an earthquake emergency. An effective public awareness and education campaign requires the coordinated efforts of all the stakeholders such as the government officials and community members, media, scientific and technical experts, business leaders and development workers, civil society groups etc.

A wide array of channels of communication is available for public awareness campaigns with different target groups:

- Face-to-face: meeting, seminar, workshop, conference, march, exhibition, demonstration, training, exchange visit, planning
- Mass media: television, radio, newspaper, cinema
- Distributed print material: leaflet, pamphlet, brochure, booklet, guideline, case study, newsletter, journal, research paper, report
- Folk media: story, drama, dance, song, puppet, music, street entertainment
- Audio-visual: video, audio, multi-media, artwork, photograph, slide show, model, map
- Stand-alone print: billboard, poster, banner, warning sign, flood water level marker
- Postal: direct mailing
- People: community leader, volunteer, project worker, head of women's group
- Electronic media: website, e-mail, e-mail discussion lists, electronic conferencing, distance learning platform, SMS etc.
- Exercises and simulations
- School awareness programs

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Annex-A: Available Resources and Capacities

Table A-1: Available and required manpower of FSCD, Rangpur

| Sl. No. | Staff Designation | No. available | Additional need |
|--------------|--------------------------|---------------|-----------------|
| 1 | Senior stationer officer | 1 | No |
| 2 | Station officer | 1 | No |
| 3 | Leader | 5 | No |
| 4 | Driver | 7 | No |
| 5 | Fireman | 27 | 2 |
| 6 | Cook | 2 | No |
| 7 | Sweeper | 1 | No |
| Total | | 44 | |

Table A-2: Available and required vehicles, tools and equipment of FSCD, Rangpur

| Vehicles/Tools | Purpose | Available Number | Additional Need |
|-------------------------|---------|------------------|-----------------|
| Water Tender | All | 2 | |
| Tana Gari | All | 2 | 1 |
| Ambulance | All | 2 | |
| Two wheeler | All | 1 | 1 |
| Hosepipe pipe | Fire | 90 | |
| Succession Hosepipe | Fire | 8 | |
| Succession range/key | Fire | 16 | |
| Portable Generator | All | 2 | 1 |
| Smoke ejector | All | 1 | 1 |
| Breathing apparatus | All | 3 | 3 |
| Face mask | All | 0 | 6 |
| Lock cutter | Rescue | 2 | 3 |
| Brunch pipe | Fire | 6 | 1 |
| Foam making brunch pipe | Fire | 3 | 1 |
| Spreader | Rescue | 1 | 1 |
| Ram jack | Rescue | 1 | 1 |
| Air lifting bag | Rescue | 1 | 2 |
| Rotary rescue saw | Rescue | 2 | 1 |
| Rotary hammer drill | Rescue | 2 | 2 |
| Ladder | Rescue | 4 | |
| Portable Pump | All | 6 | |
| Foam trolley | Fire | 1 | |

| Vehicles/Tools | Purpose | Available Number | Additional Need |
|---------------------|---------|------------------|-----------------|
| Strainer | fire | 7 | |
| Fireman exe | All | 4 | 4 |
| Fireman suit | Fire | 6 | 10 |
| Hit protective suit | Fire | 1 | 3 |
| Gum boot | All | 16 | 25 |
| Helmet | All | 10 | 20 |
| Extinguisher | Fire | 8 | |
| Search light | All | 3 | 2 |
| TTL | Fire | 0 | 1 |

Table A-3: List of urban community volunteer in Rangpur City

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|-----------------------|---------|--------------|--------------|-----------------------|
| 1 | Md. Atiul Islam | 8 | 01738624905 | 01199178305 | Rangpur Fire Station |
| 2 | Md. Aminul Islam | 8 | 01737365011 | 01756091371 | Rangpur Fire Station |
| 3 | Most. Nargis Parvin | 1 | 01916514355 | 01724549188 | Rangpur Fire Station |
| 4 | Md. Mahabub Alam | 8 | 01750421278 | 01553273821 | Rangpur Fire Station |
| 5 | Md. Abu Sayed | 7 | 01741458489 | 01916990170 | Rangpur Fire Station |
| 6 | Farjana Rahman | 4 | 01747126674 | 01722667578 | Rangpur Fire Station |
| 7 | Rehana Perven | 4 | 01723904796 | 01916211920 | Rangpur Fire Station |
| 8 | Md. Tanvir Morshed | 7 | 01721716855 | 01939172862 | Rangpur Fire Station |
| 9 | Khurshida Aktar Jahan | 7 | 01913435109 | 01723576688 | Rangpur Fire Station |
| 10 | Taslim Akter | 4 | 01732028020 | 01723206019 | Rangpur Fire Station |
| 11 | Joynob Bibi Nipa | 8 | 01723904796 | 01722080782 | Rangpur Fire Station |
| 12 | Md. Asadujjaman Asek | 5 | 01741462355 | 01931071910 | Rangpur Fire Station |
| 13 | Md. Rezve Alam | 1 | 01744876065 | 01190310619 | Rangpur Fire Station |
| 14 | Md. Jahedul Islam | 8 | 01755441491 | 01740139911 | Rangpur Fire Station |
| 15 | Md. Abul Kalam Azad | 7 | 01940687452 | 01737145285 | Rangpur Fire Station |
| 16 | Moly Akter | 4 | 01763120000 | 01719303913 | Rangpur Fire Station |
| 17 | Mst. Ayarin Naher | 7 | 01750452646 | 01723256196 | Rangpur Fire Station |
| 18 | Mst. Nilima Parveen | 5 | 01741462931 | 01714558464 | Rangpur Fire Station |
| 19 | Most. Jelin Begum | 8 | 01738343429 | 01723465475 | Rangpur Fire Station |
| 20 | Most. Akter Jahen | 4 | 01716931789 | 01737129090 | Rangpur Fire Station |
| 21 | Md. Ibrahim Ali | 1 | 01755469946 | 01915899093 | Rangpur Fire Station |
| 22 | Liton Islam | 1 | 01750583351 | | Rangpur Fire Station |
| 23 | Md. Faruk Hossain | 1 | 01719038248 | 01718644255 | Rangpur Fire Station |
| 24 | Md. Fazlul Karim | 7 | 01738753713 | 01722080067 | Rangpur Fire Station |
| 25 | Mehedi Hasan | 1 | 01719244378 | 01912110888 | Rangpur Fire Station |
| 26 | Md. Abu Lish | 1 | 01722695764 | 01932149015 | Rangpur Fire Station |
| 27 | Md. Abul Basar | 5 | 01736020184 | 01821136673 | Rangpur Fire Station |
| 28 | Sree. Madon Chandra | 8 | 01735981295 | | Rangpur Fire Station |
| 29 | Asadul Islam | 4 | 01719327654 | | Rangpur Fire Station |
| 30 | Md. Monjurul Hasan | 5 | 01750452045 | | Rangpur Fire Station |

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|-----------------------------|---------|--------------|--------------|-----------------------|
| 31 | Md. Kamruzzaman | 5 | 01714558464 | 01741462931 | Rangpur Fire Station |
| 32 | Md. Shamim Miah | 7 | 01738255465 | 01755441771 | Rangpur Fire Station |
| 33 | Md. Rahmatullah Rony | 7 | 01738439798 | 01718786465 | Rangpur Fire Station |
| 34 | Jannatul Ferdousi | 2 | 01746235888 | 01715314865 | Rangpur Fire Station |
| 35 | Miss. Mamataj Begum | 7 | 01737821407 | 01729105812 | Rangpur Fire Station |
| 36 | Most. Armina Sultana | 12 | 01750797532 | | Rangpur Fire Station |
| 37 | Md. Fazlul Haque | 4 | 01761069926 | 01744755480 | Rangpur Fire Station |
| 38 | Md. Nazmul Haque | 7 | 01738118435 | 01673217810 | Rangpur Fire Station |
| 39 | Md. Abdul Razzak | 7 | 01737427075 | 01751432255 | Rangpur Fire Station |
| 40 | Md. Sultan Mandol | 7 | 01737933403 | 01725934188 | Rangpur Fire Station |
| 41 | Bulbul Ahammed | 5 | 01737138718 | 01842138718 | Rangpur Fire Station |
| 42 | Md. Aftabuzzaman | 4 | 01723206019 | 01916507961 | Rangpur Fire Station |
| 43 | Md. Salim Reza | 1 | 01737364807 | 01710918663 | Rangpur Fire Station |
| 44 | Mst. Iren Akter Opu | 4 | 01747861960 | 01750421309 | Rangpur Fire Station |
| 45 | Md. Atikuzzaman | 1 | 01737564356 | 01823412784 | Rangpur Fire Station |
| 46 | Md. Farhad Hossen Robi | 8 | 01723148247 | 01928715559 | Rangpur Fire Station |
| 47 | Md. Burhan Ullah | 6 | 01722940745 | 01830440176 | Rangpur Fire Station |
| 48 | Most. Renu Akter | 7 | 01923937855 | 01734741331 | Rangpur Fire Station |
| 49 | Md. Al Amin Hasan Mukut | 2 | 01751040502 | 01761025959 | Rangpur Fire Station |
| 50 | Mst. Arjahan Begum | 7 | 01719860158 | 01942216097 | Rangpur Fire Station |
| 51 | Shamse Ara Begum | 8 | 01823424061 | 01921489480 | Rangpur Fire Station |
| 52 | Md. Alamgir | 6 | 01737391665 | 01738376597 | Rangpur Fire Station |
| 53 | Md. Abul Kalam Azad | 7 | 01729734607 | 01750600142 | Rangpur Fire Station |
| 54 | Md. Maruf Hasan | 1 | 01750730315 | 01937333742 | Rangpur Fire Station |
| 55 | Monoz Kumer Sarker | 5 | 01717413475 | | Rangpur Fire Station |
| 56 | Md. Osman Gani | 4 | 01737392965 | 01676474577 | Rangpur Fire Station |
| 57 | Md. Monzurul Islam | 8 | 01719514542 | 01724676006 | Rangpur Fire Station |
| 58 | Md. Mominul Islam | 8 | 01921489480 | 01750544842 | Rangpur Fire Station |
| 59 | Motiul Islam Munna | 8 | 01762933777 | 01943613248 | Rangpur Fire Station |
| 60 | Hasan Ali Shah | 7 | 01737717082 | 01715636768 | Rangpur Fire Station |
| 61 | Md. Mydul Islam | 4 | 01733255824 | 01740490646 | Rangpur Fire Station |
| 62 | Md. Mahmudul Hasan | 8 | 01713714101 | 01728719222 | Rangpur Fire Station |
| 63 | Md. Rokon Uddin | 13 | 01737578446 | 01737138314 | Rangpur Fire Station |
| 64 | Md. Sazzad Hossain | 7 | 01718352150 | 01724671599 | Rangpur Fire Station |
| 65 | Md. Akhtar Uzzaman Sawdagar | 0 | 01713733795 | 01720665132 | Rangpur Fire Station |
| 66 | Md. Al Ami Firoz | 7 | 01763116270 | 01734022118 | Rangpur Fire Station |
| 67 | Md. Forhad Hossain | 2 | 01734740761 | 01722648144 | Rangpur Fire Station |
| 68 | Md. Megdad Hossain | 8 | 01737267750 | 01918927325 | Rangpur Fire Station |
| 69 | Khaleda Parvin | 7 | 01751767688 | 01722906558 | Rangpur Fire Station |
| 70 | Abeda Sultana | 7 | 01747089570 | 01913435109 | Rangpur Fire Station |
| 71 | Md. Shamiul Islam | 13 | 01738625796 | 01745637165 | Rangpur Fire Station |
| 72 | Md. Masud Rana | 12 | 01738149971 | 01720437033 | Rangpur Fire Station |
| 73 | Sarat Chandra Ray | 12 | 01752011641 | 01756720724 | Rangpur Fire Station |

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|---------------------------|---------|--------------|--------------|------------------------|
| 74 | Md. Azizul Islam | 2 | 01922961803 | 01946452900 | Rangpur Fire Station |
| 75 | Bidhan Chandra Sharma | 8 | 01722721812 | 01756723937 | Rangpur Fire Station |
| 76 | Md. Towhedul Islam | 5 | 01747034127 | 01553535878 | Rangpur Fire Station |
| 77 | Shakila Ahmed | 12 | 01721215979 | 01680976637 | Rangpur Fire Station |
| 78 | Md. Mohaimenul Islam | 8 | 01738150327 | 01927823049 | Rangpur Fire Station |
| 79 | Md. Ruhul Amin | 8 | 01723207833 | 01740490493 | Rangpur Fire Station |
| 80 | Md. Milon | 12 | 01718566124 | 01744859860 | Rangpur Fire Station |
| 81 | Most. Farhana Sarmin | 8 | 01923495633 | | Rangpur Fire Station |
| 82 | Md. Toufik Sheikh | 9 | 01723673221 | | Rangpur Fire Station |
| 83 | Md. Nadimul Islam | 7 | 01737577526 | 01717015806 | Rangpur Fire Station |
| 84 | S. M Toufiqur Rahman | 7 | 01723556442 | 01737577526 | Rangpur Fire Station |
| 85 | Md. Hasebujjaman | 5 | 01737716471 | 01723672612 | Rangpur Fire Station |
| 86 | Md. Tariquzzaman | 3 | 01712500964 | 01913267587 | Rangpur Fire Station |
| 87 | Sonaton Kumar Zha | 8 | 01728721145 | 01737853071 | Rangpur Fire Station |
| 88 | Aklima Jamal Kobita | 8 | 01757260505 | 01828317492 | Rangpur Fire Station |
| 89 | Rumana Yesmin | 8 | 01710522216 | 01717514306 | Rangpur Fire Station |
| 90 | Most. Shirina Akter | 4 | 01721216731 | 01761700487 | Rangpur Fire Station |
| 91 | Afrin Islam | 4 | 01719548542 | 01722933855 | Rangpur Fire Station |
| 92 | Asmira Akther | 4 | 01741463085 | 01712764746 | Rangpur Fire Station |
| 93 | Mst. Pearee Begum | 7 | 01947905140 | 01917121612 | Rangpur Fire Station |
| 94 | Mst. Sajeda Akter | 8 | 01740927177 | 01922983525 | Rangpur Fire Station |
| 95 | Md. Safiul Islam | 0 | 01719363470 | 01715271109 | Rangpur Fire Station |
| 96 | Md. Mostafizur Rahman | 8 | 01719726770 | 01717591744 | Rangpur Fire Station |
| 97 | Anwara Akter | | 01922500644 | 01715067542 | Lalbag Fire Station |
| 98 | Fahmida Khatun | | 01924459566 | 01674206555 | Lalbag Fire Station |
| 99 | Md. Novel Hossen | | 01935893789 | | Kurmitola Fire Station |
| 100 | Md. Miraz Hydar Chowdhury | 0 | 01769-662562 | | Rangpur Fire Station |
| 101 | Md. Rafiqul Islam | 0 | 01728-115934 | 01721-878811 | Rangpur Fire Station |
| 102 | Md. Mizanur Rahman | 0 | 01729-586221 | 01925-665076 | Rangpur Fire Station |
| 103 | Md. Mominul Islam | 0 | 01761-198382 | 01960753719 | Rangpur Fire Station |
| 104 | Md. Zahirul Islam | 0 | 01720-618092 | | Rangpur Fire Station |
| 105 | Md. Karamot Ali | 0 | 01938326493 | | Rangpur Fire Station |
| 106 | Md. Mostak Ahmed | 0 | 01917432182 | 01913017437 | Rangpur Fire Station |
| 107 | Md. Sawkat Ali | 0 | 01938026684 | | Rangpur Fire Station |
| 108 | Md. Harun Or Rashid | 0 | 0172897045 | 0172452565 | Rangpur Fire Station |
| 109 | Md. Mahamudun Nabi | 0 | 01724-105719 | | Rangpur Fire Station |
| 110 | Mohammad Alek Raza | 0 | 01724690332 | 01945655744 | Rangpur Fire Station |
| 111 | Prosanno Kumar Roy | 0 | 01724-707235 | 01911832521 | Rangpur Fire Station |
| 112 | Apurbo Kumar Ray | 0 | 01724114298 | 01960742686 | Rangpur Fire Station |
| 113 | Md. Hafiz Uddin | 0 | 01716141916 | | Rangpur Fire Station |
| 114 | Md. Abdul Mannan | 0 | 01835635218 | 01923205536 | Rangpur Fire Station |
| 115 | Mohammad Aslam | 0 | 01815482170 | | Rangpur Fire Station |
| 116 | Md. Shahanuzzaman | 0 | 01728720965 | | Rangpur Fire Station |

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|-------------------------|---------|--------------|--------------|-----------------------|
| 117 | Md. Shahidul Islam | 0 | 01718461877 | 01926-733601 | Rangpur Fire Station |
| 118 | Md Faruk Hossain | 0 | 01193054481 | 01191398488 | Rangpur Fire Station |
| 119 | Md. Yousuf Ali | 0 | 01734-098571 | 01715-773372 | Rangpur Fire Station |
| 120 | Md. Rabiul Islam | 0 | 01760-142563 | 01828-183083 | Rangpur Fire Station |
| 121 | Shapla Rani | 25 | 01762869782 | | Rangpur Fire Station |
| 122 | Mst. Mukta Parvin | 24 | 01714420724 | | Rangpur Fire Station |
| 123 | Miju Ahmed | 21 | 01738053434 | 01822945288 | Rangpur Fire Station |
| 124 | Md. Shams Uz Zaman | 32 | 01717948282 | 01723315090 | Rangpur Fire Station |
| 125 | Md. Manik Hossain | 26 | 01737084904 | 01732095776 | Rangpur Fire Station |
| 126 | Md. Sadrul Pasa | 11 | 01722796766 | 01960743124 | Rangpur Fire Station |
| 127 | Most. Shamoli Akter | 22 | 01739452394 | | Rangpur Fire Station |
| 128 | Papri Rani Roy | 25 | 01746715687 | 01937379479 | Rangpur Fire Station |
| 129 | Md. Zamiul Islam | 25 | 01750452435 | 01686988916 | Rangpur Fire Station |
| 130 | Md. Nurujjaman | 27 | 01737989444 | 01831129259 | Rangpur Fire Station |
| 131 | Md. Arshad Amin | 27 | 01721940694 | 01710870958 | Rangpur Fire Station |
| 132 | Md. Abul Kalam Azad | 25 | 01191615392 | 01744822432 | Rangpur Fire Station |
| 133 | Most. Nazmun Naher Naju | 22 | 01750545833 | | Rangpur Fire Station |
| 134 | Most. Tazmin Sultana | 22 | 01739015194 | | Rangpur Fire Station |
| 135 | Md. Jahangir Alam | 3 | 01737999592 | 01774136736 | Rangpur Fire Station |
| 136 | Md. Rabiul Islam | 28 | 01738150299 | | Rangpur Fire Station |
| 137 | Md. Rahidul Islam Liton | 3 | 01719547394 | 01673360153 | Rangpur Fire Station |
| 138 | Md. Rahel Miah | 25 | 01723513282 | 01962465059 | Rangpur Fire Station |
| 139 | Md. Samiur Rahman | 26 | 01737938363 | 01811115242 | Rangpur Fire Station |
| 140 | Md. Shoaib Hossen | 26 | 01831784658 | 01737763612 | Rangpur Fire Station |
| 141 | Md. Fazla Rabbi | 11 | 01751028540 | 01671382973 | Rangpur Fire Station |
| 142 | Md. Shafeur Rahman | 22 | 01199533096 | | Rangpur Fire Station |
| 143 | Md. Hasan Mahmud | 19 | 01737389928 | 01737389928 | Rangpur Fire Station |
| 144 | Md. Gazi Salauddin | 22 | 01744635180 | 01742126088 | Rangpur Fire Station |
| 145 | Md Sabuj Miah | 7 | 01744512665 | 01922400074 | Rangpur Fire Station |
| 146 | Noor Habib | 9 | 01719087886 | 01925645927 | Rangpur Fire Station |
| 147 | Md. Aatur Rahman | 4 | 01737365855 | 01738237359 | Rangpur Fire Station |
| 148 | Md. Nasir Uddin | 25 | 01747033576 | 01685257607 | Rangpur Fire Station |
| 149 | Most. Jannatul Mawa | 25 | 01824951881 | | Rangpur Fire Station |
| 150 | Md. Shah Alam | 30 | 01738145713 | 01720581309 | Rangpur Fire Station |
| 151 | Md. Moniruzzaman Sarker | 22 | 01771034057 | 01962132057 | Rangpur Fire Station |
| 152 | Md. Waes Korune | 28 | 01738236958 | 01767333662 | Rangpur Fire Station |
| 153 | Afrin Aktar | 25 | 01719247398 | | Rangpur Fire Station |
| 154 | Most. Jannathy Khatun | 25 | 01738281731 | | Rangpur Fire Station |
| 155 | Md. Aatur Rahman | 25 | 01751344171 | | Rangpur Fire Station |
| 156 | Bizon Kumar Roy | 25 | 01726927607 | 01913279307 | Rangpur Fire Station |
| 157 | Md. Saddam Hossain | 30 | 01722883249 | 01935253595 | Rangpur Fire Station |
| 158 | Md. Mostafizar Rahman | 22 | 01738753818 | 01915991285 | Rangpur Fire Station |
| 159 | Md. Nuruzzaman Rony | 22 | 0 | 0 | Rangpur Fire Station |

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|-------------------------|---------|--------------|--------------|-----------------------|
| 160 | Md. Delower Hossen | 22 | 01751403792 | 01917966524 | Rangpur Fire Station |
| 161 | Md. Jahidul Islam | 20 | 01737763574 | 01724563291 | Rangpur Fire Station |
| 162 | Md. Awal Hossain | 25 | 01762131807 | 01761311402 | Rangpur Fire Station |
| 163 | Mirza Titumir | 9 | 01723951954 | 01762955923 | Rangpur Fire Station |
| 164 | Md. Zahangir Alam Mony | 25 | 01723535260 | 01838773183 | Rangpur Fire Station |
| 165 | Md. Nurul Islam | 24 | 01719258932 | 01914743798 | Rangpur Fire Station |
| 166 | Mst. Amena Khatun | 30 | 01729680147 | 01912434557 | Rangpur Fire Station |
| 167 | Md. Mizanur Rahman | 25 | 01737566053 | 01944255360 | Rangpur Fire Station |
| 168 | Hamidur Rahman | 19 | 01737718022 | 01761314114 | Rangpur Fire Station |
| 169 | Md. Abdur Rashid | 19 | 01829367137 | 01740140582 | Rangpur Fire Station |
| 170 | Md. Mydul Islam | 3 | 01739445180 | 01836122178 | Rangpur Fire Station |
| 171 | Md. Badsha Alam | 22 | 01712576416 | | Rangpur Fire Station |
| 172 | Md. Yakub Ali Sojib | 24 | 01718626811 | 01924244809 | Rangpur Fire Station |
| 173 | Md. Rubayeth Beenlatif | 24 | 01556386703 | 01719513882 | Rangpur Fire Station |
| 174 | Md. Asaduzzaman | 32 | 01735398902 | 01738118593 | Rangpur Fire Station |
| 175 | Md. Alomgir Hossain | 1 | 01762706719 | 01725618598 | Rangpur Fire Station |
| 176 | Miss. Bilkiss Begum | 6 | 01917755809 | | Rangpur Fire Station |
| 177 | Md. Baser Ali | 24 | 01724123334 | 01923765522 | Rangpur Fire Station |
| 178 | Md. Sumon Mian | 22 | 01724673595 | 01916508354 | Rangpur Fire Station |
| 179 | Uttam Kumar Roy | 24 | 01737888334 | 01926870495 | Rangpur Fire Station |
| 180 | Md. Zikrul Hasan | 24 | 01914415038 | 01942644344 | Rangpur Fire Station |
| 181 | Krishnandu Barma | 24 | 01717250287 | 01671161997 | Rangpur Fire Station |
| 182 | Md. Khalilur Rahman | 25 | 01720660218 | 01750646127 | Rangpur Fire Station |
| 183 | Md. Tahamid Hossain | 5 | 01967789827 | 01737389967 | Rangpur Fire Station |
| 184 | Md. Rahid Mondol | 25 | 01755366203 | 01813909772 | Rangpur Fire Station |
| 185 | Md. Sayem Hossen Raj | 24 | 01926606336 | 01757060615 | Rangpur Fire Station |
| 186 | Md. Masud Rana | 9 | 01761311684 | 01751206794 | Rangpur Fire Station |
| 187 | Md. Tamjenur Rashid | 18 | 01719207255 | | Rangpur Fire Station |
| 188 | Most. Shila Akter | 21 | 01926029911 | | Rangpur Fire Station |
| 189 | Md. Solaiman Ali | 5 | 01740865562 | 01755279213 | Rangpur Fire Station |
| 190 | Shojebur Rahman | 9 | 01729448806 | | Rangpur Fire Station |
| 191 | Jannatul Ferdoush | 26 | 01746218576 | 01719708677 | Rangpur Fire Station |
| 192 | Md. Asir Ali | 30 | 01929853258 | 01946324968 | Rangpur Fire Station |
| 193 | Md. Ismaeel Hossen Saad | 24 | 01719366652 | 01926606336 | Rangpur Fire Station |
| 194 | Md. Masud Islam | 24 | 01738587236 | | Rangpur Fire Station |
| 195 | Rozifa Sultana | 20 | 01737718058 | | Rangpur Fire Station |
| 196 | Most. Mahbuba Begum | 21 | 0 | 0 | Rangpur Fire Station |
| 197 | Md. Moniruzzaman | 24 | 01744426363 | 01929307347 | Rangpur Fire Station |
| 198 | Md. Raiyan Been Latif | 24 | 01719543882 | 01967789478 | Rangpur Fire Station |
| 199 | Farjana Yesmin | 22 | 01947913833 | 01917913833 | Rangpur Fire Station |
| 200 | Md. Nurul Amin | 24 | 01737590759 | 01923819074 | Rangpur Fire Station |
| 201 | Syed Kamrul Hasan | 23 | 01750545299 | 01722256783 | Rangpur Fire Station |
| 202 | Most. Akhi Khatun | 25 | 01738642629 | | Rangpur Fire Station |

| Sl. No | Participant Name | Ward No | Contact no.1 | Contact no.2 | Attached Fire Station |
|--------|-------------------------|---------|--------------|--------------|-----------------------|
| 203 | Md. Mominur Islam | 7 | 01740083296 | 01738150108 | Rangpur Fire Station |
| 204 | Most. Afren Akter Happy | 10 | 0 | 0 | Rangpur Fire Station |
| 205 | Mosa. Aktara Parvin | 25 | 01737390008 | | Rangpur Fire Station |
| 206 | S. M Habibur Rahman | 26 | 01824615639 | 01553231962 | Rangpur Fire Station |
| 207 | Md. Faysal Ahmed | 22 | 01723271337 | 01721764347 | Rangpur Fire Station |
| 208 | Md. Iftakhar Mahmud | 26 | 01197221558 | 01717678408 | Rangpur Fire Station |
| 209 | Momina Khatun | 9 | 01738269232 | | Rangpur Fire Station |
| 210 | Most. Mousumy Khatun | 22 | 01751462131 | | Rangpur Fire Station |
| 211 | Md. Firoz Hasan | 22 | 01741699852 | 01750734006 | Rangpur Fire Station |
| 212 | Md. Juyel Rana | 24 | 01765841561 | 01961604374 | Rangpur Fire Station |
| 213 | Md. Obaidullah | 11 | 01735678820 | 01738656917 | Rangpur Fire Station |
| 214 | Md. Rasel Miah | 25 | 01747719105 | 01676972167 | Rangpur Fire Station |
| 215 | Sujan Kumar Mishro | 28 | 01916847247 | 01733145834 | Rangpur Fire Station |
| 216 | Uttom Kumer Roy | 9 | 01749662745 | 01818036573 | Rangpur Fire Station |
| 217 | Md. Amirul Islam | 22 | 01926615729 | 01913977995 | Rangpur Fire Station |
| 218 | Md. Al Mamun | 24 | 01737999541 | 01923879852 | Rangpur Fire Station |
| 219 | Md. Mizanur Rahman | 25 | 01923648682 | 01767537137 | Rangpur Fire Station |
| 220 | Md. Nazmul Huda | 10 | 01717277769 | 01842277769 | Rangpur Fire Station |

Table A-4: List of available open spaces within the City Corporation to be used for immediate evacuation

| Sl. | Name of the open space | Location (Ward no.) | Area (sq. m.) | Population holding capacity (@1 sq. m./ person) | Total displaced population | Additional population that can be accommodate from surrounding areas |
|-----|--|---------------------|---------------|---|----------------------------|--|
| 1 | Shirin Community Center/ Park | 03 | 15,613 | 15,613 | 6,904 | 296,302 |
| 2 | Aziz Biri Chatal | 04 | 4,561 | 4,561 | | |
| 3 | Eidgah Math | 09 | 1,647 | 1,647 | | |
| 4 | Rangpur Medical College Playground | 16 | 23,999 | 23,999 | | |
| 5 | Uttom School & College Playground | 16 | 1,592 | 1,592 | | |
| 6 | Teacher training college hostel field | 16 | 6,724 | 6,724 | | |
| 7 | Cantonment Mosque Field | 16 | 2,398 | 2,398 | | |
| 8 | PTI College Playground | 17 | 14,596 | 14,596 | | |
| 9 | Teacher Training College Field | 17 | 3,206 | 3,206 | | |
| 01 | Rangpur Karani Para High School Playground | 18 | 4,486 | 4,486 | | |
| 11 | Cricket Field | 19 | 24,577 | 24,577 | | |
| 12 | Police Line Eidgah Field | 19 | 21,046 | 21,046 | | |
| 13 | Shurovi Uddyan | 19 | 17,365 | 17,365 | | |
| 14 | Rangpur Zila School Playground | 19 | 9,632 | 9,632 | | |

| Sl. | Name of the open space | Location (Ward no.) | Area (sq. m.) | Population holding capacity (@1 sq. m./ person) | Total displaced population | Additional population that can be accommodate from surrounding areas |
|--------------|---|---------------------|----------------|---|----------------------------|--|
| 15 | Rangpur Zila School Playground | 19 | 13,561 | 13,561 | | |
| 16 | Rangpur Munshi Para High School Playground | 20 | 2,065 | 2,065 | | |
| 17 | Munshipara Eidgah | 20 | 1,539 | 1,539 | | |
| 18 | Bir Muktijodha Taibur Rahman High School Playground | 20 | 1,007 | 1,007 | | |
| 19 | Kamarpara Bus Tarminal | 21 | 4,839 | 4,839 | | |
| 20 | New Adarsha Para Eidgah | 21 | 1,025 | 1,025 | | |
| 21 | Alamnagar Govt. Primary School Playground | 21 | 1,685 | 1,685 | | |
| 22 | Rangpur Polytechnic Institute Playground | 23 | 8,022 | 8,022 | | |
| 23 | Mondal Para Eidgah | 26 | 2,471 | 2,471 | | |
| 24 | Robartson Gonj Eidgah | 26 | 5,925 | 5,925 | | |
| 25 | Water Development Board Eidgah Math | 26 | 1,474 | 1,474 | | |
| 26 | Kobor Sthan Eidgah Math | 28 | 4,883 | 4,883 | | |
| 27 | Baitul Mokarram Dimokhe Dakhil Madrasa | 28 | 2,090 | 2,090 | | |
| 28 | Cadet College Basket Ball Playground | 28 | 1,789 | 1,789 | | |
| 29 | Basket Ball Playground | 28 | 1,541 | 1,541 | | |
| 30 | BRAC Training Center Field | 28 | 5,866 | 5,866 | | |
| 31 | Carmichael College Playground | 28 | 22,749 | 22,749 | | |
| 32 | Carmichael College Playground | 28 | 14,956 | 14,956 | | |
| 33 | Cadet College Playground | 28 | 13,345 | 13,345 | | |
| 34 | Cadet College Mosque Field | 28 | 18,244 | 18,244 | | |
| 35 | Cadet College Playground | 28 | 9,076 | 9,076 | | |
| 36 | Siddique Memorial School & College Math | 28 | 3,599 | 3,599 | | |
| 37 | Kasaituli Eidgah | 29 | 1,567 | 1,567 | | |
| 38 | Mahiganj Degree College | 29 | 5,617 | 5,617 | | |
| 39 | Kheya Park | 32 | 1,794 | 1,794 | | |
| 40 | Reg.Primary School | 32 | 1,035 | 1,035 | | |
| Total | | | 303,206 | 303,206 | 6,904 | 296,302 |

Table A-5: The list of proposed evacuation routes that can be used for safe evacuation

| Road name | Road type | Road width (m) |
|---------------------------|-----------|----------------|
| Station Road | Pucca | 7-19 |
| Goneshpur Road | Pucca | 15 |
| Ganga Chara Road | Pucca | 6-12 |
| College Road | Pucca | 6-13 |
| Taj Hat Road | Pucca | 7 |
| R K Road | Pucca | 7-18 |
| Dhaka-Rangpur Highway | Pucca | 7-28 |
| Modern More road | Pucca | 6-16 |
| City Bazar Road | Pucca | 9-14 |
| Pirgasa Road | Pucca | 6-8 |
| Dhap Road | Pucca | 7 |
| Rangpur-Dinajpur Highway | Pucca | 8-14 |
| Central Road | Pucca | 6 |
| Rangpur City Bypass | Pucca | 8 |
| Rangpur - Badarganj Road | Pucca | 7 |
| Pan Bazar Cantonment Road | Pucca | 7-8 |

Table A-6: List of major hospitals/clinics within Rangpur City Corporation and their capacities

| Sl. No. | Name of Hospital | Location | Capacity | | | | | | | Emergency contact number |
|---------|--|-------------------------------|-------------|---------|--------|------------------|-------------|--|----------------------------------|--------------------------|
| | | | No. of Beds | Doctors | Nurses | Paramedics Staff | Other Staff | Other Available Facilities | Availability of Contingency Plan | |
| 1 | Rangpur Sheba Hospital | Cant: more Rangpur | 10 | 3 | 10 | 3 | 16 | OT (1), Ambulance (1), Generator | No | 01728 721166 |
| 2 | Central Clinic and Nursing Home | Medical more Rangpur | 20 | 2 | 6 | 3 | 18 | OT, X-ray (2), Pathological (1), Generator | No | 01712 009575 |
| 3 | Rainbow Clinic | Dhap Jell Road, Rangpur | 10 | 1 | 4 | 0 | 15 | OT, Generator | No | 01713 792521 |
| 4 | Green Life Clinic | Dhap Jell Road, Rangpur | 10 | 1 | 6 | 1 | 19 | OT, X-ray, Generator | No | 01745285927 |
| 5 | North Star Hospital | Dhap Jell Road, Rangpur | 10 | 3 | 6 | 0 | 15 | OT, Generator | No | 01712080146 |
| 6 | Rangpur Sadesh Hospital (Pvt.) Ltd | Dhap Jell Road, Rangpur | 20 | 6 | 12 | 6 | 20 | OT (2), Generator | No | 01712411359 |
| 7 | Desh clinic and Nursing Home | Dhap R,K Road, Rangpur | 20 | 8 | 16 | 0 | 30 | OT, Generator | No | 01719709500 |
| 8 | Fera Rehab & Mental Care | Sahyamoli Lane Dhap, Rangpur | 10 | 3 | 3 | 0 | 2 | OT, Generator | No | 01712-797050 |
| 9 | New Rangpur Clinic | Dhap, Sahyamoli Lane, Rangpur | 20 | 4 | 8 | 2 | 28 | OT, Generator | No | 01819114903 |
| 10 | Aadunik Eye Hospital | Dhap,Rangpur | 10 | 3 | 3 | 3 | 6 | OT, Generator | No | 01715949759 |
| 11 | Health Care Hospital | Dhap Jell Road, Rangpur | 11 | 5 | 7 | 0 | 15 | OT ,Generator | No | 01758775471 |
| 12 | Uttam Sheba Hospital | Dhap Jell Road, Rangpur. | 13 | 2 | 6 | 0 | 18 | OT, Generator | No | 01730438866 |
| 13 | Saif Islamic Hospital | Dhap Jell Road, Rangpur | 20 | 1 | 5 | 1 | 15 | OT, Ambulance (1), Generator. | No | 01947432407 |
| 14 | North Bangle Clinic and Nursing Home | Shayamoli lane, Dhap Rangpur | 15 | 3 | 6 | 0 | 17 | OT, Generator | No | 01750702973 |
| 15 | Islami Bank Community Hospital Rangpur Ltd | Police Phari, Dhap Rangpur | 30 | 12 | 19 | 0 | 90 | OT, Ambulance (1), Generator | No | 01720646487 |
| 16 | Update care Hospital | Dhap Jell Road, Rangpur | 25 | 3 | 15 | 0 | 55 | OT, Ambulance (3), Generator | No | 01738444555 |
| 17 | Rose Hospital | Dhap Jell Road, Rangpur | 34 | 3 | 13 | 3 | 39 | OT, Ambulance (1), Generator. | No | 0175773007 |
| 18 | Day-Night Hospital | Kakoli Road, Dhap | 20 | 3 | 12 | 2 | 18 | OT, Generator | No | 01773229652 |
| 19 | Good Health hospital | Dhap Road, Rangpur | 43 | 6 | 11 | 0 | 36 | OT, Ambulance (1), | No | 01717974489 |

| Sl. No. | Name of Hospital | Location | Capacity | | | | | | | Emergency contact number |
|---------|---|------------------------------|-------------|---------|--------|------------------|-------------|---|----------------------------------|--------------------------|
| | | | No. of Beds | Doctors | Nurses | Paramedics Staff | Other Staff | Other Available Facilities | Availability of Contingency Plan | |
| | | | | | | | | Generator. | | |
| 20 | Modern Clinic and Nursing Home | Dhap Jell Road, Rangpur | 16 | 2 | 4 | 2 | 12 | OT, Ambulance (1), Generator. | No | 01728617848 |
| 21 | Bangabondhu Memorial hospital | Mahigonj, Rangpur | 25 | 7 | 7 | 0 | 18 | OT, Generator | No | 01713338466 |
| 22 | Nazmun Nahar Hospital | Mahigonj, Rangpur | 10 | 4 | 6 | 0 | 12 | OT, Generator | No | 01722714003 |
| 23 | Mahigonj Clinic And Nursing Home | Mahigonj, Rangpur | 10 | 3 | 6 | 0 | 9 | OT, Generator | No | 01718645625 |
| 24 | Morium Eye Hospital | Satmatha, Mahigonj | 0 | 1 | 0 | 1 | 2 | OT, Generator | No | 01716291794 |
| 25 | Surjer Hashi Clinic | Tajhat more, Rangpur | 10 | 1 | 4 | 1 | 36 | OT, Ambulance (1), Generator. | No | 01723206435 |
| 26 | TB Clinic and Hospital | Tajhat, Rangpur | 20 | 2 | 5 | 0 | 9 | OT, Generator. | No | 01716140314 |
| 27 | Maa & Shishu Kallyan Kendra | Sadar, Rangpur | 10 | 3 | 2 | 2 | 15 | OT, Ambulance(1), Generator | No | 01731448708 |
| 28 | Mokbul Hossain General and Diabetics Hospital | Dorshona more, Rangpur | 10 | 2 | 5 | 1 | 5 | OT, Generator. | No | 01922272865 |
| 29 | Dip Eye Care & Hospital | Dorshona more, Rangpur | 20 | 7 | 28 | 10 | 50 | OT, Generator | No | 01915074228 |
| 30 | Model Family Planning Clinic | Medical more Rangpur | 20 | 4 | 5 | 0 | 21 | OT, Generator. | No | 0521-62152 |
| 31 | Rangpur Medical Collages Hospital | Dhap, Rangpur | 1000 | 220 | 450 | 0 | 502 | OT (8), X-Ray, CT Scan, MRI, ICU, Pathological Lab, Blood Bank, Ambulance(3), Generator | No | 01715361262 |
| 32 | Rangpur Community Medical Collages Hospital | Medical more, Rangpur | 750 | 50 | 101 | 25 | 1000 | OT(8), X-Ray(4), ICU Pathological Lab, Blood Bank, Ambulance(8), Generator | No | 01717235978 |
| 33 | Digonta General Hospital | Sagorpara, Dhap, Rangpur. | 10 | 3 | 6 | 2 | 12 | OT, Generator | No | 01193144095 |
| 34 | Jamuna Clinic and Nursing Home | Borirhat Road, Dhap, Rangpur | 15 | 1 | 4 | 0 | 8 | OT, Generator | No | 01718562670 |
| 35 | Rangpur Life Line Community | Dhap, Sangachora Road, | 15 | 6 | 10 | 0 | 20 | OT (2), Generator | No | 01717678415 |

| Sl. No. | Name of Hospital | Location | Capacity | | | | | | | Emergency contact number |
|---------|--|-------------------------------|-------------|---------|--------|------------------|-------------|---|----------------------------------|--------------------------|
| | | | No. of Beds | Doctors | Nurses | Paramedics Staff | Other Staff | Other Available Facilities | Availability of Contingency Plan | |
| | Hospital Pvt. Ltd | Rangpur | | | | | | | | |
| 36 | Kosir Uddin Memorial Medical Collages Hospital | Bangladesh Bank more, Rangpur | 250 | 60 | 38 | 12 | 100 | OT (3), X-Ray, Ambulance (1), Generator | No | 01768887799 |
| 37 | Rhythm Clinic and Diagnostic Center | Bangladesh Bank more, Rangpur | 15 | 2 | 4 | 1 | 15 | OT, Generator | No | 01710727344 |
| 38 | Good Life Hospital | Dhap Jell Road, Rangpur | 25 | 2 | 4 | 1 | 15 | OT, Generator | No | 01772968837 |
| 39 | R G Hospital | Jell Road, Dhap, Rangpur | 10 | 3 | 7 | 0 | 27 | OT (2), Generator. | No | 01718961272 |
| 40 | Brac Clinic | Dishi more, Rangpur | 20 | 5 | 7 | 0 | 27 | OT (1), Generator. | No | 01729 670045 |
| 41 | Ideal General Hospital | R.K. Road, Dhap, Rangpur | 30 | 5 | 11 | 0 | 28 | OT, Generator. | No | 01556305301 |
| 42 | National Community Hospital | Check post Dhap, Rangpur | 10 | 3 | 4 | 0 | 15 | OT, Generator. | No | 01780503305 |
| 43 | Apollo Eye Hospital | R.K. Road, Dhap, Rangpur | 10 | 1 | 4 | 0 | 12 | OT, Generator | No | 01719545249 |
| 44 | Boishakhi Clinic and Diabetics Home | R.K. Road, Rangpur | 10 | 1 | 4 | 0 | 12 | OT, Generator | No | 01723734926 |
| 45 | Holy Family Hospital | R.K. Road, Rangpur | 10 | 3 | 6 | 1 | 16 | OT, Generator | No | 01195555567 |
| 46 | Surgical Home | R.K. Road, Rangpur | 50 | 5 | 6 | 1 | 15 | OT, Generator | No | 01712839259 |
| 47 | Janata Clinic | Dhap, R.K. Road, Rangpur | 10 | 2 | 6 | 1 | 24 | OT, Generator | No | 01714516970 |
| 48 | Delta General Hospital | Dhap, R.K. Road, Rangpur | 27 | 3 | 3 | 1 | 15 | OT, Ambulance (1), Generator. | No | 01734303089 |
| 49 | Prime Medical Collages & Hospital | Bodorgonj Road, Rangpur | 750 | 250 | 600 | 100 | 500 | OT (10), X-Ray (2), CT Scan (1), ICU(8 Bed), Pathological Lab, Blood Bank, Ambulance(4), Generator. | No | 01730033110 |

Table A-7: List of proposed shelter sites and their capacities

| Sl. | Name of the open spaces | Location | Area (sq. m.) | Population holding capacity (@45 sq. m./ family) |
|-----|--|-------------|----------------|--|
| 1 | Shirin Community Center/ Park | Ward No.-03 | 15,613 | 347 |
| 2 | Rangpur Medical College Playground | Ward No.-16 | 23,999 | 533 |
| 3 | Teacher training college hostel field | Ward No.-16 | 6,724 | 149 |
| 4 | PTI College Playground | Ward No.-17 | 14,596 | 324 |
| 5 | Cricket Field | Ward No.-19 | 24,577 | 546 |
| 6 | Police Line Eidgah Field | Ward No.-19 | 21,046 | 467 |
| 7 | Shurovi Uddyan | Ward No.-19 | 17,365 | 385 |
| 8 | Rangpur Zila School Playground | Ward No.-19 | 9,632 | 214 |
| 9 | Rangpur Zila School Playground | Ward No.-19 | 13,561 | 301 |
| 10 | Rangpur Polytechnic Institute Playground | Ward No.-23 | 8,022 | 178 |
| 11 | Robartson Gonj Eidgah | Ward No.-26 | 5,925 | 131 |
| 12 | BRAC Training Center Field | Ward No.-28 | 5,866 | 130 |
| 13 | Carmichael College Playground | Ward No.-28 | 22,749 | 505 |
| 14 | Carmichael College Playground | Ward No.-28 | 14,956 | 332 |
| 15 | Cadet College Playground | Ward No.-28 | 13,345 | 296 |
| 16 | Cadet College Mosque Field | Ward No.-28 | 18,244 | 405 |
| 17 | Cadet College Playground | Ward No.-28 | 9,076 | 201 |
| 18 | Mahiganj Degree College | Ward No.-29 | 5,617 | 124 |
| | Total | | 250,913 | 55,68 |

Table A-8: Food Requirements in Different Shelter Camps

| Name of shelter sites | Population holding capacity | Tentative Daily Food Requirement (most common food items) in Metric Tons | | | | Tentative Monthly Food Requirement (most common food items) in Metric Tons | | | |
|--|-----------------------------|--|----------------|------------------|------------------------|--|----------------|----------------|---------------|
| | | Wheat Flour (@100gms) | Rice (@250gms) | Lentils (@150ms) | Vegetable Oil (@35gms) | Wheat Flour | Rice | Lentils | Vegetable Oil |
| Shirin Community Center/ Park | 15,613 | 1.56 | 3.90 | 2.34 | 0.55 | 46.84 | 117.10 | 70.26 | 16.39 |
| Rangpur Medical College Playground | 23,999 | 2.40 | 6.00 | 3.60 | 0.84 | 72.00 | 179.99 | 108.00 | 25.20 |
| Teacher training college hostel field | 6,724 | 0.67 | 1.68 | 1.01 | 0.24 | 20.17 | 50.43 | 30.26 | 7.06 |
| PTI College Playground | 14,596 | 1.46 | 3.65 | 2.19 | 0.51 | 43.79 | 109.47 | 65.68 | 15.33 |
| Cricket Field | 24,577 | 2.46 | 6.14 | 3.69 | 0.86 | 73.73 | 184.33 | 110.60 | 25.81 |
| Police Line Eidgah Field | 21,046 | 2.10 | 5.26 | 3.16 | 0.74 | 63.14 | 157.85 | 94.71 | 22.10 |
| Shurovi Uddyan | 17,365 | 1.74 | 4.34 | 2.60 | 0.61 | 52.10 | 130.24 | 78.14 | 18.23 |
| Rangpur Zila School Playground | 9,632 | 0.96 | 2.41 | 1.44 | 0.34 | 28.90 | 72.24 | 43.34 | 10.11 |
| Rangpur Zila School Playground | 13,561 | 1.36 | 3.39 | 2.03 | 0.47 | 40.68 | 101.71 | 61.02 | 14.24 |
| Rangpur Polytechnic Institute Playground | 8,022 | 0.80 | 2.01 | 1.20 | 0.28 | 24.07 | 60.17 | 36.10 | 8.42 |
| Robertson Gonj Eidgah | 5,925 | 0.59 | 1.48 | 0.89 | 0.21 | 17.78 | 44.44 | 26.66 | 6.22 |
| BRAC Training Center Field | 5,866 | 0.59 | 1.47 | 0.88 | 0.21 | 17.60 | 44.00 | 26.40 | 6.16 |
| Carmichael College Playground | 22,749 | 2.27 | 5.69 | 3.41 | 0.80 | 68.25 | 170.62 | 102.37 | 23.89 |
| Carmichael College Playground | 14,956 | 1.50 | 3.74 | 2.24 | 0.52 | 44.87 | 112.17 | 67.30 | 15.70 |
| Cadet College Playground | 13,345 | 1.33 | 3.34 | 2.00 | 0.47 | 40.04 | 100.09 | 60.05 | 14.01 |
| Cadet College Mosque Field | 18,244 | 1.82 | 4.56 | 2.74 | 0.64 | 54.73 | 136.83 | 82.10 | 19.16 |
| Cadet College Playground | 9,076 | 0.91 | 2.27 | 1.36 | 0.32 | 27.23 | 68.07 | 40.84 | 9.53 |
| Mahiganj Degree College | 5,617 | 0.56 | 1.40 | 0.84 | 0.20 | 16.85 | 42.13 | 25.28 | 5.90 |
| Total | 250,913 | 25.09 | 62.73 | 37.64 | 8.78 | 752.74 | 1881.85 | 1129.11 | 263.46 |

Table A-9: Water and Toilet Requirements in Different Shelter Camps

| Name of Shelter Sites | Population holding capacity | Water Requirement in the Shelter Camp in Cubic Meters (@15 Lt. per capita per day) | | No. of Toilets (max 20 person per toilet) |
|--|-----------------------------|--|------------------|---|
| | | Daily | For 3 days | |
| Shirin Community Center/ Park | 15,613 | 234.195 | 702.585 | 781 |
| Rangpur Medical College Playground | 23,999 | 359.985 | 1079.955 | 1200 |
| Teacher training college hostel field | 6,724 | 100.86 | 302.58 | 336 |
| PTI College Playground | 14,596 | 218.94 | 656.82 | 730 |
| Cricket Field | 24,577 | 368.655 | 1105.965 | 1229 |
| Police Line Eidgah Field | 21,046 | 315.69 | 947.07 | 1053 |
| Shurovi Uddyan | 17,365 | 260.475 | 781.425 | 868 |
| Rangpur Zila School Playground | 9,632 | 144.48 | 433.44 | 482 |
| Rangpur Zila School Playground | 13,561 | 203.415 | 610.245 | 678 |
| Rangpur Polytechnic Institute Playground | 8,022 | 120.33 | 360.99 | 401 |
| Robartson Gonj Eidgah | 5,925 | 88.875 | 266.625 | 297 |
| BRAC Training Center Field | 5,866 | 87.99 | 263.97 | 294 |
| Carmichael College Playground | 22,749 | 341.235 | 1023.705 | 1138 |
| Carmichael College Playground | 14,956 | 224.34 | 673.02 | 748 |
| Cadet College Playground | 13,345 | 200.175 | 600.525 | 668 |
| Cadet College Mosque Field | 18,244 | 273.66 | 820.98 | 912 |
| Cadet College Playground | 9,076 | 136.14 | 408.42 | 454 |
| Mahiganj Degree College | 5,617 | 84.255 | 252.765 | 281 |
| Total | 250,913 | 3,763.67 | 11,291.09 | 12,550 |

Annex-B: Earthquake Hazard and Risk Maps

Map B-1: Possible concrete building damage map due to scenario-2 earthquake

Map B-2: Possible masonry building damage map due to scenario-2 earthquake

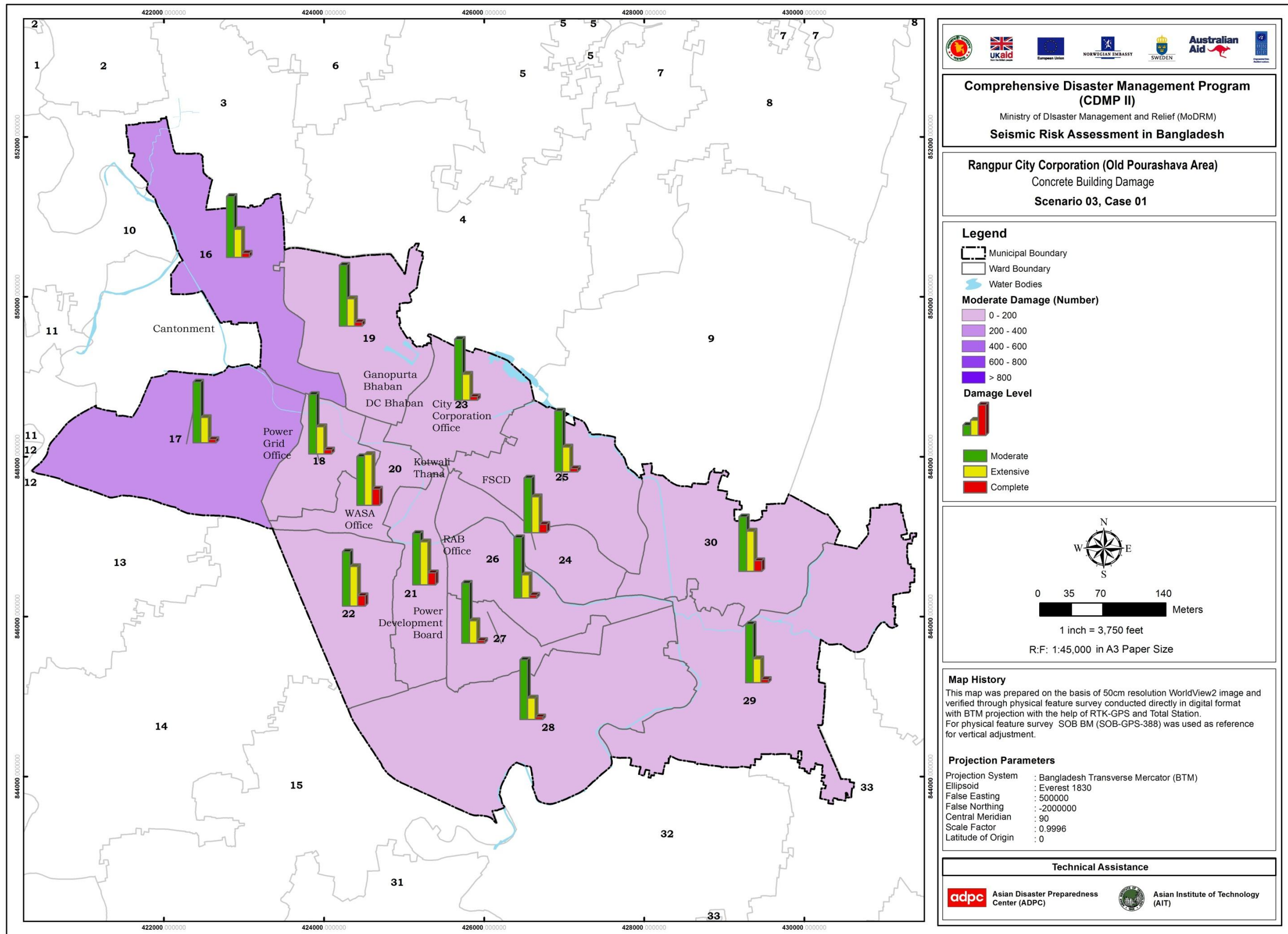
Map B-3: Probability of functionality of education facilities at day-1 due to scenario-2 earthquake

Map B-4: Probability of functionality of health facilities at day-1 due to scenario-2 earthquake

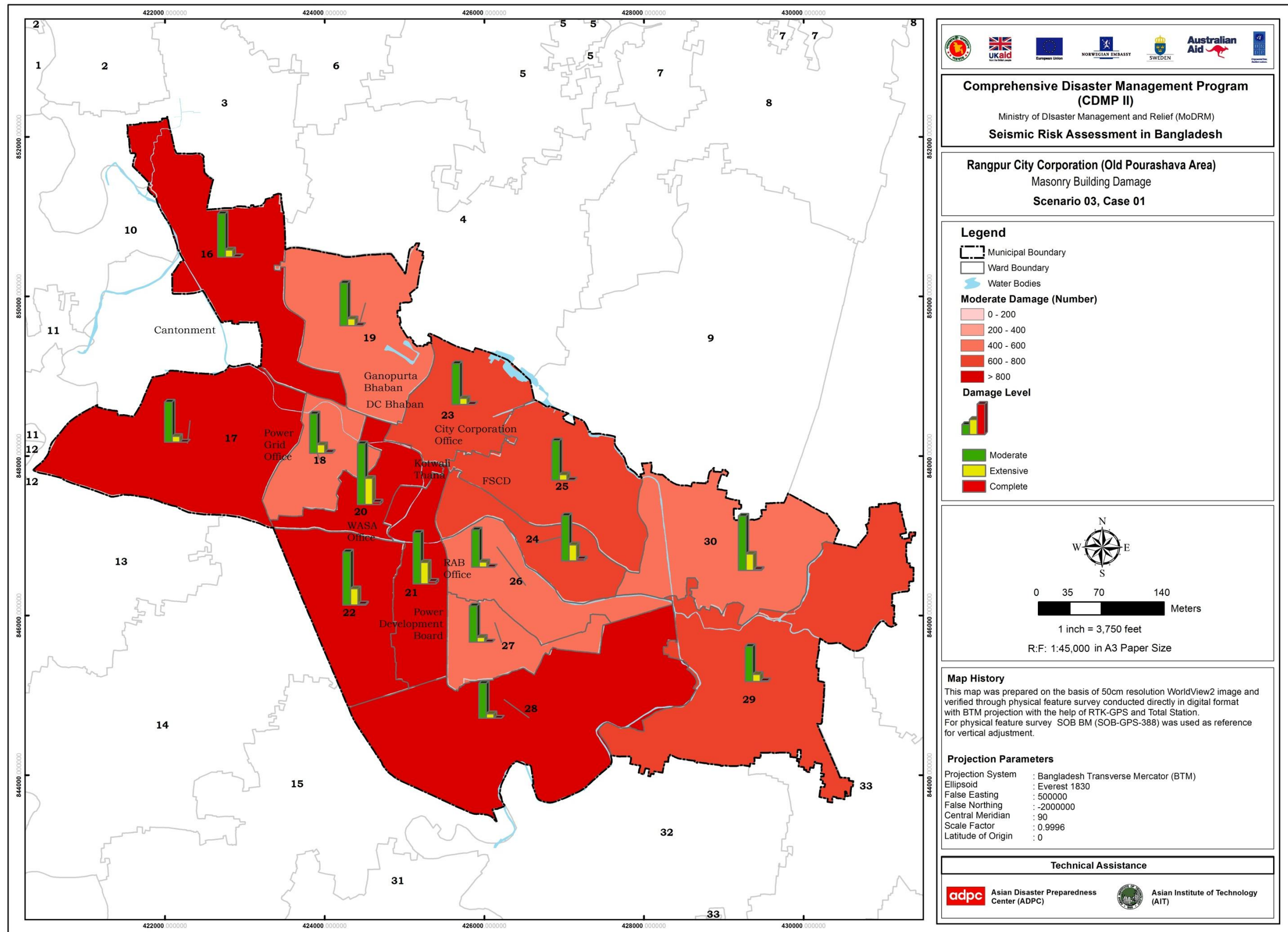
Map B-5: Probability of functionality of critical facilities at day-1 due to scenario-2 earthquake

Map B-6: Probability of functionality of road network at day-1 due to scenario-2 earthquake

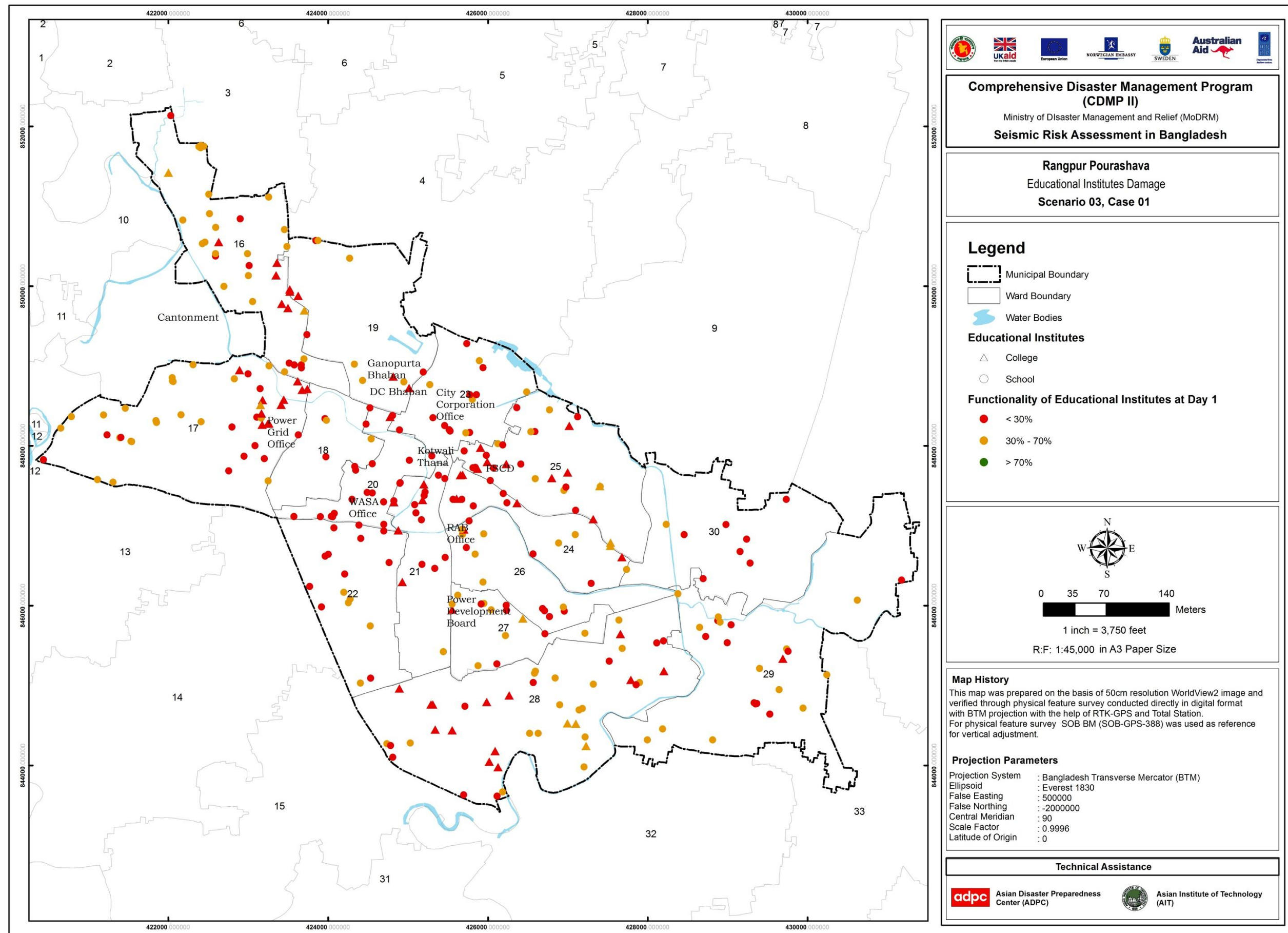
Map B-7: Probability of functionality of transportation facilities at day-1 due to scenario-2 earthquake



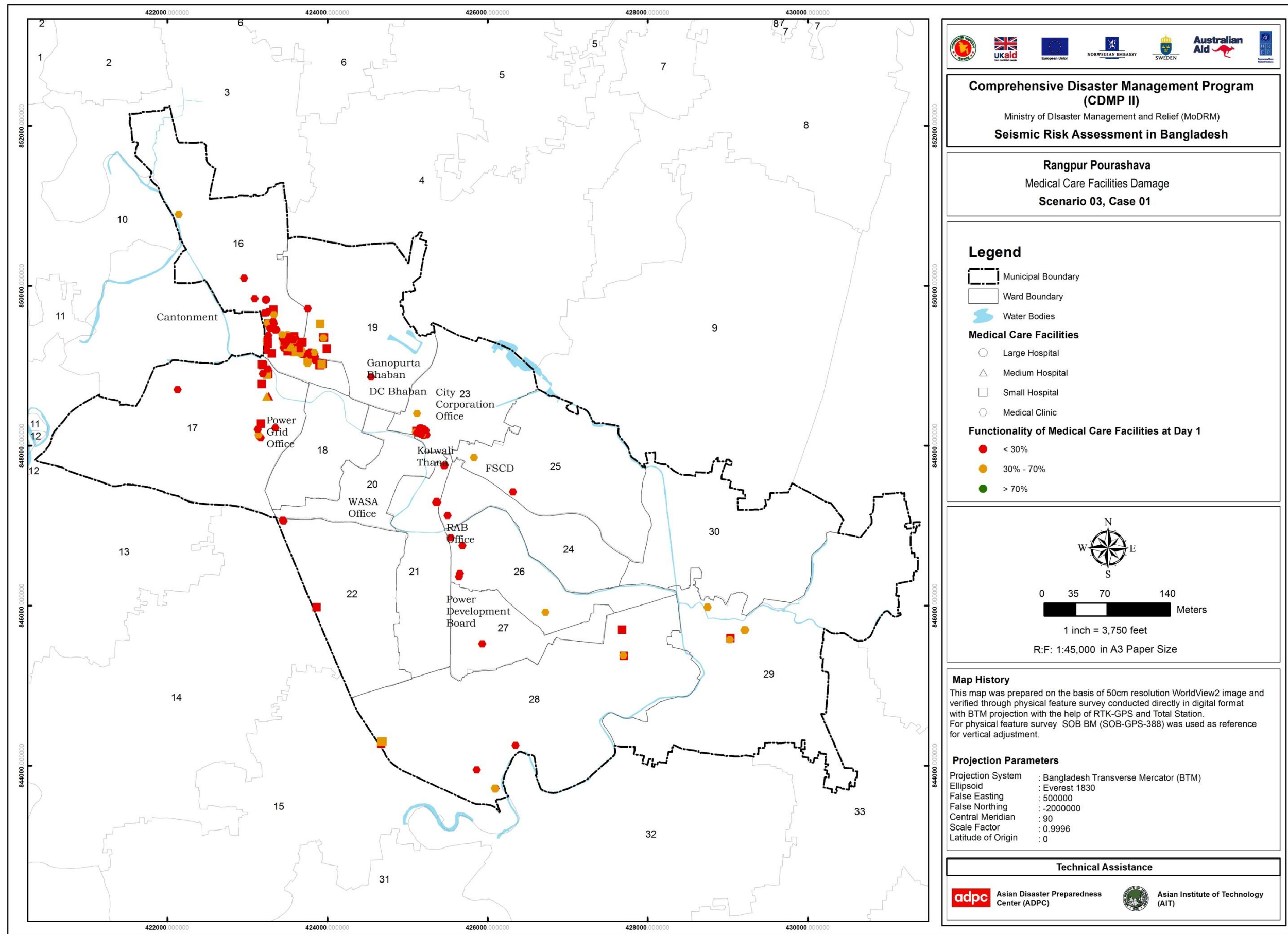
Map B-1: Possible concrete building damage map due to scenario-2 earthquake



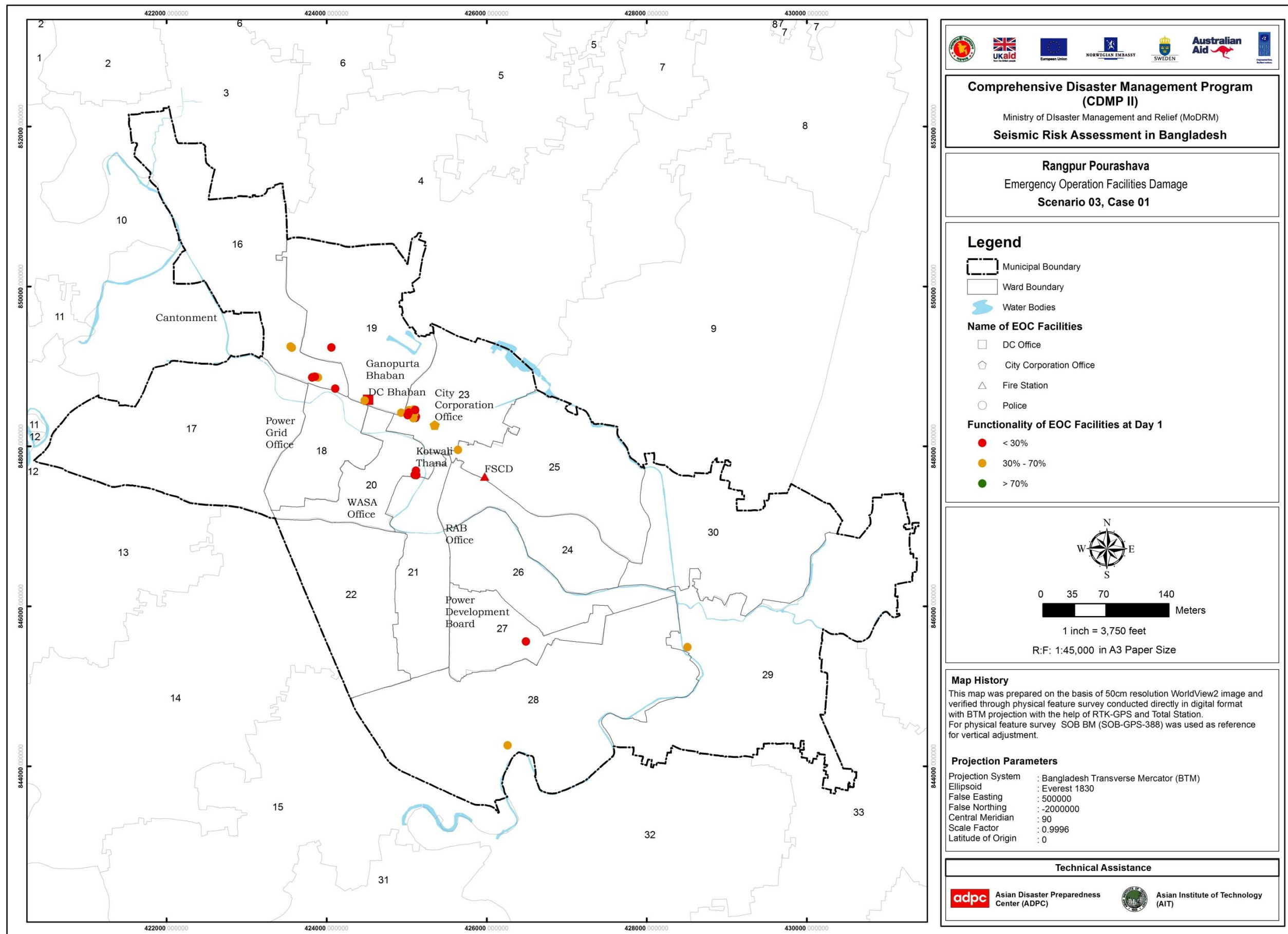
Map B-2: Possible masonry building damage map due to scenario-2 earthquake



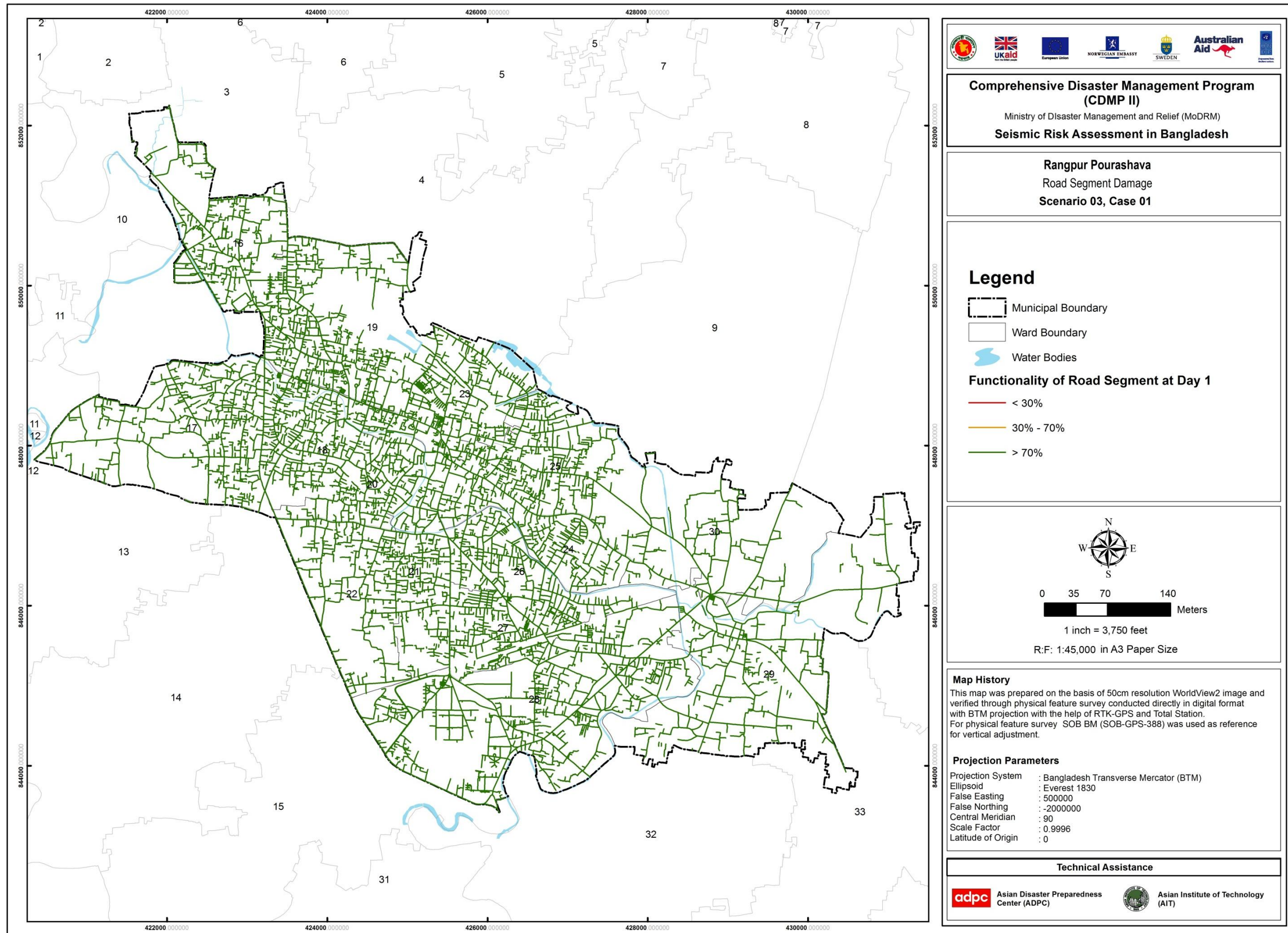
Map B-3: Probability of functionality of education facilities at day-1 due to scenario-2 earthquake



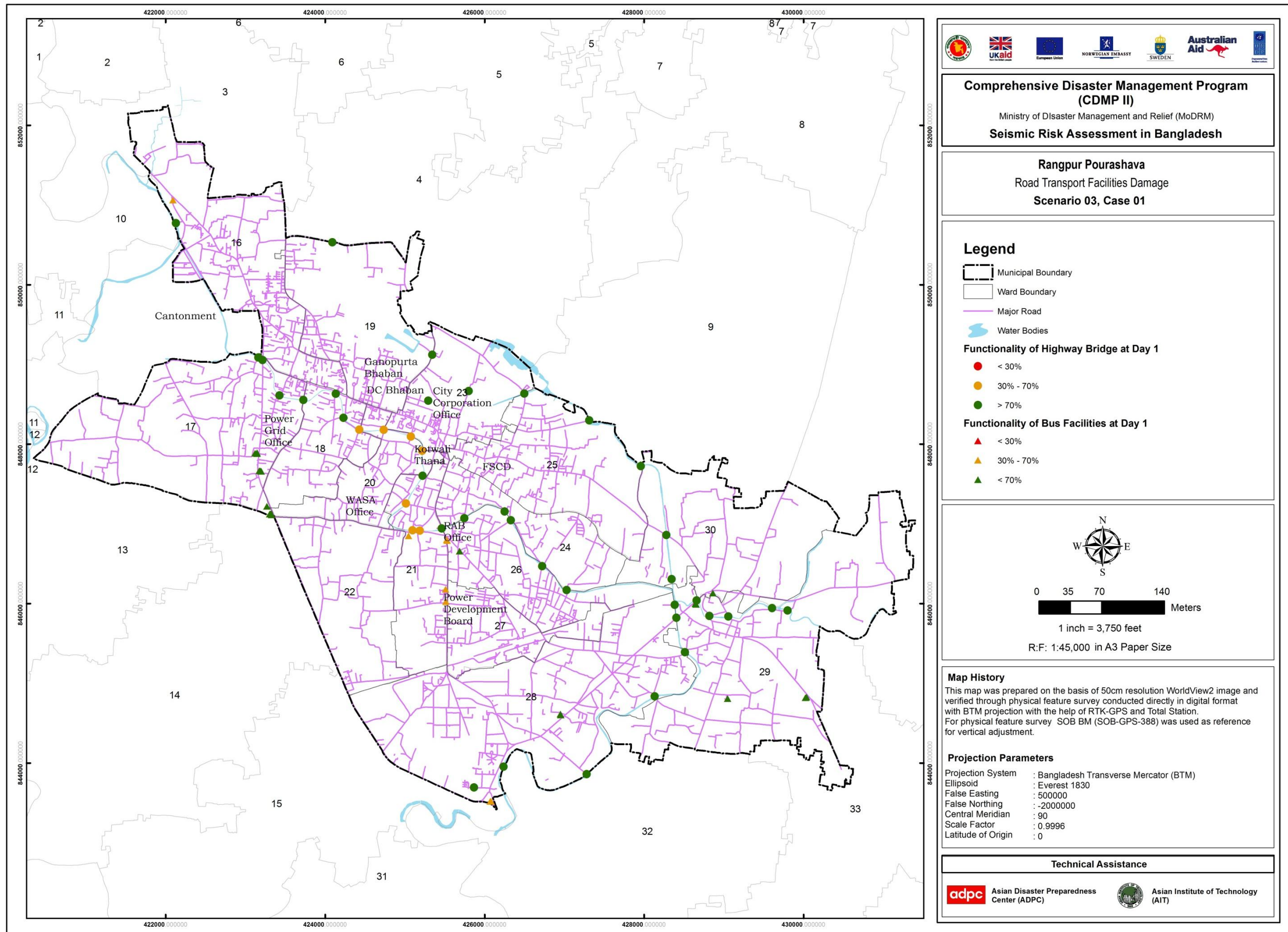
Map B-4: Probability of functionality of health facilities at day-1 due to scenario-2 earthquake



Map B-5: Probability of functionality of critical facilities at day-1 due to scenario-2 earthquake



Map B-6: Probability of functionality of road network at day-1 due to scenario-2 earthquake



Map B-7: Probability of functionality of transportation facilities at day-1 due to scenario-2 earthquake

Annex-C: Contingency Planning Maps

Map C-1: Location of key emergency agencies in Rangpur City

Map C-2: Location of proposed immediate evacuation spaces

Map C-3 Proposed evacuation routes

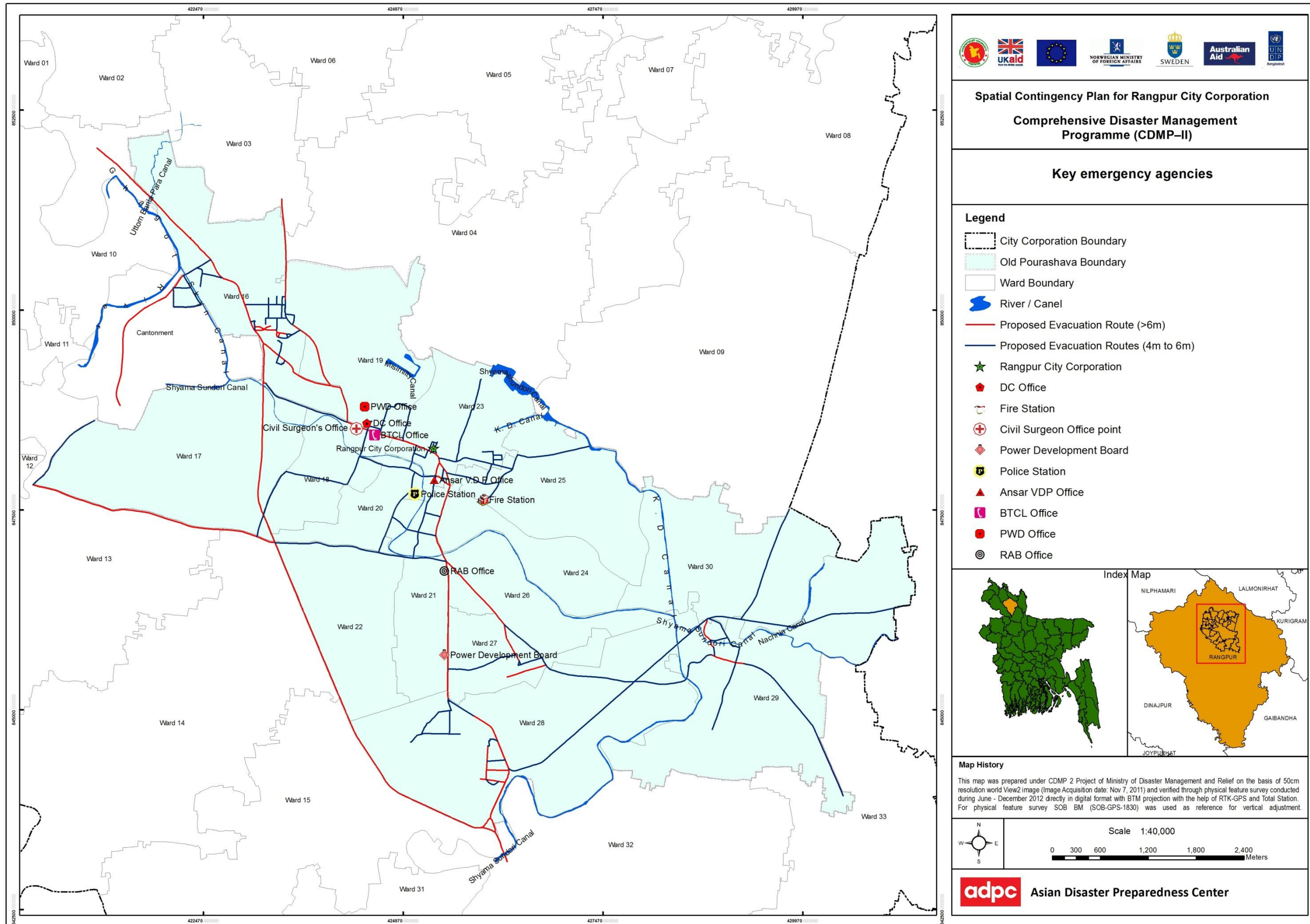
Map C-4: Location of water supply sources

Map C-5: Location of major hospitals and clinics

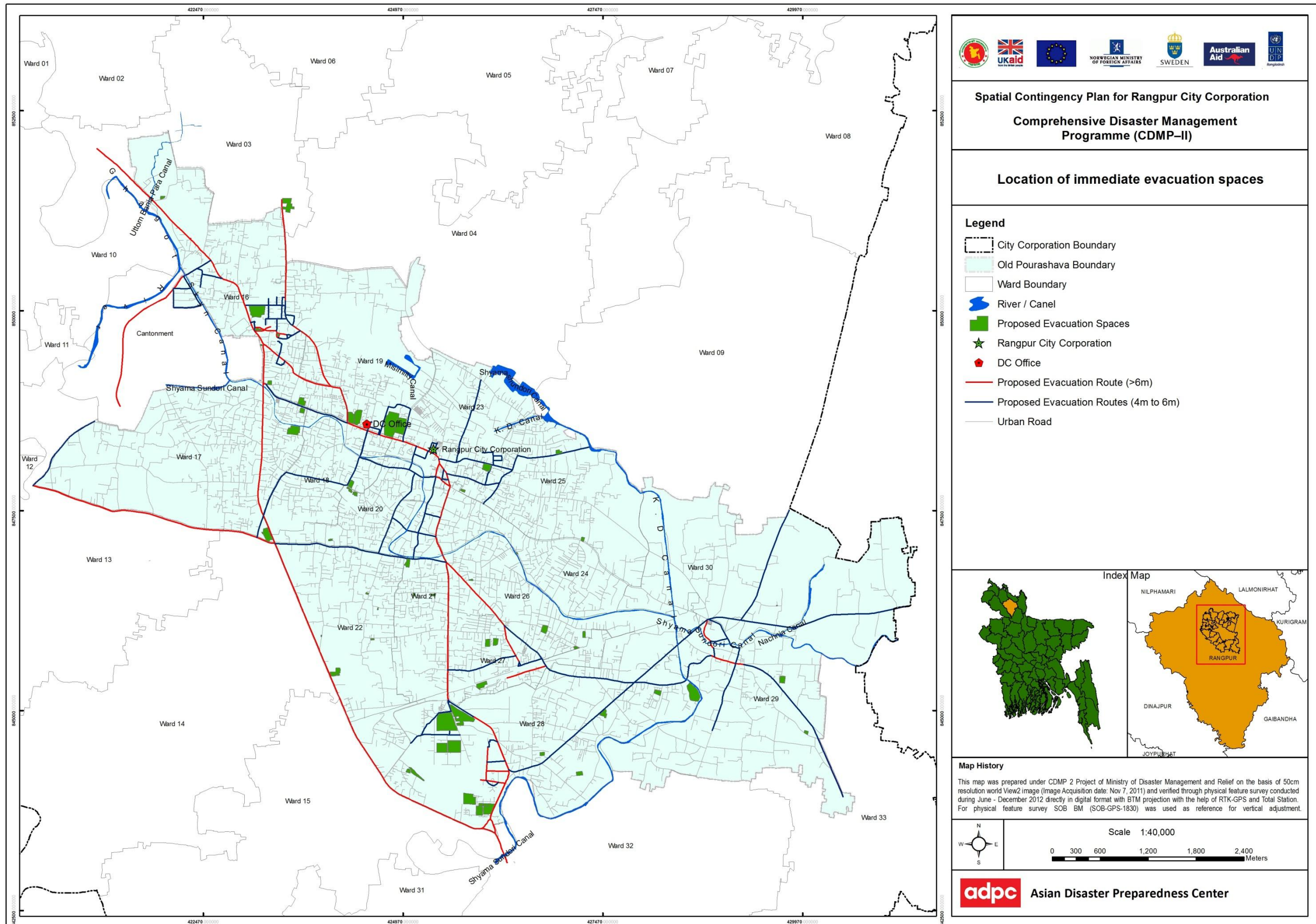
Map C-6: Location of proposed shelter sites (open spaces)

Map C-7: Locations of educational and communal buildings available

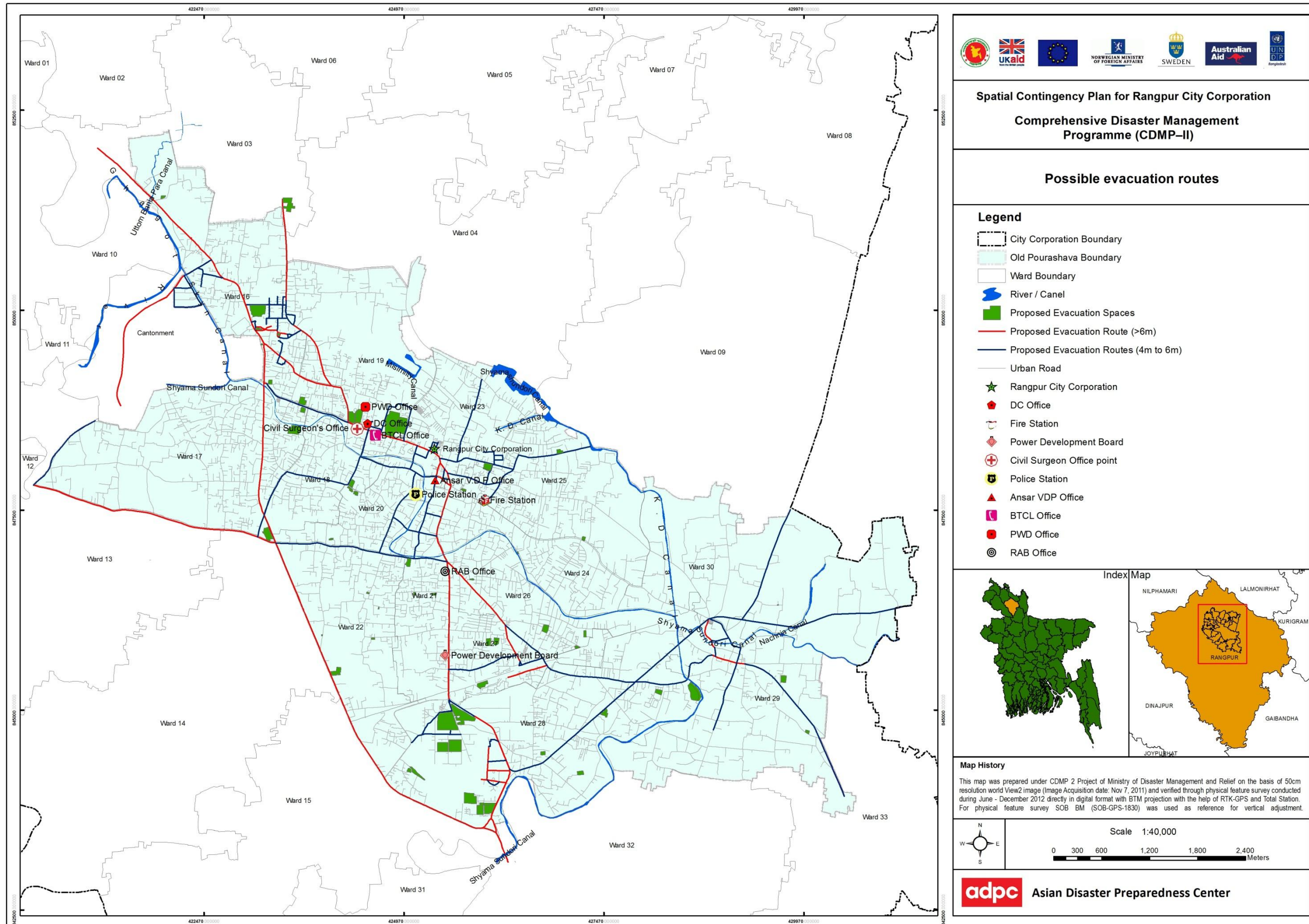
Map C-8: Location of fuel re-filling stations



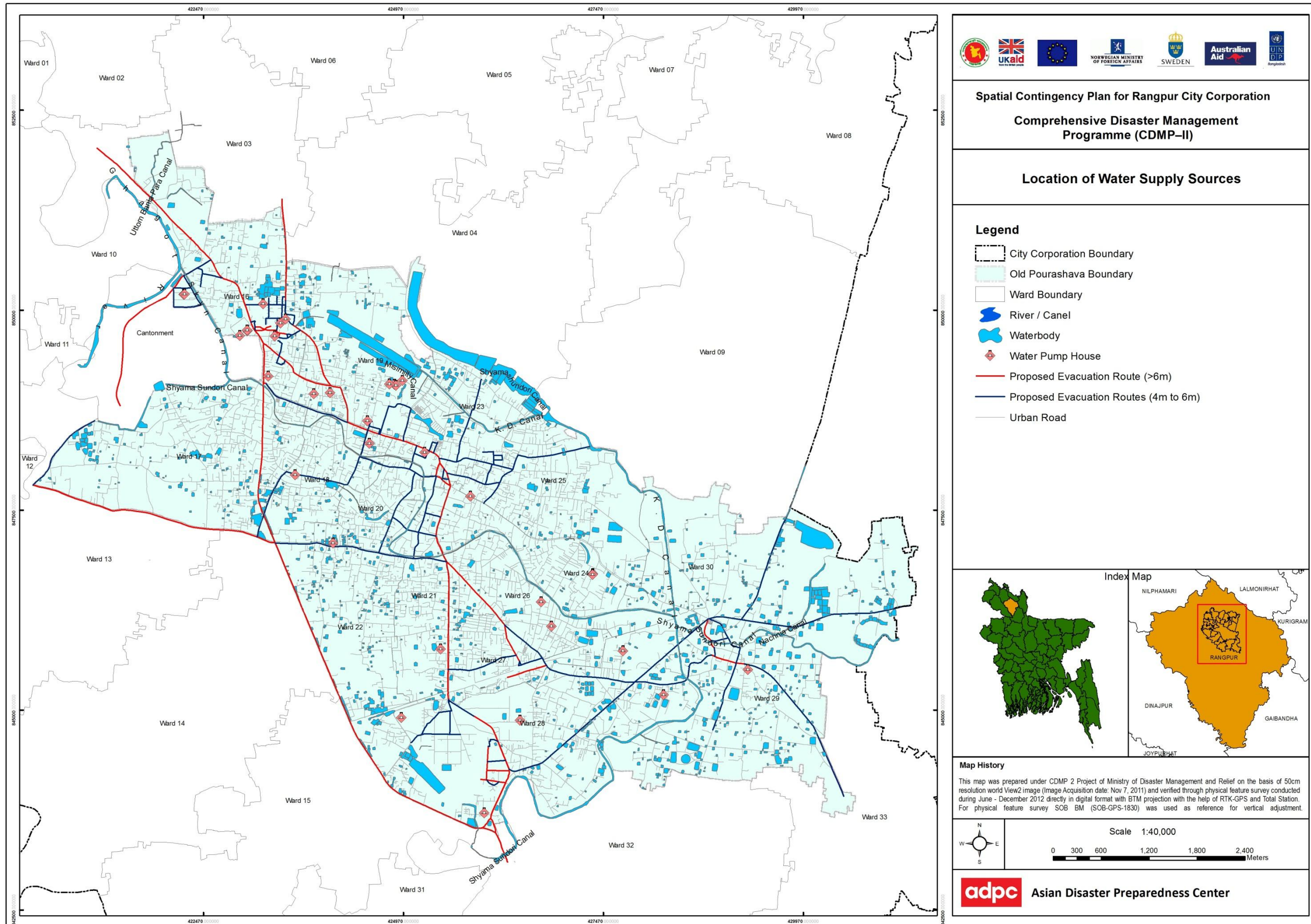
Map C-1: Location of key emergency agencies in Rangpur City



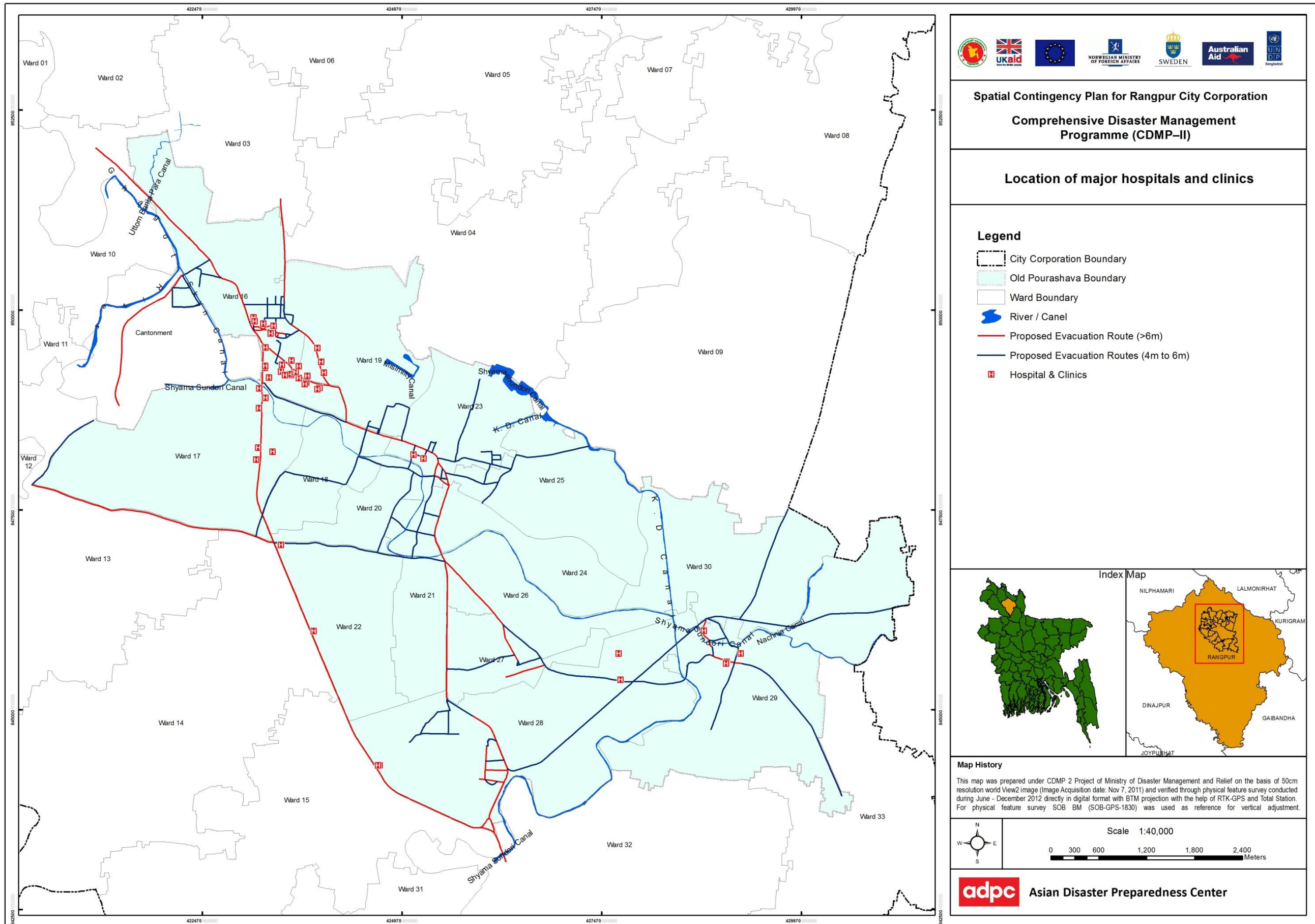
Map C-2: Location of proposed immediate evacuation spaces



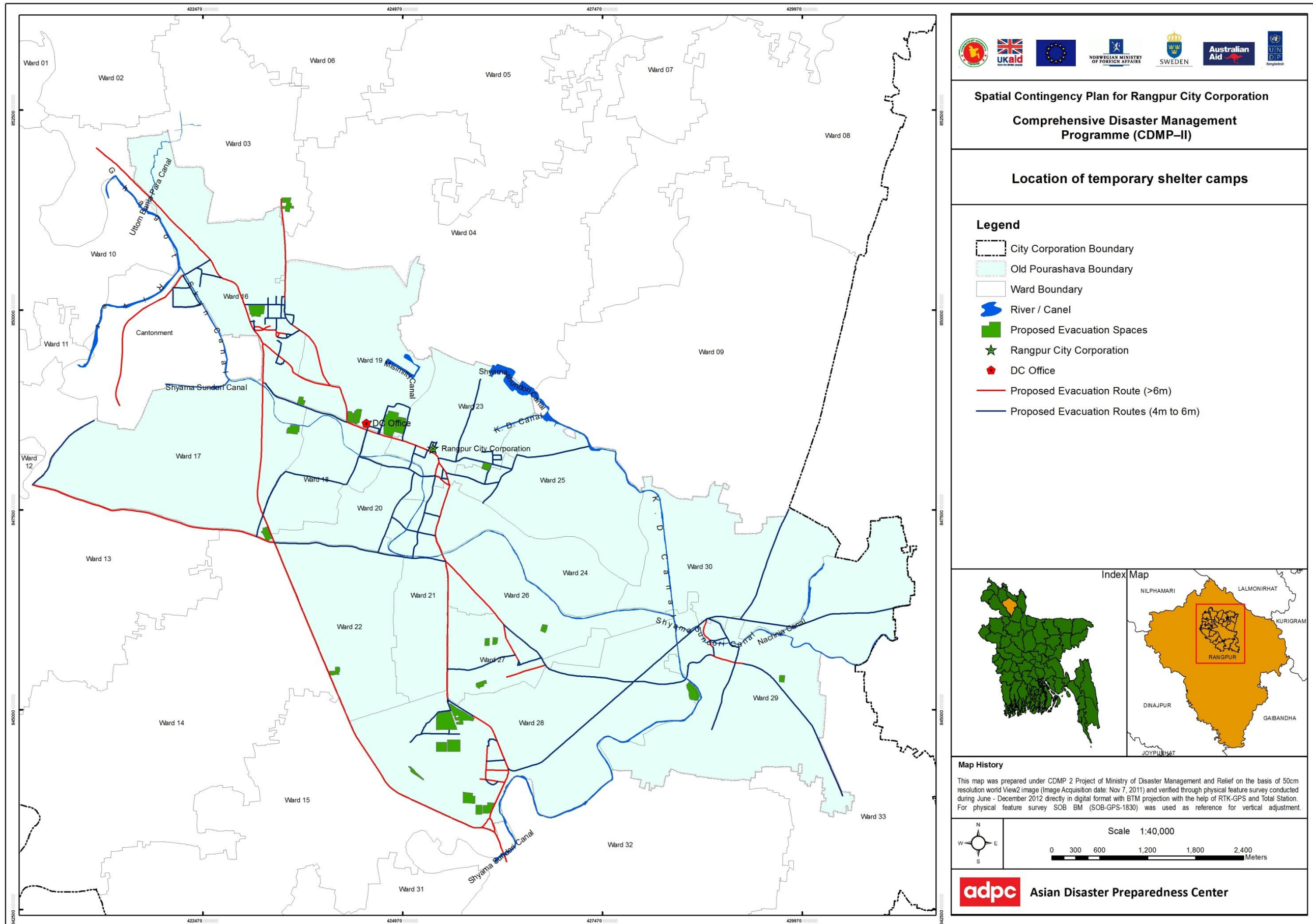
Map C-3 Proposed evacuation routes



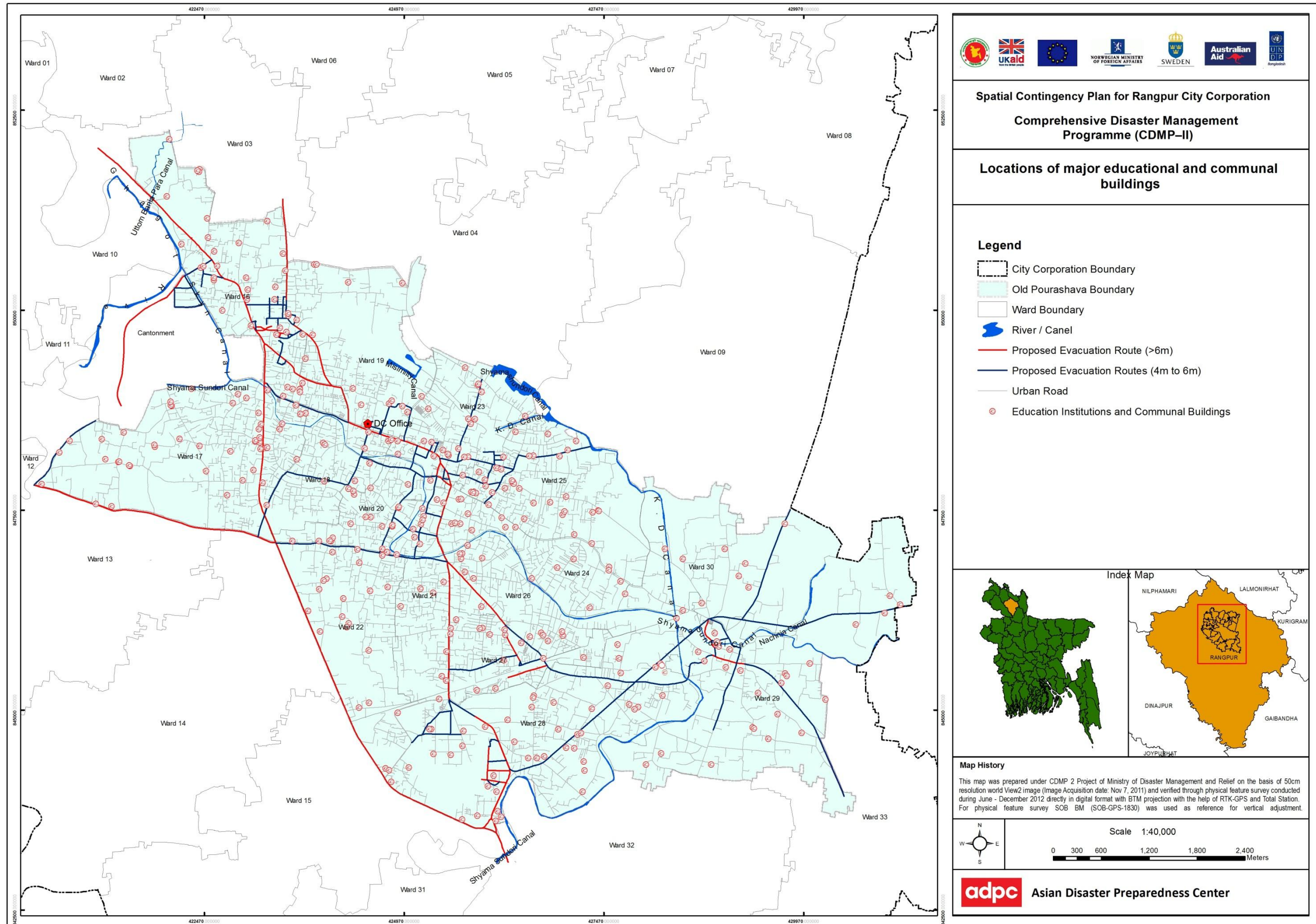
Map C-4: Location of water supply sources



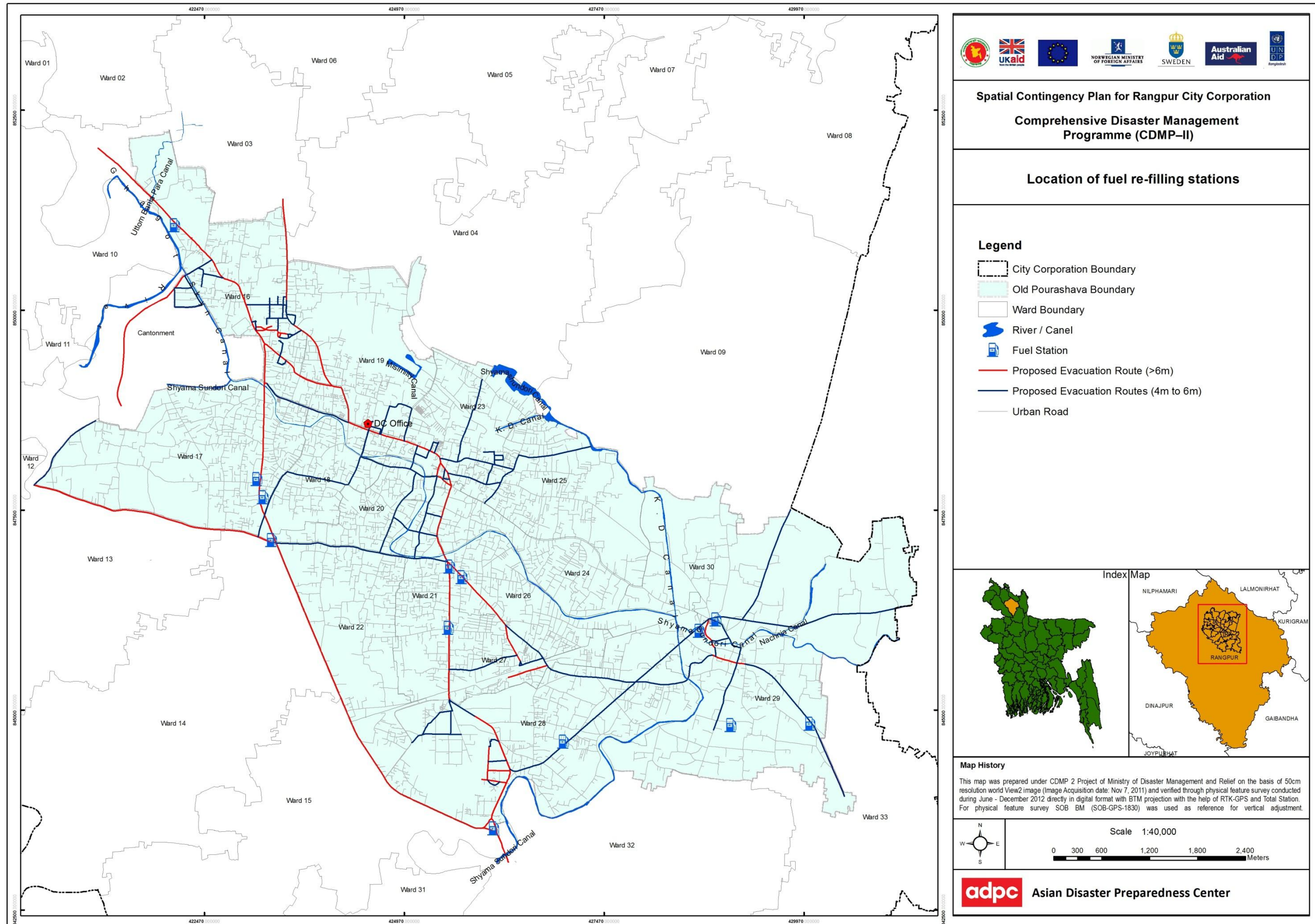
Map C-5: Location of major hospitals and clinics



Map C-6: Location of proposed shelter sites (open spaces)



Map C-7: Locations of educational and communal buildings available



Map C-8: Location of fuel re-filling stations



Comprehensive Disaster Management Programme (CDMP II)
Ministry of Disaster Management and Relief
Government of the People's Republic of Bangladesh

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