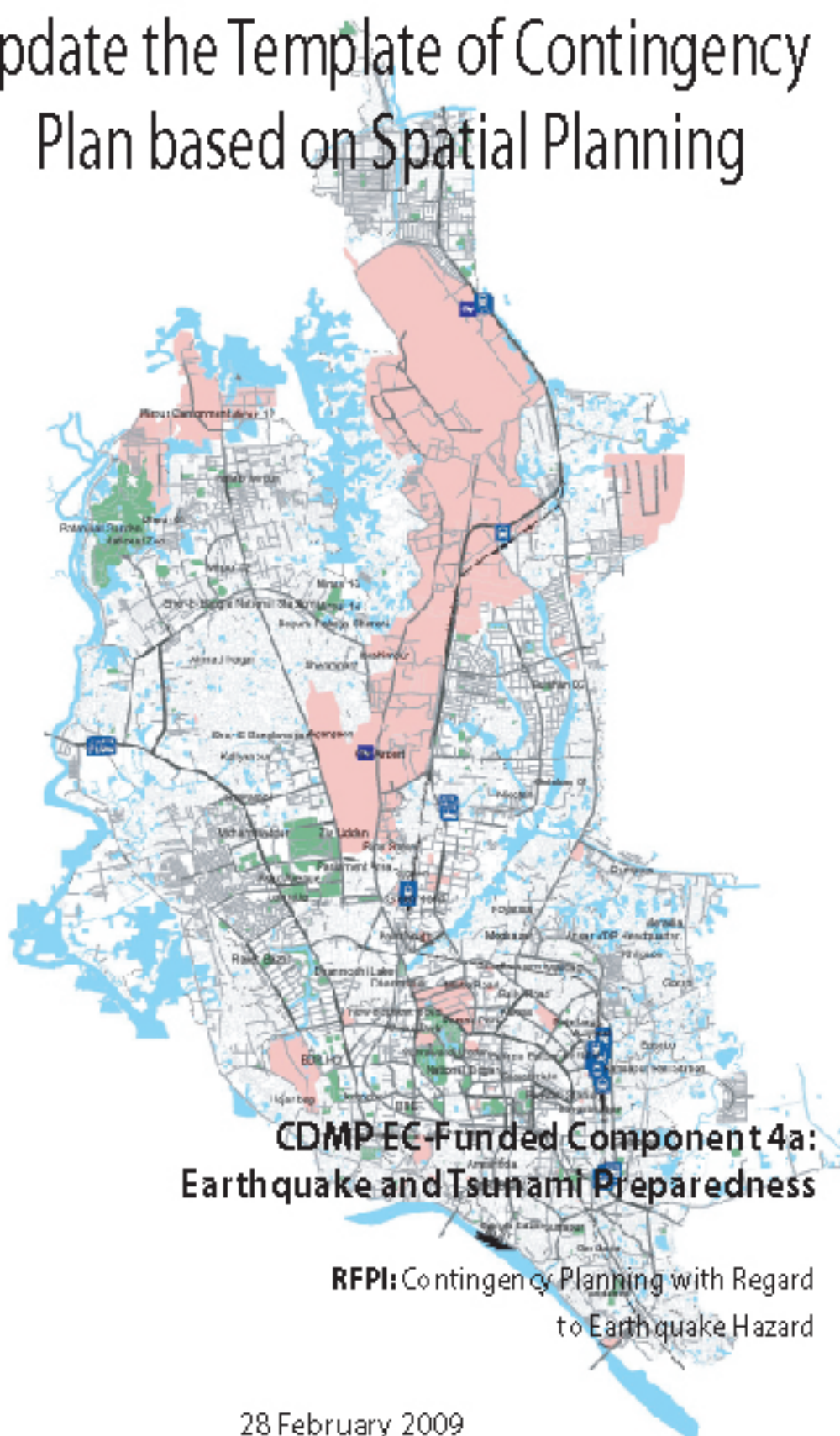




# Update the Template of Contingency Plan based on Spatial Planning

**DELIVERABLE 4**



28 February 2009

# Executive Summary

Bangladesh is susceptible to damaging earthquakes. It is a fact that during the recent past no major scale earthquake events have occurred in Bangladesh or within its neighborhood but records indicates that during the past few hundred years there have been several significant earthquake events recorded within Bangladesh. The rapid increase in vulnerability of urban areas is evident from the rapid urbanization, population growth in most of large urban centers, population migration and development of major economic zones in and around major cities like Dhaka, Chittagong. It is therefore, extremely important to anticipate as best as possible, the future probable earthquake threats in the country as well as areas of high vulnerability, especially, the urban centers and plan for the quick and early recovery for impending earthquake emergency in future.

Present capacities in disaster management in Bangladesh are largely centered on emergency response and post disaster recovery, which is evident from the flood and cyclone events of high magnitude. But for low frequency high magnitude events, which occur without warning such as earthquake there is a need for a comprehensive geo-hazard risk reduction “Contingency Planning” strategy. Contingency planning is a management tool used to ensure adequate arrangements are made in anticipation of a crisis. This is achieved primarily through the participation of different agencies involved in different types of activities in the contingency planning process itself, as well as through follow-up actions and subsequent revisions of plans. Contingency planning helps ensure that response is coordinated, through clarification of goals, strategies, roles and responsibilities.

To achieve further benefits from such an endeavour appropriate spatial planning is also needed to ensure that the disaster preparedness is considered early on in the physical planning process. In the current project on the Contingency Planning with regard To Earthquake Hazard in Bangladesh which is being financed jointly by GoB, UNDP, DFID and EC is implemented under the component 4b, Earthquake and Tsunami Preparedness Programme, of Comprehensive Disaster Management Programme of the Ministry of Food and Disaster Management of Government of Bangladesh Contingency Plans are being prepared at three different levels, viz., national, city and agency levels. Scope of incorporating detail spatial analyses, in other words, detail physical planning in National level plans is extremely limited. However, physical planning or spatial planning issues could be effectively introduced in preparing earthquake contingency plans at city level. Agency level plans can also be enriched by incorporating some form of spatial analysis in agency level contingency plan templates.

In this report rationale, objectives incorporating spatial planning issues in contingency planning process have been identified. Besides, details on the activities that have been undertaken and methodologies that have been followed for updating contingency plan templates based on spatial planning under activity 2 of SoW for RFP I: Contingency planning with regard to earthquake hazard project have also been discussed. Kind of spatial analysis that would be included in the final contingency plans at different levels has also been identified in the report. Maps and tables appended in this report would give a preliminary understanding about the spatial planning issues which will be included in the final contingency plans in future. Spatial planning requirements of different agencies have been identified through literature review, agency level consultative meetings and most importantly from the capacity building and simulation exercises that were conducted under this project. Comments and suggestions made in different TAG meetings and meetings with GIS experts and professionals have been taken into consideration while updating the templates with the introduction of spatial planning considerations. A cluster based approach by clustering all activities under 9 different clusters has been adopted to identify the spatial planning requirements in each cluster. However, it is understood that for detailed incorporation of spatial analysis in Contingency Plan templates would require Seismic Hazard and Vulnerability

Maps, which would be developed by “Seismic Hazard and Vulnerability mapping” Project team. Once such maps are available the plan templates will be modified further. Such modifications will be made to take spatial variations of intensity of the hazard, vulnerability and Potential Risk within a city into account. Objectives of this report are to:

- Discuss the objectives and rationale of updating the interim contingency planning templates
- Discuss activities that have been undertaken and methodologies that have been followed to update the previously submitted contingency plan templates at National, City and Agency levels.
- Update contingency plan templates at National, City and Agency by introducing spatial planning issues

According to SoW this report (Deliverable 5) is prepared in four sections. In Section 1, general **Introduction** about the Deliverable 5 has been given. In Section 2 objectives and rationale of updating the interim contingency planning templates have been discussed. In Section 3, activities that have been undertaken and methodologies that have been followed to update the previously submitted contingency plan templates have been discussed and new plan templates have been suggested. Finally, in Section 4, a **Conclusion** has been made about the activities that are reported in Deliverable 5.

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## LIST OF ABBREVIATIONS

<b>AFD</b>	Armed Forces Division
<b>AMI</b>	Anjumane Mofidul Islam Bangladesh
<b>Ansar &amp; VDP</b>	Bangladesh Ansar and Village Defence Party
<b>BDR</b>	Bangladesh Rifles
<b>BDRCS</b>	Bangladesh Red Crescent Society
<b>BFRI</b>	Bangladesh Forest Research Institute
<b>BGMEA</b>	Bangladesh Garment Manufacturers and Exporters Association
<b>BIP</b>	Bangladesh Institute of Planners
<b>BIWTC</b>	Bangladesh Inland Water Transport Corporation
<b>BKMEA</b>	Bangladesh Knitwear Manufacturer and Exporters Association
<b>BLRI</b>	Livestock Research Institute
<b>BMA</b>	Bangladesh Medical Association
<b>BMD</b>	Bangladesh Meteorological Department
<b>BP</b>	Bangladesh Police
<b>BPDB</b>	Bangladesh Power Development Board
<b>BR</b>	Bangladesh Railway
<b>BRTA</b>	Bangladesh Road and Transport Authority
<b>BRTC</b>	Bangladesh Road and Transport Corporation
<b>BTMEA</b>	Bangladesh Textile Mills Association
<b>BTTB</b>	Bangladesh Telephone and Telegraph Board
<b>BTV</b>	Bangladesh Television
<b>BUET</b>	Bangladesh University of Engineering & Technology
<b>BWDB</b>	Bangladesh Water Development Board
<b>CAA</b>	Civil Aviation Authority
<b>CBOs</b>	Community-Based Organizations
<b>CC</b>	City Corporations
<b>CCP</b>	Bangladesh Center for Communication Programs
<b>CDA</b>	Chittagong Development Authority
<b>CPP</b>	Cyclone Preparedness Programme
<b>DCC</b>	Dhaka City Corporation
<b>DESA</b>	Dhaka Electricity Supply Authority
<b>DESCO</b>	Dhaka Electric Supply Company Ltd.
<b>DG Fisheries</b>	Directorate of Fisheries
<b>DG Food</b>	Directorate General of Food
<b>DG Livestock</b>	Directorate of Livestock
<b>DGHS</b>	Directorate General of Health Services
<b>DMB</b>	Disaster Management Bureau
<b>DPHE</b>	Bangladesh Department of Public Health Engineering
<b>DRR</b>	Directorate of Relief and Rehabilitation
<b>DWASA</b>	Dhaka Water Supply and Sewerage Authority
<b>FBCCI</b>	Federation of Bangladesh Chambers of Commerce

<b>FSCD</b>	Bangladesh Fire Service & Civil Defence
<b>IAB</b>	Institute of Architects Bangladesh
<b>IFRC</b>	International Federation of Red Cross and Red Crescent
<b>INGOs</b>	International Non-Government Organizations
<b>LGA</b>	Local Government Agencies
<b>LGD</b>	Local Government Division
<b>LGED</b>	Local Government Engineering Department
<b>LGRD</b>	Local Government and Rural Development
<b>LGRDC</b>	Local Government Rural Development and Cooperatives
<b>MoC</b>	Ministry of Commerce
<b>MoC</b>	Ministry of Communications
<b>MoCAT</b>	Ministry of Civil Aviation and Tourism
<b>MoF</b>	Ministry of Finance
<b>MoFDM</b>	Ministry of Food and Disaster Management
<b>MoFL</b>	Ministry of Fisheries and Livestock
<b>MoHFW</b>	Ministry of Health and Family Welfare
<b>MoHPW</b>	Ministry of Housing and Public Works
<b>Mol</b>	Ministry of Information
<b>MoL</b>	Ministry of Land
<b>NGOs</b>	Non-Government Organizations
<b>PDB</b>	Power Development Board
<b>PetroBangla</b>	It is a successor of Bangladesh Mineral Oil and Gas Corporation
<b>PHE</b>	Public Health Engineering
<b>PID</b>	Press Information Department
<b>PSTN</b>	Public switched telephone Network
<b>PWD</b>	Public Works Department
<b>R&amp;H</b>	Roads and Highways
<b>RAJUK</b>	Rajdhani Unnyan Kortipakha
<b>REHAB</b>	Real Estate & Housing Association of Bangladesh
<b>RHD</b>	Roads and Highways Department
<b>TITAS</b>	Titas Gas Transmission and Distribution Co. Ltd
<b>VDP</b>	Village Defence Party
<b>WHO (DERG)</b>	World Health Organization (Disaster Emergency Response Group)



# Section One

## 1. Introduction

Bangladesh is susceptible to damaging earthquakes. It is a fact that during the recent past no major scale earthquake events have occurred in Bangladesh or within its neighbourhood but records indicate that during the past few hundred years there have been several significant earthquake events recorded within Bangladesh. The rapid increase in vulnerability of urban areas is evident from the rapid urbanization, population growth in most of large urban centers, population migration and development of major economic zones in and around major cities like Dhaka, Chittagong. It is therefore, extremely important to anticipate as best as possible, the future probable earthquake threats in the country as well as areas of high vulnerability, especially, the urban centers and plan for the quick and early recovery for impending earthquake emergency in future.

Present capacities in disaster management in Bangladesh are largely centered on emergency response and post disaster recovery, which is evident from the flood and cyclone events of high magnitude. But for low frequency high magnitude events, which occur without warning such as earthquake there is a need for a comprehensive geo-hazard risk reduction “Contingency Planning” strategy. Contingency planning is a management tool used to ensure adequate arrangements are made in anticipation of a crisis. This is achieved primarily through the participation of different agencies involved in different types of activities in the contingency planning process itself, as well as through follow-up actions and subsequent revisions of plans.

Contingency planning helps ensure that response is coordinated, through clarification of goals, strategies, roles and responsibilities. It helps avoid problems by attempting to anticipate and overcome difficulties. Contingency planning is an effective way to create new relationships with agencies, organizations, NGOs, government and local actors, and to strengthen those that already exist. The relationships developed during the contingency planning process often prove invaluable in ensuring an effective emergency response. The development of contingency plans allows for a more accurate reflection and understanding of what might be required in a particular area within a given situation. Such Contingency Planning efforts should be linked to an easy implementation framework to be able to address the related issues. Government and Institutional structures, policy and legal framework are some vital features in ensuring clear delineation of aspects of contingency plan preparation and implementation. This is an important step towards longer-term investment in plan preparation and in effective implementation.

To achieve further benefits from such an endeavour appropriate spatial planning is also needed to ensure that the disaster preparedness is considered early on in the physical planning process. In the current project on the Contingency Planning with regard To Earthquake Hazard in Bangladesh which is being financed jointly by GoB, UNDP, DFID and EC is implemented under the component 4b, Earthquake and Tsunami Preparedness Programme, of Comprehensive Disaster Management Programme of the Ministry of Food and Disaster Management of Government of Bangladesh Contingency Plans are being prepared at three different levels, viz., national, city and agency levels. Scope of incorporating detail spatial analyses, in other words, detail physical planning in National level plans is extremely limited. However, physical planning or spatial planning issues could be effectively introduced in preparing earthquake contingency plans at city level. Agency level plans can also be enriched by incorporating some form of spatial analysis in agency level contingency plan templates.



At city level to consider contingencies for seismic hazard, plans should include a seismological analysis and seismic zoning (microseismic regionalization). On the basis of this the detailed criteria for site plans are established, taking into account social and economic (or even financial) considerations connected with a seismic contingency. The second relevant element would be the spatial articulation of urban areas, observing similar considerations as above. Next are the communal facilities systems with a seismological sensitivity analysis, then the communications corridors, etc. In the Detailed planning level the configuration of the built environment is expressed, translations of broader urban planning and development criteria are linked with architectural and engineering aspects of structures themselves. The latter enable us to apply very detailed structural requirements as far as seismic risk is concerned. Contingency Planning components bring into structural plans of cities alternative land uses in the case of emergencies, provisional housing, and other areas, such as locations of hospitals, supply and evacuation routes etc. The general guideline for detailed urban planning and design provisions for alternative uses of urban spaces and facilities could possibly be quick alternation of land uses and facility functions; a park becomes a hospital area, or a housing estate, a square or a stadium becomes a site for improvised municipal government offices. While preparing agency level Contingency Plans, spatial analysis of catchment areas for individual field offices within an agency, helps in identifying their specific responsibilities and resource requirements and targeting during any emergency situation. For agencies responsible for providing utility services information on every detail of their network could be very useful in deciding their operations during emergencies.

The employment of recent advances in spatial data acquisition and management and Geometric engineering technologies in disaster management, including Information Communication and Technology (ICT), Geographical Information Systems (GIS), Remote Sensing (RS), and Global Positioning System (GPS), has considerably improved disaster management through facilitating data capture, integration and analysis. The integration of such technologies with each other and with other technologies such as decision support systems (DSS), the world-wide-web and simulators has created more effective disaster management in general and contingency plan making in particular. GIS database for disaster management consists of damage estimation result, disaster management resource and damage response plan. Utilizing GIS database is indispensable to figure out the simulation result of disaster, to develop contingency plans along with mitigation and management plans, and to evaluate and improve plans, in both quantitatively and geographically. GIS database will be effective in disaster response stage, by inputting and sharing the damage information and availability of resources.

The project on Contingency Planning with regard to earthquake hazard is comprised of two main Tasks:

- Task I : To determine status of Contingency Planning and design of interim Contingency Plan
- Task II: To turn interim Contingency Plans into final versions (using maps for selected urban areas that highlight earthquake-vulnerable school/hospital/emergency response and control buildings etc.)

To accomplish Task 1 of contingency planning, different stakeholders have been identified and discussed with. One National level Round Table and a number of Working Group meetings have also been conducted. Besides, formal discussions with the Executive Management of the respective major stakeholder agencies, several informal discussions have been conducted with other officials connected with contingency planning to identify the present status of contingency planning by stakeholder Agencies at National and city Level. Based on these activities three templates for contingency planning at national,

city and agency levels were developed (the same had been submitted to CDMP under Deliverable 2 of the Project). Under Deliverable 3 current and extended roles and responsibilities of different stakeholder agencies in relation to pre, during and after any earthquake emergency were also identified. In the same report various recommendations were made by the consultant to facilitate smooth accomplishment of both current and extended responsibilities of different stakeholder agencies. This includes some recommendations for undertaking major changes in Institutional structure, Changes to Policy and mandate, Capacity building needs and simulations. Deliverable 4 mainly included reporting of the activities undertaken by the consultant for developing an Interim Contingency Plan among different organizations which included,

- Development of a matrix of existing situation/issues regarding the management of earthquake emergency in Bangladesh and to recommend improvements
- Development of interim contingency plan against the developed template
- Formulation of action plan to circulate and execute the interim contingency plan among different stakeholder organizations

Interim planning templates for national, city corporation and agency levels were proposed in the Deliverable 2 'Development of interim contingency planning template for national, city corporation and agency levels' in March 2008 under activity 1 of SoW for RFP I: Contingency planning with regard to earthquake hazard. Subsequent interim Contingency Plans prepared by following these templates could identify current deficit in earthquake planning relating to pre, during and post disaster activities for responding to potential earthquake events in Bangladesh. This attempt for development of an interim contingency plan for earthquake disaster events provided important analysis on disaster management response capacity in regards to earthquakes through assessment of the present national, local and institutional capacity and resources needed to cope with an earthquake event.

Nevertheless, given the space dependency of the impacts of earthquake hazard and spatial implication of the management of earthquake triggered disaster need for incorporating spatial planning issues in contingency planning process is essential. Spatial analysis and subsequent planning come into the play in contingency planning in various ways; identifying spatial locations for prepositioning emergency supplies, locating hospitals and field hospitals, locating temporary shelters, routes for search and rescue and emergency evacuation etc are some of the essential spatial planning features that are needed to be included in a well thought Contingency Plan templates. Under Activity 2 of SoW for RFP I: Contingency planning with regard to earthquake hazard project attempts have been made to introduce spatial planning in the proposed template. An intensive literature review has been conducted to identify spatial planning issues related to contingency planning. For incorporating spatial planning issues in Contingency Plan templates feedback received from the agency level consultative meetings had been very instrumental. Opinions expressed by different stakeholders in capacity building trainings and simulation exercises conducted under this project had been found to be extremely useful in identifying spatial planning requirements of different agencies in contingency planning process. Detailed geo-spatial data collection has been carried out. Besides, inventory of human resources and equipments of different first responding and service providing agencies has also been made to assess their disaster management capacities in case of any earthquake event. Finally, suggestion given in the TAG meeting held in September, 18, 2008 and special GIS expert group's meeting, held in February, 22, 2009 have been duly considered in developing the updated templates.

This Report seeks to provide details on the activities that have been undertaken and methodologies that have been followed for updating contingency plan templates based on spatial planning under activity 2 of SoW for RFP I: Contingency planning with regard to earthquake hazard. Objectives of this report are to:

- Discuss the objectives and rationale of updating the interim contingency planning templates
- Discuss activities that have been undertaken and methodologies that have been followed to update the previously submitted contingency plan templates at National, City and Agency levels.
- Update contingency plan templates at National, City and Agency by introducing spatial planning issues

According to SoW this report (Deliverable 5) is prepared in four sections. In Section 1, general **Introduction** about the Deliverable 5 has been given. In Section 2 objectives and rationale of updating the interim contingency planning templates have been discussed. In Section 3, activities that have been undertaken and methodologies that have been followed to update the previously submitted contingency plan templates have been discussed and new plan templates have been suggested. Finally, in Section 4, a **Conclusion** has been made about the activities that are reported in Deliverable 5.

## **Section Two**

### **2: Rationale and objective to improve the interim contingency plan**

Usually many government and non-government agencies are involved in accomplishing response activities after occurrence of earthquake. However, experiences have shown that these response activities are extremely complicated and no single agency alone can perform any of the response activities fully; all related organizations have to work together in a coordinated manner for optimum and efficient response. All agencies need to work together in a systematic manner so that their capacities and resources are best utilized to fulfill the need complementing and supplementing other agencies. Realizing the need of coordinated and comprehensive emergency response, United Nations has been promoting its humanitarian response activities in a cluster approach. This approach is proved to be effective and efficient in responding to recent disasters for example the response during Oct. 8, 2005 earthquake in Pakistan. Hence, it is suggested that this concept of response operations in functional clusters be applied in the context of Bangladesh also in case of possible earthquake disaster.

In this approach, all response activities are grouped into relevant functional clusters based on the similarity of works, normal time and disaster time mandates of different relevant organizations and possible complementarity in the resources and capacities. Moreover, it is also evident to incorporate spatial planning concept into scenario based contingency planning process for better emergency response management with regard to earthquake hazard. Hence, an appropriate template needs to be structured that would lead developing an effective earthquake contingency plan based on geo-hazard vulnerability map.

#### **2.1 Review the clusters through various meetings**

After the impact of an earthquake on a community, the main response tasks will be the conduct of damage assessment and needs analysis (DANA), the control of fires, rescue of trapped persons and the treatment of the injured. The emergency tasks can be grouped into a number of functional groups as a planning vehicle through which responsibilities can be assigned to a group of relevant Organizations for lead and support functions.

The probable response activities should be anticipated, and when clustering them into functional groups attempts will have to be made to identify institutions responsible for each activity. Assigning functional responsibilities to clusters and identifying lead and support institutions along with global cluster leads are needed for easiness of operations, maintain the command, control structure and undertake training and capacity building operations by fixing the accountability to lead agencies in each cluster.

It had been agreed that there is a need in Bangladesh for a more holistic and comprehensive approach to disaster management, recognising however that there is a need to move from generic hazards to risk specific programmes. While broad or generic plans provide an overarching guide to how hazards will be addressed within country's planning and response infrastructure, they fail, as defined by their nature, to address specific issues and take into account specific issues such as local resources, capacities to respond and identification of exact

risk. The development of contingency plans allows for a more accurate reflection and understanding of what might be required in a particular area within a given situation. It should be noted however that Contingency Plans must still operate with the National planning and response framework and should be seen as complementing “All Hazards” planning and not replacing them.

It has been decided to develop first an interim Earthquake Contingency Plan template for national, city and agency levels for the cities of Dhaka, Chittagong and Sylhet. From this template specific information will be obtained to develop a good understanding of the particular earthquake risk in each of these areas. Additionally it would be possible to determine which agencies are responsible for each pre during and post disaster activity and have those roles and responsibilities clearly outlined in the plan.

It should be noted that the template designed for National, City and Agency level is essentially the same. It is the content level and even the complexity of the content which changes. It is important to ensure that wherever possible these Contingency Plans across these three levels closely reflect each other in terms of design and process so that continuity is maintained. In this perspective, previously the following ten clusters have been identified for formulating the contingency plans.

- Operations Response Group
- Emergency Services Group
- Urban Crisis Planning and Management Group
- Healthcare & Response Group
- Welfare, Food And Nutrition Group
- Utilities planning & Restoration Group
- Mass Media Communications And Public Information Group
- Water And Sanitation Group
- Transport planning and restoration Group
- Recovery planning Group

Contingency Plans by its nature examine specific risk within a given area and outline a comprehensive approach to the hazard outlining clearly which local agencies are responsible for particular actions across pre, during and post activities. It also provides an opportunity to prepare a number of scenario based problems specific to an area to help test the capacity to respond. Consequently, this clustering approach provides an opportunity to reflect how operations will be conducted within a particular area and provide a more detailed indication of the current conditions that the plan operates under and the principles of operation that are utilised within the area.

Once the response activities are planned to be coordinated and performed on cluster basis, the contingency planning is done in cluster system. When the contingency planning is done in functional cluster approach, it requires planning at three levels; Inter-agency overall contingency planning, cluster level contingency planning and agency/organization level contingency planning.

Inter-agency contingency planning provides a common, over-arching framework to guide the collective action of all partners including individual agencies/organizations and cluster/sector groups. Inter-agency contingency planning does not replace the need for planning by individual agencies/ organizations in relation to their mandate and responsibilities within sectors/clusters.

However, it provides focus and coherence to the various levels of planning that are required to effectively mount a humanitarian response. Table 2.1 explains the relationships between inter-agency, cluster/sector and agency/ organization-specific planning. In order to ensure coherence, a dynamic interaction between the different levels is required throughout the planning process.

**Table 2.1 Levels of Contingency Planning and Role of Inter-Agency Planning**

Type of Planning	Inter-agency planning: Common Planning Framework	Cluster/sector planning	Organization specific planning
<b>Function</b>	Provides a common strategic planning framework to ensure complementarity of response action between agencies/ organizations.	Defines how agencies will work to together to achieve sector-specific objectives.	Defines the specific organizational arrangements required to deliver the services that the organization is committed to provide.
<b>Indicative Elements</b>	<ul style="list-style-type: none"> <li>• Common analysis, risk &amp; vulnerability assessment</li> <li>• Scenarios &amp; planning assumptions</li> <li>• Agreed planning figures</li> <li>• Overall management &amp; coordination arrangements</li> <li>• Overall objectives &amp; strategies</li> <li>• Overarching principles</li> <li>• Gap analysis</li> <li>• Information management arrangements</li> <li>• Appeal and funding arrangements</li> <li>• Linkages with government</li> <li>• Preparedness &amp; maintenance actions</li> </ul>	<ul style="list-style-type: none"> <li>• Participation &amp; coordination</li> <li>• Sectoral objectives &amp; response strategies</li> <li>• Needs assessment &amp; analysis</li> <li>• Capacity &amp; response commitments</li> <li>• Gap analysis</li> <li>• Information management arrangements</li> <li>• Standards for response</li> <li>• Monitoring and reporting</li> <li>• Personnel requirements</li> <li>• Material &amp; financial requirements</li> <li>• Preparedness &amp; maintenance actions</li> <li>• Standard Operating Procedures</li> </ul>	Describes how the organization's response will be delivered using their emergency response systems & capacities

Hence, following the widely accepted inter-agency contingency planning approach adopted by UN system and based on the existing emergency response mechanism, legislative and current

institutional framework of Bangladesh, the following nine functional clusters are advocated for formulating an effective earthquake contingency plan.

- Emergency Operations – Overall command and coordination
- Emergency Operations – Search, Rescue and evacuation
- Health
- Relief Services (Food, nutrition and other relief)
- Shelter (including camp management)
- Water Supply, Sanitation and Hygiene
- Restoration of Urban Services
- Transport (road, rail, air, sea)
- Security and Welfare

Given the status of developing country, Bangladesh is assuming a massive volume of humanitarian assistances in case of any natural disasters. That is, the importance of global development partners' interventions is significant to address any emergencies. Hence, the global cluster partners need to be identified in terms of each functional cluster that would enable the lead agency to coordinate in a better cohesive way.

Different agencies related to disaster management in Bangladesh and their possible involvements in different functional clusters are needed to be identified properly. In Table 2.2, lead agency along with global cluster partners have been identified against each functional cluster in line with existing Standing Order on Disasters (SOD), draft Disaster Management Act, draft Disaster Management Plan; and various round-table, working group, consultation and on the whole Technical Advisory Group (TAG) meetings.

**Table 2.2 Functional Groups and Cluster level activities**

Functional Clusters	Activities to be performed	Lead agency	Global Cluster Partners (proposed)
Emergency Operations – Overall command and coordination	<ul style="list-style-type: none"> <li>• Notification of earthquake occurrence to/from concerned authorities</li> <li>• Conduct rapid Damage and Needs Assessment, compile emergency response needs and coordinate for appeals</li> <li>• Operationalization of agency, city etc. level Emergency Operations Centres (EOCs)</li> <li>• Facilitation and coordination for response operations <ul style="list-style-type: none"> <li>○ Command, control, Coordination among response institutions</li> <li>○ Maintain proper chain of command</li> <li>○ Facilitation for logistics and relief transport</li> <li>○ Lead and operationalizing the</li> </ul> </li> </ul>	MoFDM (National EOC)	UNOCHA, UNRC



Functional Clusters	Activities to be performed	Lead agency	Global Cluster Partners (proposed)
	<ul style="list-style-type: none"> <li>Incident Command System (ICS) <ul style="list-style-type: none"> <li>Compile reports regarding response operations</li> </ul> </li> <li>Information dissemination (media) and communication</li> </ul>		
Emergency Operations – Search, Rescue and evacuation	<ul style="list-style-type: none"> <li>Light Search and Rescue at the neighbourhood level</li> <li>Specialized search and rescue</li> <li>Rubble removal</li> <li>First aid &amp; First Medical Response to provide emergency medical treatment</li> <li>Field level victim triaging</li> <li>Victim Transportation</li> <li>Medical care of victims and injured people</li> <li>Evacuation from hazardous areas</li> <li>Fire safety &amp; rescue</li> </ul>	FSCD	IFRC
Restoration of Urban Services	<ul style="list-style-type: none"> <li>Quick restoration of critical services (electricity, communication, transportation and other critical services)</li> <li>Detail damage assessment of buildings, infrastructures and other facilities</li> <li>Restoration and rehabilitation of utilities and services</li> </ul>	City Corporations	UNDP
Health	<ul style="list-style-type: none"> <li>Preparedness planning for Hospitals</li> <li>Arrangements for Medicare for injured</li> <li>Child care and reproductive health</li> <li>Medicare for sick people</li> <li>Counselling and Physio-social trauma support</li> <li>Mortuary services</li> <li>Epidemic control</li> <li>Immunization</li> </ul>	DG-Health services	WHO
Relief Services (Food, nutrition and other relief)	<ul style="list-style-type: none"> <li>Needs analysis survey (to identify needs for victims)</li> <li>Supply and distribution of food items</li> <li>Supply and distribution of non-food and other relief items</li> </ul>	DRR	UNICEF, IFRC, WFP
Security and Welfare	<ul style="list-style-type: none"> <li>Management of dead &amp; Missing</li> <li>Security arrangements, Maintenance of law and order</li> <li>Security (security of people and properties)</li> <li>Traffic control</li> <li>Maintenance of Information on dead and missing</li> <li>Identification and reunification of displaced people</li> </ul>	BP	UNHCR/OHCHR/UNICEF
Shelter (including	<ul style="list-style-type: none"> <li>Establishment of temporary shelters</li> </ul>	AFD	IFRC

Functional Clusters	Activities to be performed	Lead agency	Global Cluster Partners (proposed)
camp management)	<ul style="list-style-type: none"> <li>Collection and distribution of emergency shelter items eg. tents, tarpaulins etc. and assistance to people for erecting such emergency shelters</li> <li>Identification of people those needing shelters in camps</li> <li>Identification of Camps for displaced</li> <li>Shelter management</li> <li>Maintenance of information related to IDPs</li> </ul>		UNHCR IOM
Water Supply, Sanitation and Hygiene	<ul style="list-style-type: none"> <li>Rapid Damage assessment</li> <li>Restoration of Water supply &amp; drainage</li> <li>Sanitation</li> <li>Waste disposal</li> </ul>	City Corporations	UNICEF
Transport (road, rail, air, sea)	<ul style="list-style-type: none"> <li>Vulnerability assessment</li> <li>Damage assessment and planning for restoration of transportation facilities connected with <ul style="list-style-type: none"> <li>Road transportation</li> <li>Rail transportation</li> <li>Air transportation</li> <li>Sea transportation</li> </ul> </li> <li>Arrangements for quick restoration of transportation facilities</li> </ul>	BRTA, CAAB, BR, CPA	UNDP, WFP

It is to be noteworthy that more functional clusters may be needed if earthquake vulnerability reduction, risk mitigation and long-term reconstruction and rehabilitation are to be considered. However, the risk mitigation, reconstruction and rehabilitation are not covered under this contingency planning and response prepared task, the possible clusters for those are not suggested in this regard.

## 2.2 Inputs from Agency Level Consultative Meetings

Various agency level consultative meetings on development of contingency planning with regard to earthquake hazard have been organized with first responding organizations/ agencies. On 11 February 2009, a consultative meeting has been facilitated with the Directorate General of Health Services (DGHS). The main objectives of this meeting are given below.

- ☐ To provide an introductory brief on Scenario Based Contingency Planning Approach;
- ☐ To present the Agency Level Interim Earthquake Contingency Plan for DGHS;
- ☐ To review the Interim Earthquake Contingency Plan;
- ☐ To Form a Committee for finalizing the Scenario based Earthquake Contingency Plan;

In this meeting, it is identified that the Department of Management Information System in DGHS needs to be improved to provide spatial planning database. To initiate the process, it was decided that DGHS would conduct a survey on capacity assessment of hospitals in three cities that would be facilitated by ADPC.

### **2.3 Inputs received during Capacity Building Trainings and Simulation Exercises**

For capacity building exercises, trainings on 'Incident Command System (ICS) for disaster management with special emphasis to earthquake hazard' have been conducted in Dhaka, Chittagong and Sylhet. During these trainings, participants were asked to revisit the following issues for facilitating contingency planning process:

- ▣ institutional roles and responsibilities for disaster/crisis management with focus on response & recovery;
- ▣ Coordination with other agencies (i.e. intergovernmental-NGO-CBO, etc.);
- ▣ Key challenges and constraints in emergency response system and major gaps in national and local administrative level;
- ▣ Lessons Learned and Progress of for Emergency Response Management;
- ▣ Recommendations for professionalizing/improvement of disaster/crisis response management.

During these trainings, all agreed that there is a requirement of national and district level policy for incident command system based disaster response mechanism.

To train the users of the plan and to evaluate the effectiveness of the Earthquake contingency plan itself, training workshops on earthquake disaster response simulation exercise for contingency planning have been organized in three cities including- Dhaka, Chittagong, and Sylhet. Valuable results of an exercise included the identification of gaps, weaknesses and opportunities to improve the effectiveness of the plan. It is stated that the responsibility of overall coordination and direction for the creation, implementation and monitoring of national earthquake contingency plan should lie with the Ministry of Food and Disaster Management (MoFDM), since this is the focal ministry with all responsibilities related to disaster management. However, the Disaster Management Bureau (DMB) along with the initial support from Comprehensive Disaster Management Programme (CDMP) will assist the ministry by coordinating and facilitating in such national contingency planning process. At local levels the contingency planning process should be coordinated and lead by the respective local authority, for example at city levels it should be lead and coordinated by respective city corporations.

### **2.4 Availability of Geo-information and Inventory Data from Different Agencies**

Spatial-based contingency planning goes beyond traditional planning to bring together and integrate all required information that facilitate effective execution of the plan. Therefore, to introduce spatial planning concept into the interim contingency plan, geo-information and inventory database have been developed that covers all first respondent agencies and other humanitarian assistance providers' organizations. The availability of such spatial information have been discussed extensively in section 3.

## 2.5 Comments and Advices received from TAG Meetings and CDMP

The Technical Advisory Group (TAG) and CDMP have been providing a continuous advisory supports for formulating an effective earthquake contingency plan at national, city and agency levels. The main comments that are received so far have been pointed out below.

- ▣ The concept of establishing a national Emergency Operations Center (EOC) for Earthquake is unique and would be highly effective in operationalizing this contingency plan. Therefore, TAG members requested ADPC to come up with a concrete suggestion regarding EOC and possibly quoting examples from the Region for CDMP to consider.
- ▣ There is a de facto EOC currently being operated under Chief Adviser's Office (i.e. Prime Minister's Office) for emergencies and suggested to see the possibility of enhancing its capacity to include the needs under Earthquake contingency plan.
- ▣ It is advised that all the relevant lead agencies for Transportation cluster and utility sector needs to be well-clarified. In addition, TAG recommended the possibility of using alternative transportation system (e.g. helicopter) in case of earthquake emergencies as most of the roads in congested areas will be blocked. Also TAG suggested having a plan to have mobile hospitals as most of the hospitals will not have adequate capacity to respond to mass casualty care during earthquakes.
- ▣ With regard to EOC, it is better to use the term 'Catchment Area' instead of 'Command Area'.
- ▣ In addition in Earthquake Contingency Plan, to consider Search and Rescue Planning in cities, in particular to have a larger team of community first responder volunteers as an important aspect that needs to be articulated in the plan for future.
- ▣ In the Contingency Plan, there is no need to provide any introductory/ background information; rather it is admissible to start the planning contents from the very first chapter of the Plan.
- ▣ In formulating spatial planning with regard to earthquake contingency plan, it would be feasible to consider geological boundary rather than administrative boundary (ward based). In this context, it is advised to consult with the existing Contingency Plan for Armed Forces Division to review the criteria for delineation of zones.

All of the above comments have found to be very effective especially in providing the roadmap towards future course of actions on 'contingency planning with regard to earthquake hazard'.

## 2.6 Comments and Advices received from GIS Expert Agencies

In the meeting with Center for Environmental and Geographic Information Services (CEGIS) and Institute of Water Modelling (IWM), the following suggestions have been made to improve spatial contingency plan with regard to earthquake hazard.

- Web-based Contingency Plan will be more effective in the context of Bangladesh
- Spatial database needs to be available with all relevant agencies
- The spatial database should be regular updated by a authorized person and also password protected

## **Section Three**

### **3. Introduction of Spatial Planning in the Interim Contingency Plan Templates**

#### **3.1 Methodology for introducing spatial features in CP Template**

##### **3.1.1 Literature Review**

Available literatures on earthquake contingency planning, specifically spatial planning features of Nevada, Jamaica, Gujarat, Tehran, Istanbul, Marikina, Bandung, Dagupan, Katmandu plans have been studied to identify spatial planning requirements of any contingency plan prepared to manage earthquake contingencies.

##### **3.1.2 Agency level consultative meetings**

Agency level consultative meetings with 5 first responding agencies (DMB, DRR, AFD, FSCD, DGHS), 3 city corporations (Dhaka, Chittagong and Sylhet), 2 development authorities (RAJUK, CDA), 5 utility and 2 service providing agencies (WASA, Titas Gas, DPDC, BTCL, RHD, POLICE) have been planned and are now underway. Both formal and informal meetings with the focal points of these agencies have been found to be useful in identifying spatial planning parameters in contingency plans.

##### **3.1.3 Inputs from Capacity Building workshops and simulation exercises**

Three capacity building workshops on ICS, one on contingency planning for lifeline utilities and 3 simulation exercises were conducted in Dhaka, Chittagong and Sylhet cities. These workshops and exercises were attended by the professionals and practitioners from varied professions and agencies. Useful inputs have been received from the attendees of these workshops and exercises.

##### **3.1.4 Suggestions and Comments from TAG and GIS experts**

Suggestion given in the TAG meeting held in September 18, 2008 and special GIS expert Group's Meeting, held in February 19, 2009 have been duly considered in developing the updated templates.

##### **3.1.5 Making Inventory of Manpower and Equipments and Capacity Assessment**

A detailed Inventory of Manpower and Equipments (appended in Annex- 3) have been made for the following organizations. This list will help in assessing disaster management capacities of the organizations listed below. Besides, spatial parameters such as catchment area, suitable locations, and shortest possible routes etc. which are the useful inputs in spatial planning can also be identified using these inventories. Questionnaire (vide Annex 1a) survey was conducted in different agencies to develop this inventory. Their officially published documents were also consulted. For Capacity assessment of the medical facilities in Dhaka, Chittagong and Sylhet a separate survey has been administered with a separate data collection format (Vide Annex 1b)

Table 3.1 Agency wise inventory types

Type of Agency	Name of the Agency	Inventory Type
First Respondent Agency	Armed Forced Division	
	Disaster Management Bureau	All Administrative Head Quarters Location, Manpower
	Department of Relief and Rehabilitation	All Food Godown with spatial location
	Fire Service and Civil Defence	All Equipments, Manpower with Station Location
	Directorate General of Health Services	Hospital / Clinic in Dhaka City with Spatial Location and their Capacity
Second Respondent Agency	Dhaka City Corporation	City Corporation Zonal Office Location, Nagar Bhabon Location, DCC Garage Location, Existing Equipment List, Manpower,
	Sylhet City Corporation	City Corporation Zonal Office Location, Nagar Bhabon Location, Garage Location, Existing Equipment List, Manpower,
	Chittagong City Corporation	City Corporation Zonal Office Location, Nagar Bhabon Location, CCC Garage Location, Existing Equipment List, Manpower,
	Rajdhani Unnayan Karttripakkho (RAJUK)	RAJUK Bhabon Location, RAJUK Garage Location, Existing Equipment List, Manpower,
Utility and Service Agency	Titas Gas	Gas Network with the Storage Location
	WASA	Water Network, Pipe Diameter, Location of Tank, Reservoir, Treatment Plant, Water Body
	Roads & Highway	Transportation Facilities, Road networks, Rail Station, Rail line, Bus Terminal, Ferry Terminal, Airport
	Shelter & Evacuation	Open Space Location, Area , Play Ground, Vacant Space, School location with area
	Security	Location of Police Box / Station,

Under the current project spatial database has been developed for three cities. All physical features of these three cities are determined and selected attribute information against the spatial features have been added. Following is the method of physical feature survey for Dhaka, Chittagong and Sylhet city corporation areas.



1. Pucca : P (P1/ P2/ P3.....)
2. Semi Pucca : SP
3. Katcha : K
4. Tin Shed : T
5. Wooden : W





**B. Structure Use:**

Sl No	Land-use	Structure Use
1	Agriculture	Nursery, Horticulture, Fisheries, Poultry Farm, Dairy Farm
2	Commercial Activity	Shop, Market, Katcha Bazar, Godown, Cold Storage
3	Community Service	Mosque, Temple, Church, Mazar/Dargah, Eidgah, Club, Association (Somiti), Community Center, Auditorium
4	Education & Research	Collect the Name of the Institute
5	Governmental Services	Collect the Name of Govt. Office
6	Non Government Services	Foreign Mission, International Organizations, NGO (all with Name)
7	Manufacturing and Processing	All type of Factory & Industries (collect Names for the Large Ones)
8	Recreational Facilities	Cinema Hall, Theater Hall, Art Gallery
9	Residential	Individual Residential, Quarters, Mess, Hostel, Bosti
10	Service Activity	Bank etc. (with Name), Private Offices, Doctor/Lawyer's Chamber, Political Party Office, Hotel, Restaurant/Tea Stall, Workshops, Power Supply, Water Supply, Gas Transmission, Sewerage Office, Police Station, Police Box, Fire Service
11	Transport & Communication	Filling Station, Bus-Truck Terminal/Stand, Ferry/Cargo Ghat, Launch Terminal, Rail Station, Airport, Post Office, Telephone Exchange/Office

**C. Structure Name:** Landmark structure names.

Names of Govt Offices, Bank, Residential Hotels, Forgien/International/NGO Offices, Mosque/Temples, School-College/University/Madrassa, Filling Station, Bus-Truck Terminal/Stand, Ferry/Cargo Ghat, Launch Terminal, Rail Station, Airport, Post Office, Telephone Exchange/Office, Katcha Bazar, etc.

**D. Structure Construction Year:**

**E.** Boundary of Playground, Park, Graveyard, Crematorium (*Shamshan*), Tea Garden, Restricted Areas including **Name**.

**F.** Mobile Tower and High-Volt Electric Towers should be identified.

Hill/Tilla area and name should be collected

### 3.2 Spatial Information and Inputs for Clusters

Spatial setting is one of the key issues for the success of earthquake contingency plan especially in urban areas. A planned development makes a post earthquake rescue operation easy than that of an unplanned or haphazard development or urban settings. Since the process of urbanization in developing countries like Bangladesh is not well controlled and guided, the scenario of a post earthquake would be beyond imagination. Under the current project, a comprehensive spatial database has been developed for the city of Dhaka, Chittagong and Sylhet to assess the earthquake scenario, capacity of different agencies in respect of response to prepare an effective contingency plan. Following is an outline of the spatial information available for different clusters and outline of the methodology to assess the capacity. In line with the standard international practice a cluster based approach has been under taken to include spatial planning parameters in the contingency plan templates.

#### 3.2.1 Emergency Operations – Overall command and coordination

##### *Spatial Information*

Locations of the concern departments / agencies have been identified in the map.

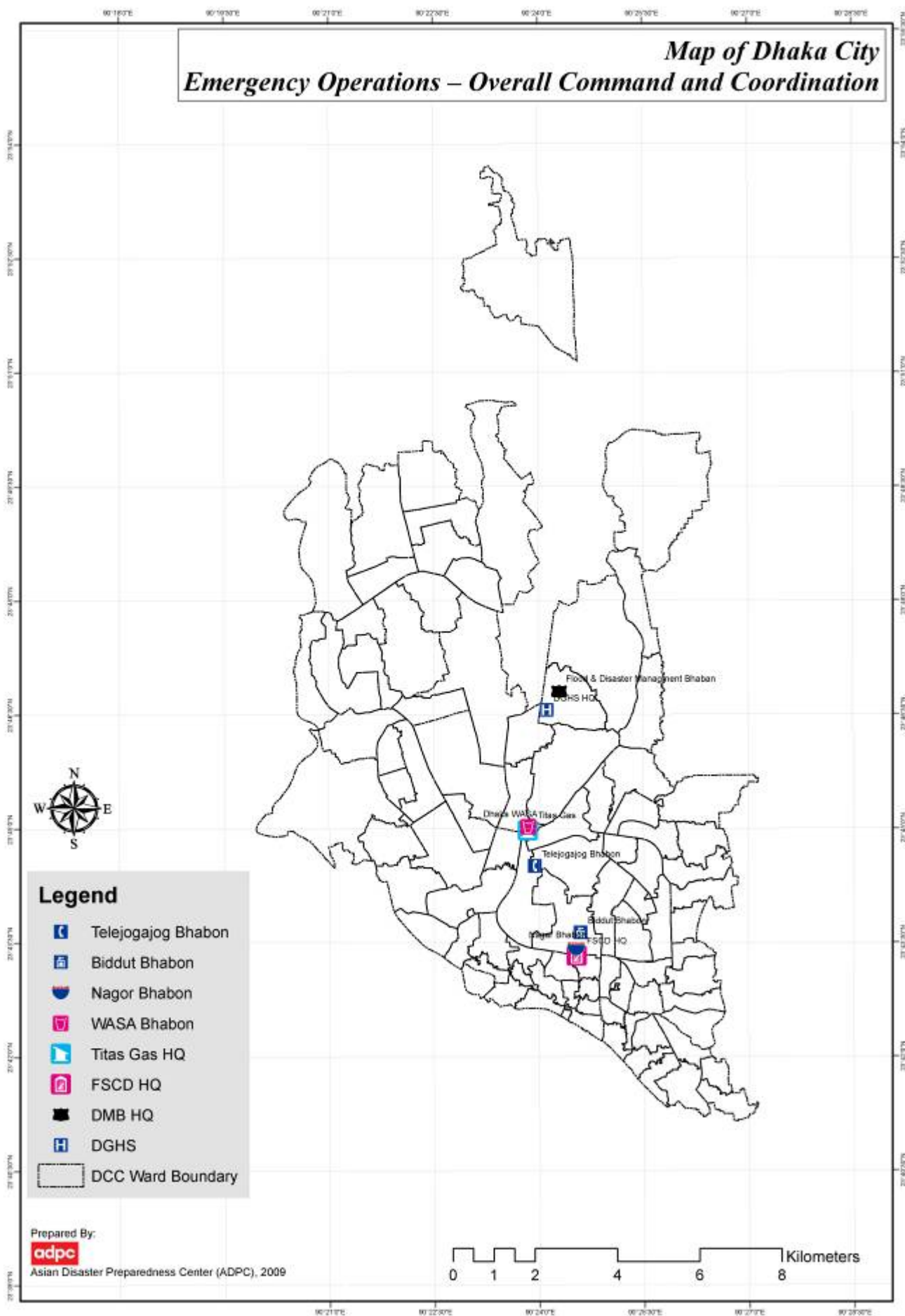
Identified Features	Reason	Remarks
Administrative headquarters location	To make emergency communication and coordination	

#### 3.2.2 Emergency Operations – Search, Rescue and evacuation

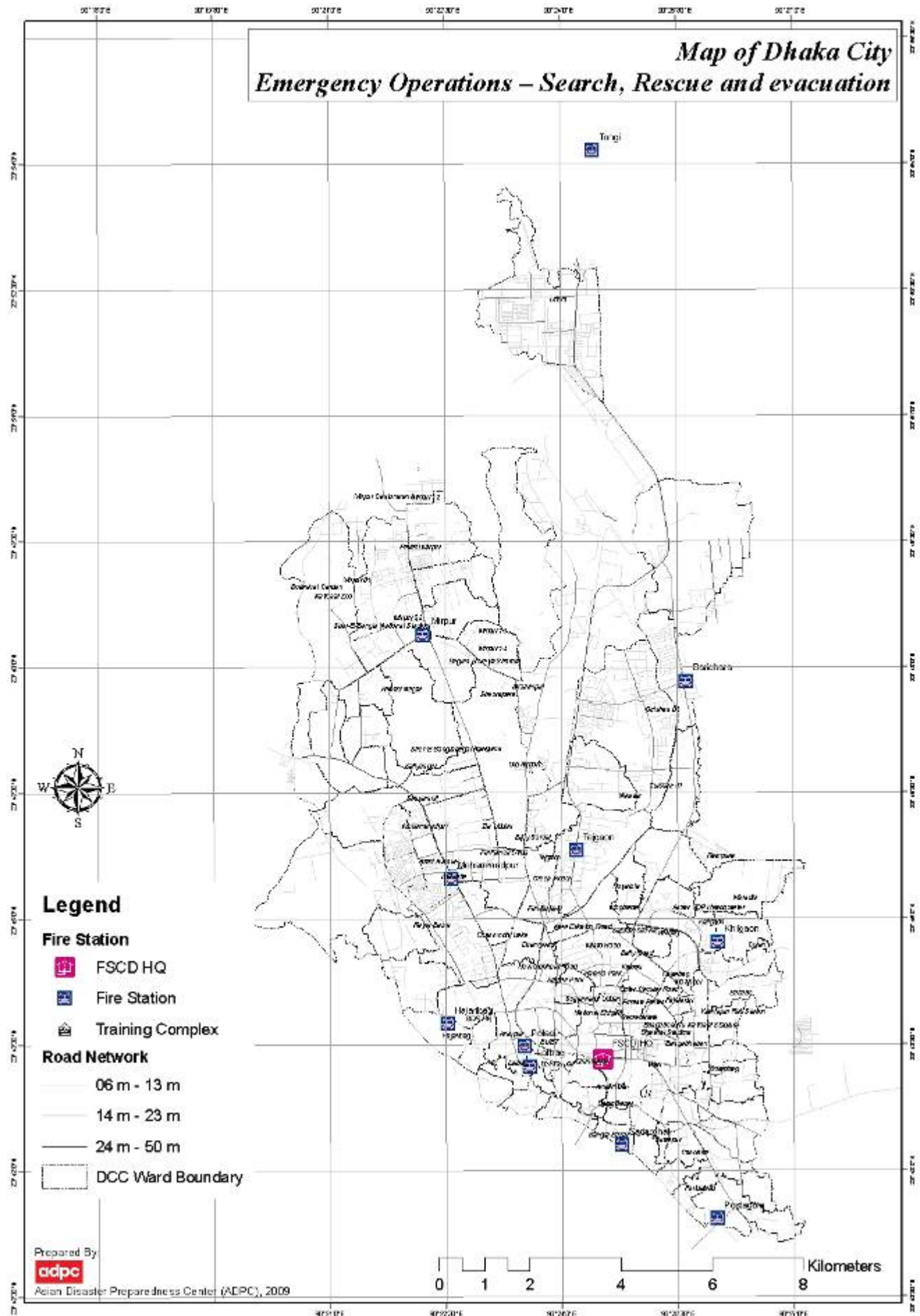
##### *Spatial Information*

Identified Features	Reason	Remarks
Roads	To make plan for evacuation route	Roads have been classified based on the width and capacity
Location of fire service stations	To assess the area coverage during an emergency	Along with the capacity of the respective stations
Location of rescue instruments like crane, bulldozers etc.	To assess the present situation these can go for operation	
Location of park, playground etc.	To identify the possible areas for evacuation	

# Map of Dhaka City Emergency Operations – Overall Command and Coordination



# Map of Dhaka City Emergency Operations – Search, Rescue and evacuation

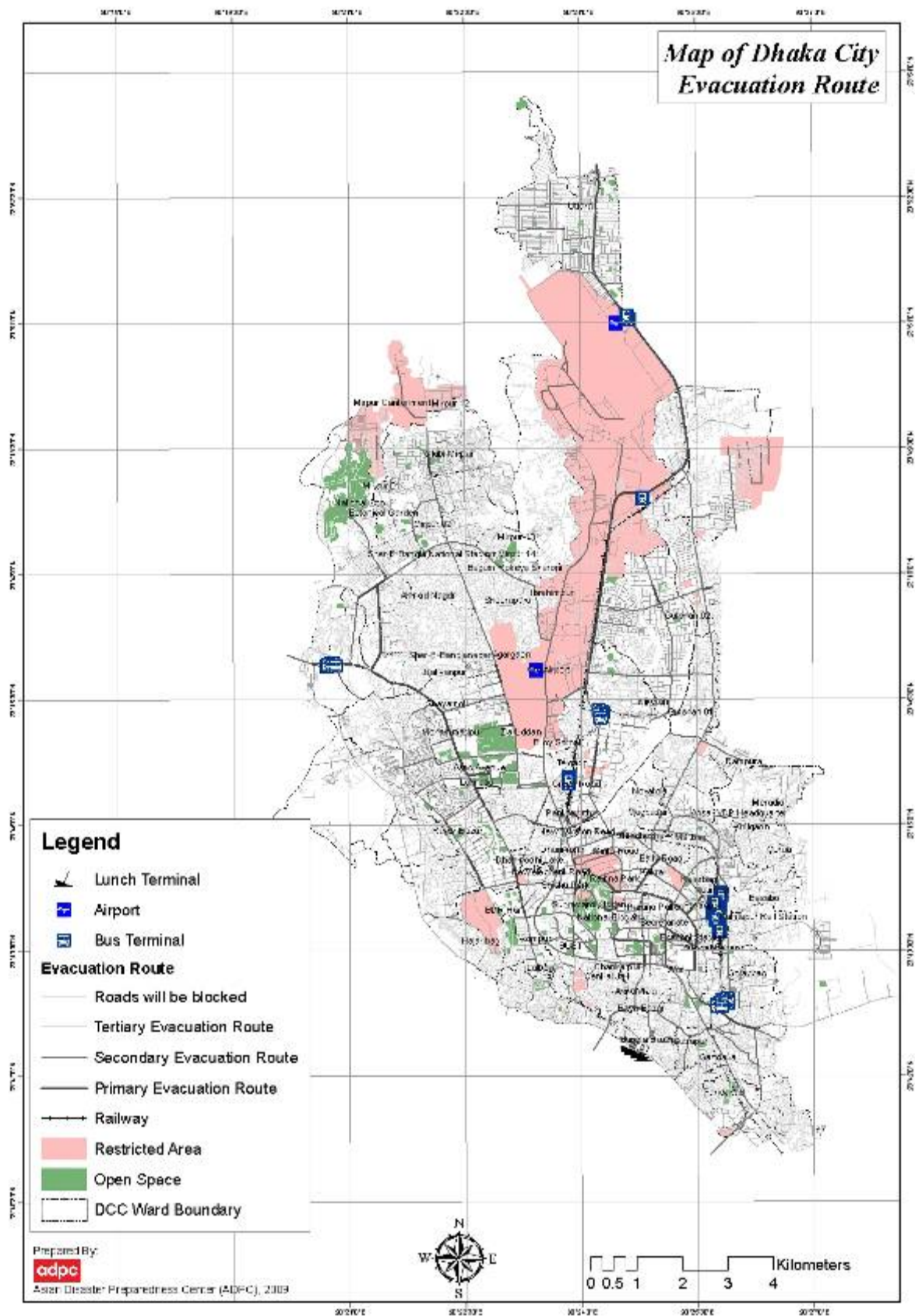


## Analysis

Identified Features	Issues to be considered	Possible Outcome
Roads	<ul style="list-style-type: none"><li>- Classification of roads</li><li>- Landuse and surrounding settings.</li></ul>	Main evacuation route would be indentified
Location of fire service stations	<ul style="list-style-type: none"><li>- Distance coverage after an event.</li><li>- Number of stations response.</li></ul>	Would determine the coverage of area under present facility
Location of rescue instruments like crane, bulldozers etc.	<ul style="list-style-type: none"><li>- Distance from main evacuation route</li></ul>	Would determine the immediate initiatives for preparedness
Location of park, playground etc.	<ul style="list-style-type: none"><li>- Distance from the community.</li><li>- Route to the place</li></ul>	Would determine the served and unnerved areas by existing open spaces

Evacuation Route Type	Road Width	Length in Kilometer
Tertiary Evacuation Route	6 to 13 m	489.35
Secondary Evacuation Route	14 to 23 m	137.62
Primary Evacuation Route	24 to 50 m	48.96





### 3.2.3 Restoration of Urban Services

#### *Spatial Information*

Identified Features	Reason	Remarks
Water supply network	To understand the present water supply system	Pipe network, pump stations, overhead tanks are identified
Gas supply network	To understand the present gas supply system	Pipe network, control points, main supply route are identified
Electricity Network	To understand the present electricity supply system	Electric pole, cable, sub-stations have been identified
Sewage network	To assess the present sewage coverage and system	
Roads	To identify the present relation with other urban services	
Bridges and culverts	To identify the present situation of communication	

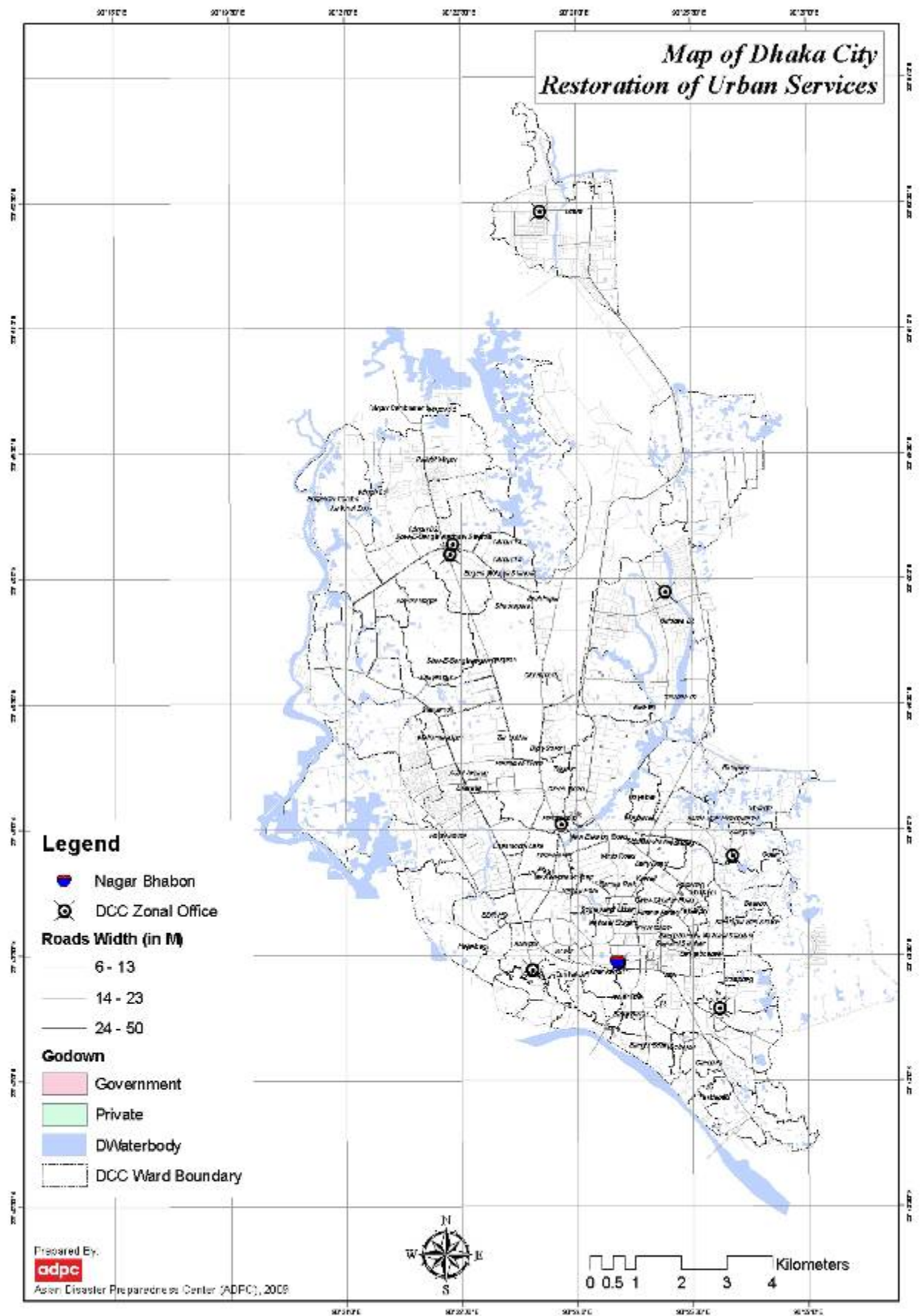
#### *Analysis*

Identified Features	Issues to be considered	Possible Outcome
Water supply network	<ul style="list-style-type: none"><li>- Supply network.</li><li>- Joints, location vulvas</li></ul>	Would determine the areas of breakings
Gas supply network	<ul style="list-style-type: none"><li>- Supply network</li><li>- Control points.</li></ul>	Would identify the possible breaking areas and fire hazard
Electricity Network	<ul style="list-style-type: none"><li>- Network</li><li>- Poles &amp; Substations</li></ul>	Would determine the possible areas to be damaged
Sewage network	<ul style="list-style-type: none"><li>- Main sewage served areas</li></ul>	Would determine the areas of breakings
Roads	<ul style="list-style-type: none"><li>- Classification of roads</li><li>- Construction of roads</li></ul>	Would determine the possible effects on other services
Bridges and culverts	<ul style="list-style-type: none"><li>- Vulnerability factors</li></ul>	Would determine the bridge/ culverts with possible damage



Table 3.2 Dhaka City Corporation Zonal Office and Command Area

Zone	Zonal Office Address	List of Words
Zone 1	Bisso Road, Adjacent to Saidabad Bus Terminal	30,75,76,77, 80, 81, 82,83, 84, 85,86,87, 88, 89, 90
Zone 2	Nagor Bhaban( 12th Floor) Fulbaria Dhaka-1000.	66, 67,68, 69, 70, 71,72, 73, 74, 78, 79
Zone 3	Hazi Abdul Gani Community Centre. Azimpur, Dhaka-1211	48, 58, 59, 60, 61, 62, 63, 64, 65
Zone 4	Tilpapara Community Centre, Khilgaon, Dhaka-1214	22, 23,24, 25, 26, 27,28, 29, 31, 32, 33, 34, 35, 36
Zone 5	Nagor Bhaban( 9th Floor) Fulbaria Dhaka-1000	49, 50, 51, 52, 53, 54, 55, 56, 57
Zone 6	Kawran Bazar Arot Building, Kawran Bazar, Dhaka-1215	39, 40, 42, 43, 44, 45, 56, 47
Zone 7	Town Hall, 10 No- Round About, Dhaka-1216, Kafrul Zonal Office	9, 10, 11, 12, 13, 14, 16, 41
Zone 8	Section-2, Mirpur, Dhaka-1216	2, 3, 4, 5, 6, 7, 8, 15
Zone 9	House No.- 4, Road No.-90, , Gulshan-2, Dhaka-1212	17, 18, 19, 20, 21, 37, 38
Zone 10	House No. -20, Road No. -13, Sector-6, Uttara, Dhaka-1230	1



### 3.2.4 Health

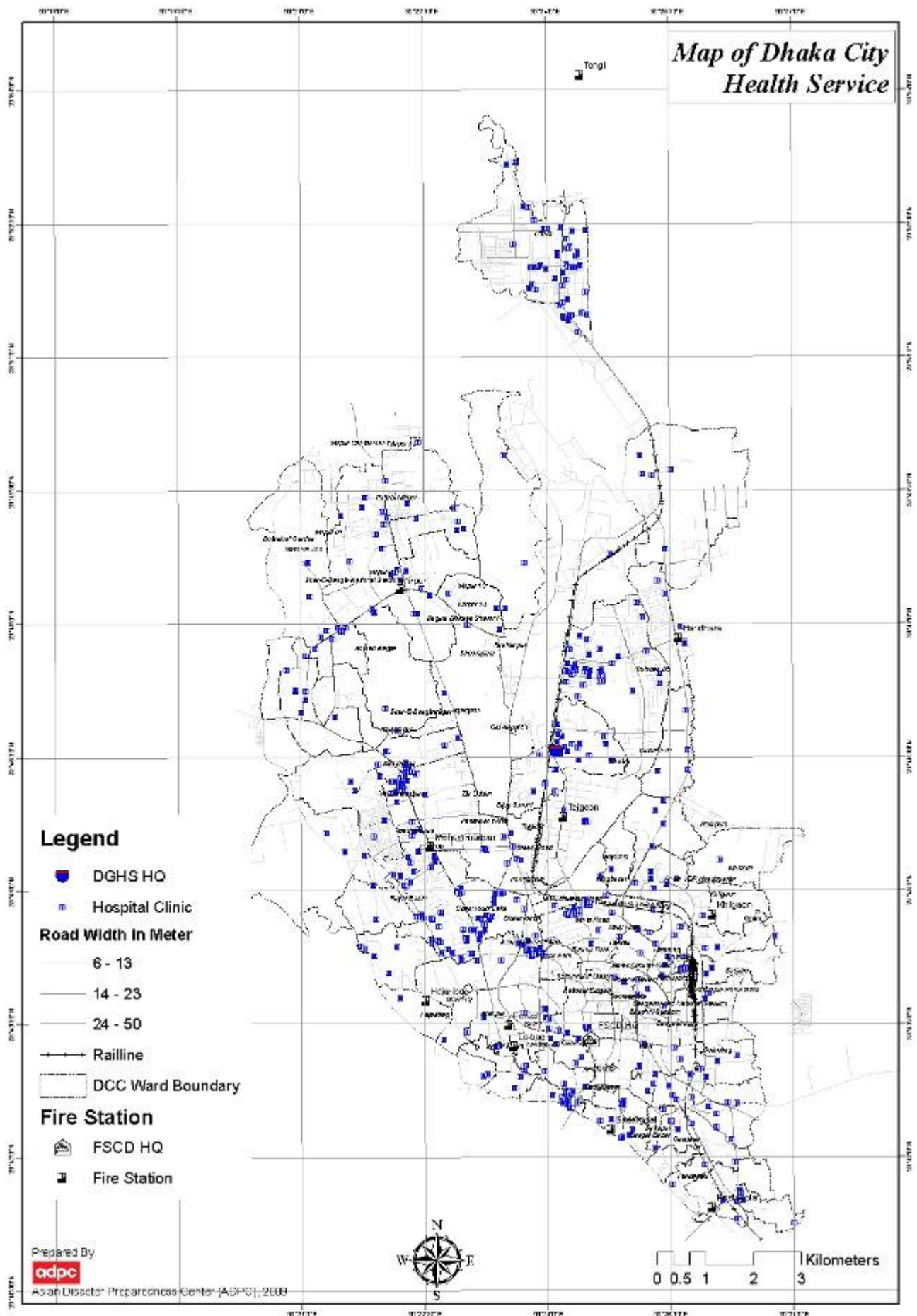
#### *Spatial Information*

Identified Features	Reason	Remarks
Roads	To identify the present relation with other urban services	
Bridges and culverts	To identify the present situation of communication	
Locations of hospitals and clinics	To identify the present distribution of the facilities	Would give a picture for medical services

#### *Analysis*

Identified Features	Issues to be considered	Possible Outcome
Roads	<ul style="list-style-type: none"> <li>- Classification of roads</li> <li>- Construction of roads</li> </ul>	Would determine the possible effects on other services
Bridges and culverts	<ul style="list-style-type: none"> <li>- Vulnerability factors</li> </ul>	Would determine the bridge/ culverts with possible damage
Locations of hospitals and clinics	<ul style="list-style-type: none"> <li>- Distance from main roads</li> <li>- Surrounding landuse</li> </ul>	Would determine the area coverage and ready service for people

Types of Medical Facilities (Based on Beds)	Number of Hospital	Percentage
Small Hospital (upto 20 Beds)	340	76.75%
Medium Hospital (21 to 50 Beds)	69	15.58%
Large Hospital (More than 50 beds)	34	07.67%

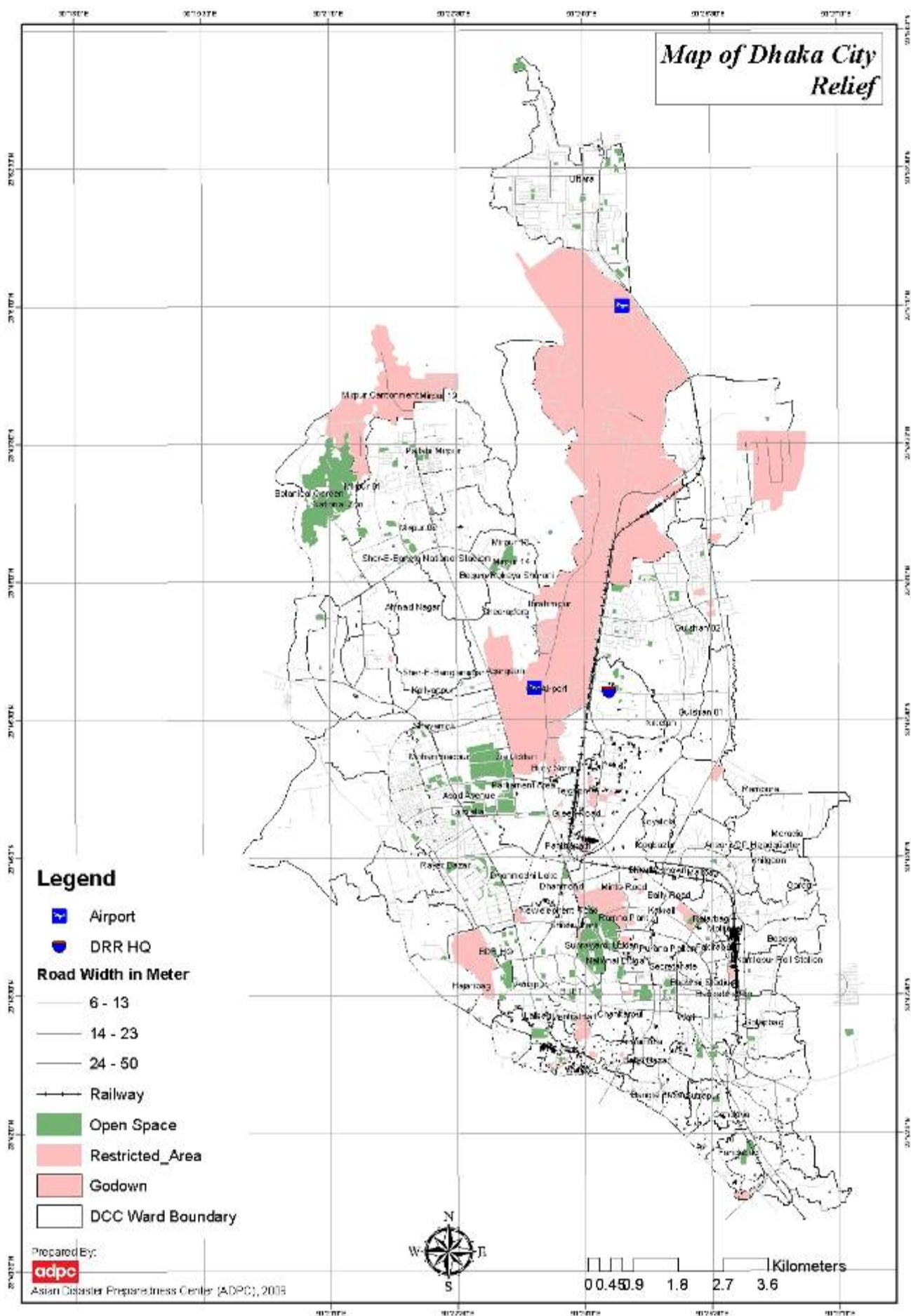


### 3.2.5 Relief Services

#### *Spatial Information*

Identified Features	Reason	Remarks
Roads	To identify the present relation with other urban services	
Bridges and culverts	To identify the present situation of communication	
Locations of food and medicine storages	To identify the present distribution of the facilities	Would give a picture of present services





### ***Analysis***

Identified Features	Issues to be considered	Possible Outcome
Roads	<ul style="list-style-type: none"><li>- Classification of roads</li><li>- Construction of roads</li></ul>	Would determine the possible effects on other services
Bridges and culverts	<ul style="list-style-type: none"><li>- Vulnerability factors</li></ul>	Would determine the bridge/ culverts with possible damage
Locations of food and medicine storages	<ul style="list-style-type: none"><li>- Distance from main roads</li><li>- Surrounding landuse</li></ul>	Would determine the area coverage and ready service for people

### **3.2.6 Security and Welfare**

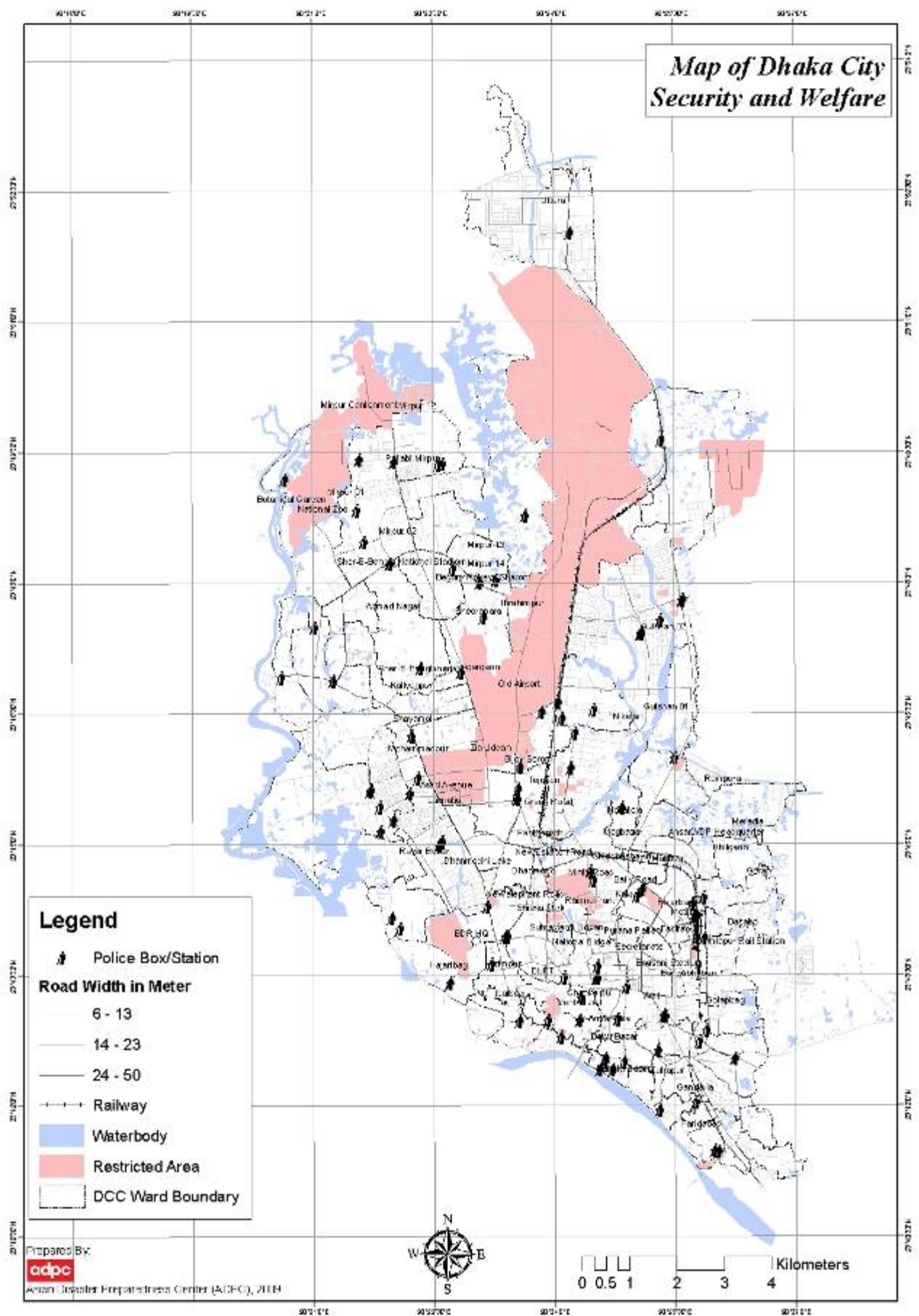
#### ***Spatial Information***

Identified Features	Reason	Remarks
Roads	To identify the present relation with other urban services	
Bridges and culverts	To identify the present situation of communication	
Locations of Police stations	To identify the present distribution of the stations	Would give a picture of present services

### ***Analysis***

Identified Features	Issues to be considered	Possible Outcome
Roads	<ul style="list-style-type: none"><li>- Classification of roads</li><li>- Construction of roads</li></ul>	Would determine the possible effects on other services
Bridges and culverts	<ul style="list-style-type: none"><li>- Vulnerability factors</li></ul>	Would determine the bridge/ culverts with possible damage
Locations of Police stations	<ul style="list-style-type: none"><li>- Distance from main roads</li><li>- Surrounding landuse</li></ul>	Would determine the area coverage and ready service for people





### 3.2.7 Shelter (including camp management)

#### *Spatial Information*

Identified Features	Reason	Remarks
Buildings	To identify the present scenario based on different classification	
Roads	To make plan for evacuation route	Roads have been classified based on the width and capacity
Location of park, playground etc.	To identify the possible areas for evacuation	

#### *Analysis*

Identified Features	Issues to be considered	Possible Outcome
Buildings	<ul style="list-style-type: none"> <li>- Vulnerability factors</li> <li>- Types and use</li> <li>- Construction materials</li> </ul>	Would determine the % of buildings collapsed or damaged
Roads	<ul style="list-style-type: none"> <li>- Classification of roads</li> <li>- Landuse and surrounding settings.</li> </ul>	Main evacuation route would be indentified
Location of park, playground etc.	<ul style="list-style-type: none"> <li>- Distance from the community.</li> <li>- Route to the place</li> </ul>	<ul style="list-style-type: none"> <li>- Would determine the served and unnerved areas by existing open spaces</li> <li>- Would be helpful to identify the place for arrangement of temporary shelter</li> </ul>

**Table 3.3 Restricted Area with Name**

Name of the Area	Area in Hector (Ha)
TV Station	5.05
Survey Could Not Be Conducted Due To Obstructions Of Local Peoples/land Owners.	4.00
Children's (Shishu) Park	3.78
Restricted Area (BCSIR)	4.12
Rajar Bag Police Line	11.79
Police Control Room	1.41
National Zoo & Botanical Garden	158.48
Mirpur Cantonment	146.72
Japan High Commission	1.35

Name of the Area	Area in Hector (Ha)
Indian Embassy	1.95
Govt. Residential Area	48.24
Govt. Office	1.54
Govt. Office	0.81
Govt. Office	3.35
FDC	2.59
Eastern Housing Limited	85.94
Embassy	0.63
Embassy Of U.S.A	1.54
Dhaka Central Jail Compound	7.47
Dhaka Central Jail Compound	4.45
Dhaka Cantonment	1826.89
Circuit House	1.64
British High Commission	0.87
Basundhara Residential Area (restricted)	146.19
Bangladesh Rail Office	3.78
B D R Headquarter	67.82
Others	30.16
<b>Total</b>	<b>2572.56</b>

**Table 3.4 Ward wise restricted area**

Ward	Ward Wise Restricted Area Area in Hector
Ward No 1	0.03367
Ward No 2	0.35736
Ward No 4	0.34652
Ward No 6	0.15688
Ward No 8	182.1293
Ward No 11	0.93298
Ward No 15	0.71072
Ward No 16	241.3695
Ward No 17	85.00397
Ward No 18	6.73301
Ward No 19	2.67622
Ward No 22	5.60847
Ward No 31	4.18631
Ward No 32	0.34182
Ward No 36	12.06432
Ward No 37	12.01489

Ward	Ward Wise Restricted Area Area in Hector
Ward No 38	30.14434
Ward No 39	1.70085
Ward No 53	54.16518
Ward No 56	8.94377
Ward No 57	1.05574
Ward No 58	3.45153
Ward No 59	8.2253
Ward No 63	1.02236
Ward No 65	1.70011
Ward No 66	0.71356
Ward No 67	12.8427
Ward No 68	0.76107
Ward No 76	0.3175
Ward No 77	0.43672
Ward No 83	0.05484
Ward No 90	0.03012

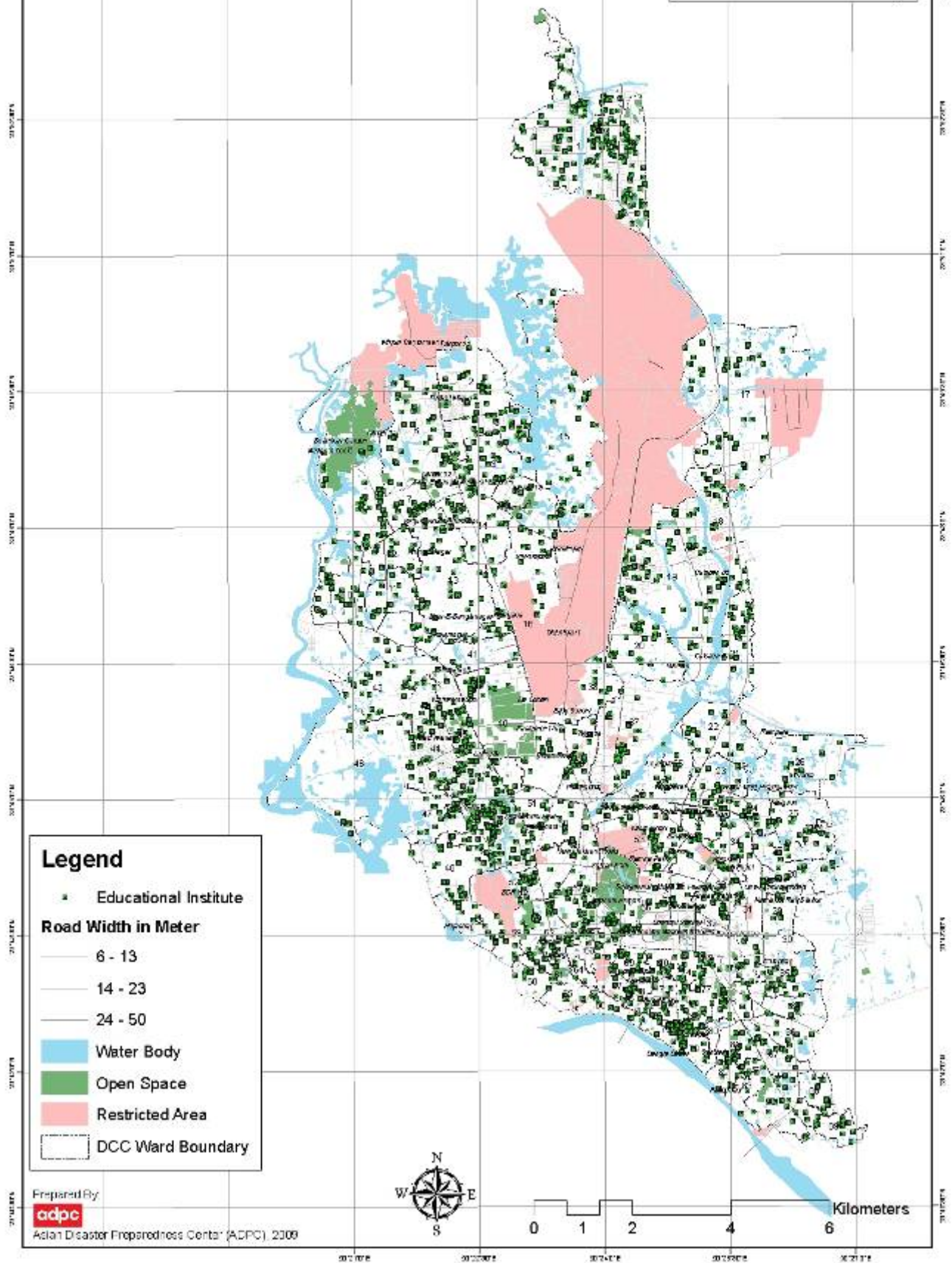
Table 3.5 Ward wise open space area in Dhaka city

Ward No	No of Block	Area in Ha
1	27	20.65
2	5	2.58
3	4	0.15
4	7	12.76
5	3	1.27
6	9	10.29
7	6	4.81
8	4	124.49
9	1	1.26
10	3	1.08
11	2	0.13
12	1	0.13
13	5	0.14
14	4	0.09
15	4	0.75
16	8	1.84
17	16	1.69
18	6	1.15
19	13	12.65
20	14	5.21
22	1	0.03
24	5	1.55
25	2	0.06
26	1	0.15
27	2	0.86
28	1	0.06
29	3	0.90
30	1	0.70
31	2	0.11
32	2	0.73
33	3	2.00
34	1	0.30
36	5	6.42
37	3	0.26

Ward No	No of Block	Area in Ha
38	6	0.14
39	2	0.20
40	15	83.16
41	1	0.27
42	2	0.47
43	1	0.09
44	2	0.82
45	9	8.17
46	2	1.29
48	2	0.70
49	13	13.38
50	1	0.01
51	1	0.22
52	6	4.97
54	1	0.09
55	1	0.29
56	14	54.02
57	13	26.69
59	5	11.26
60	3	0.64
61	3	6.09
62	10	2.78
63	2	1.01
65	3	1.40
67	1	0.11
68	3	0.22
69	1	0.15
70	1	0.01
73	2	0.45
75	5	0.78
76	4	5.36
77	2	1.23
78	4	0.63
79	1	0.12

Ward No	No of Block	Area in Ha
81	4	2.17
82	1	0.02
83	4	2.30
84	3	0.35
85	4	1.78
86	4	0.58
87	4	0.43
88	2	0.10
90	1	4.26
<b>Total</b>	<b>343</b>	<b>456.46</b>

# Map of Dhaka City Shelter Cluster Map



## Legend

• Educational Institute

## Road Width in Meter

— 6 - 13

— 14 - 23

— 24 - 50

Water Body

Open Space

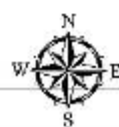
Restricted Area

DCC Ward Boundary

Prepared By



Asian Disaster Preparedness Center (ADPC) 2009



0 1 2 4 6 Kilometers



### 3.2.8 Water Supply, Sanitation and Hygiene

#### *Spatial Information*

Identified Features	Reason	Remarks
Water supply network	To understand the present water supply system	Pipe network, pump stations, overhead tanks are identified
Sewage network	To assess the present sewage coverage and system	

#### *Analysis*

Identified Features	Issues to be considered	Possible Outcome
Water supply network	<ul style="list-style-type: none"> <li>- Supply network.</li> <li>- Joints, location vulvas</li> </ul>	Would determine the areas of breakings
Sewage network	<ul style="list-style-type: none"> <li>- Main sewage served areas</li> </ul>	Would determine the areas of breakings

Table 3.6 Basic information of Water Supply in Dhaka City Area

Sl. No.	Items	Unit	Quantity in Dhaka City Area
1	Water line	Km	2396.61
2	Water connection	Nos.	222613
3	Daily water production	MLD	1524.87
4	Deep tube wells in operation	Nos.	447
5	Deep tube wells of other agencies	Nos.	691
6	Overhead tank in operation	Nos.	38
7	Water treatment plant	Nos.	2

Source: DWASA, 2008

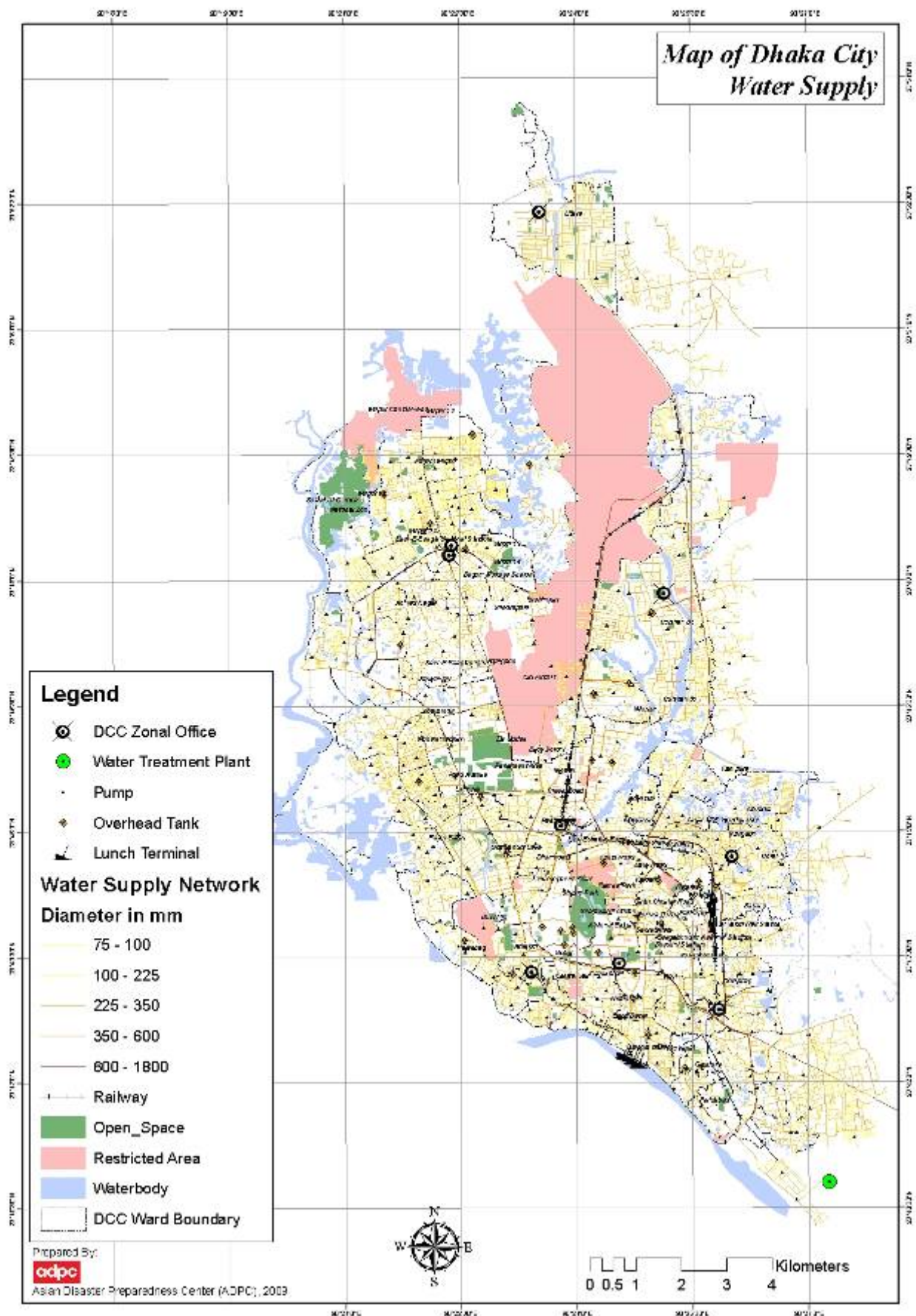
Table 3.7 Water Supply Line in Dhaka City

Sl. No.	Line Size	Length in km.
1	100 mm	947.41
2	150 mm	705.53
3	200 mm	408.41
4	250 mm	44.10
5	300 mm	183.56
6	400 mm	12.80
7	450 mm	52.50
8	500 mm	3.11
9	600 mm	3.90
10	1000 mm	2.40

Sl. No.	Line Size	Length in km.
11	1200 mm	2.92
12	1400 mm	4.25
13	1800 mm	0.71
14	Other	23.00
	Total	2396.61

Source: DWASA, 2008





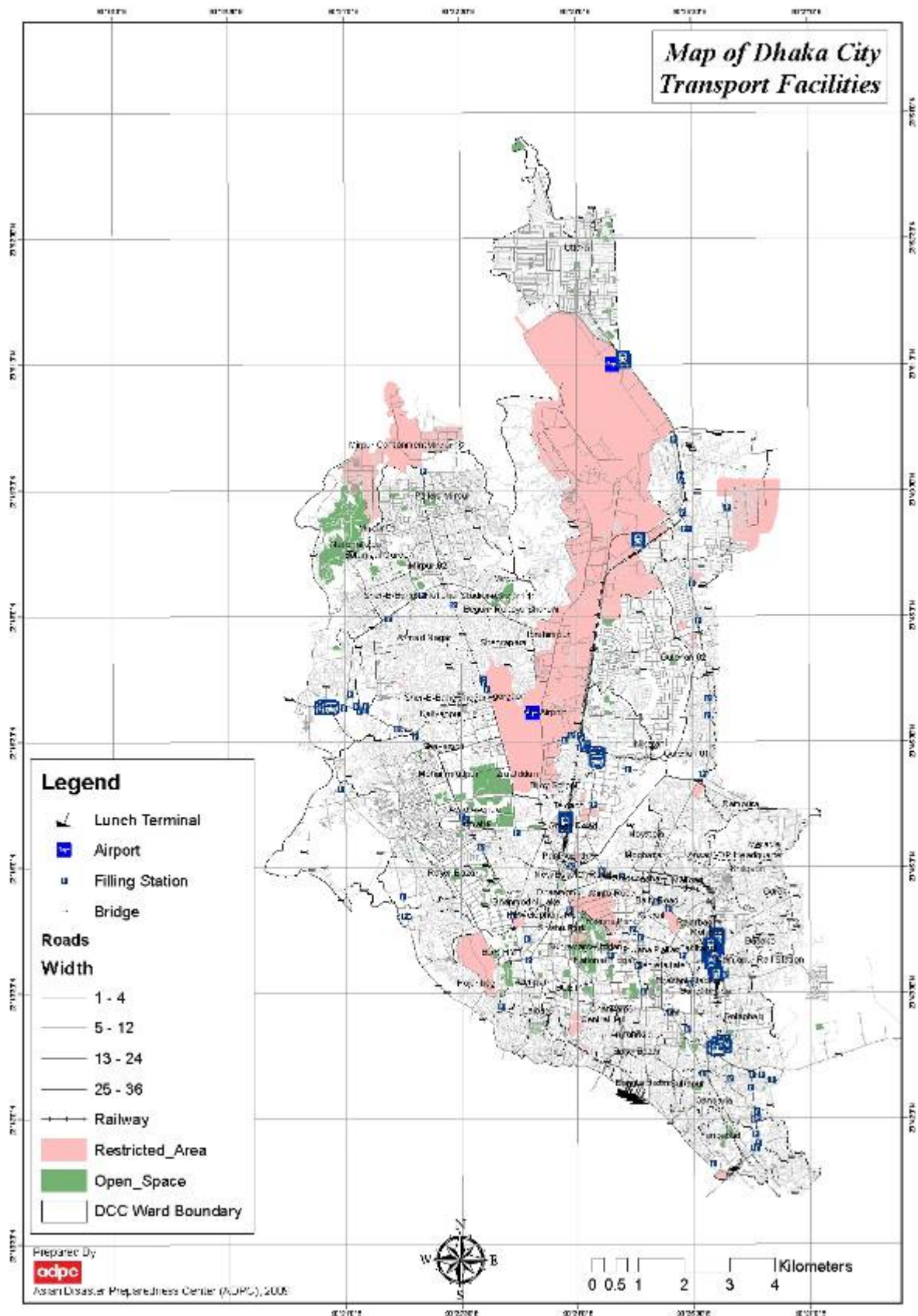
### 3.2.9 Transport

#### *Spatial Information*

Identified Features	Reason	Remarks
Roads	To make plan for evacuation route	Roads have been classified based on the width and capacity
Railways	To make plan for evacuation route	

#### *Analysis*

Identified Features	Issues to be considered	Possible Outcome
Roads	<ul style="list-style-type: none"><li>- Classification of roads</li><li>- Landuse and surrounding settings.</li></ul>	Main evacuation route would be indentified
Railways	<ul style="list-style-type: none"><li>- Railway and stations</li></ul>	Would determine the % of station buildings collapsed or damaged



### **3.3 Revised Recommended Contingency Plan Templates**

Scope of incorporating detail spatial analyses, in other words, detail physical planning in National level plans is extremely limited. However, physical planning or spatial planning issues could be effectively introduced in preparing earthquake contingency plans at city level. Agency level plan templates can also be enriched by incorporating some form of spatial analysis. At city level, cluster based spatial information of facilities and utility network should be included in a new Chapter (Chapter 5) entitled 'Spatial Distribution and Catchment Areas of Different Facilities and Utility Network Within The City Under Different Cluster' In this chapter spatial distribution of facilities and utility network under different functional group/clusters should be appended for both normal time situation and under different emergency scenario. In agency level template different spatial information can be included in Chapter 6 entitled 'Readiness Check List and Reporting Format of Readiness'. Proposed Templates are appended in Annex 2. Activities are underway to develop a web based digital contingency plan template using Map server and ARCGIS. Skeleton of this template has been appended in the Annex 5. As this activity is not included in ADPC's scope of work of the present project a separate concept note has been appended in the Annex 4.

## Section Four

### 4. Conclusion

The current capacities of disaster management in Bangladesh are largely centered on emergency response and post-disaster recovery, but the appropriate spatial planning (based on the hazard and vulnerability mapping) has not been introduced in disaster preparedness in the decision making process. In this report rationale, objectives incorporating spatial planning issues in contingency planning process have been identified. Besides, details on the activities that have been undertaken and methodologies that have been followed for updating contingency plan templates based on spatial planning under activity 2 of SoW for RFP I: Contingency planning with regard to earthquake hazard project have also been discussed. Kind of spatial analysis that would be included in the final contingency plans at different levels has also been identified in the report. Maps and tables appended in this report would give a preliminary understanding about the spatial planning issues which will be included in the final contingency plans in future. Spatial planning requirements of different agencies have been identified through literature review, agency level consultative meetings and most importantly from the capacity building and simulation exercises that were conducted under this project. Comments and suggestions made in different TAG meetings and meetings with GIS experts and professionals have been taken into consideration while updating the templates with the introduction of spatial planning considerations. A cluster based approach by clustering all activities under 9 different clusters has been adopted to identify the spatial planning requirements in each cluster. However, it is understood that for detailed incorporation of spatial analysis in Contingency Plan templates would require Seismic Hazard and Vulnerability Maps, which would be developed by “Seismic Hazard and Vulnerability mapping” Project team. Once such maps are available the plan templates will be modified further. Such modifications will be made to take spatial variations of intensity of the hazard, vulnerability and Potential Risk within a city into account and should differentiate the city into different zones. For each zone, the spatial planning for search and rescue operations and evacuation, mass casualty management, identification of vacant areas for evacuation camps, identification of locations for pre-positioning of emergency response facilities etc. will be done under this plan. The spatial plan will show the route for rescue operations and evacuation areas of the different parts of the city. The open spaces of the city will be determined to evacuate the people there and providing them with first aids. The assessment of needs for tents, foods and supporting materials in different zonal office for disaster management of the cities should be conducted under this plan.

**Annexure**  
■ ■ ■ ■ ■



## INSTITUTIONAL ANALYSIS FOR NATIONAL EARTHQUAKE CONTINGENCY PLANNING

### FACT SHEET FOR OPERATION PLANNING AND MANAGEMENT

#### Disclaimer:

This questionnaire is for general inventory of capacities and other key information of different organizations which may be involved in responding to disaster situations. This questionnaire is primarily meant for assisting in earthquake Contingency Planning. It has been developed as part of the Contingency Planning Component of Tsunami and Earthquake Preparedness Program of Disaster Management program (CDMP) of the Government of Bangladesh which is being implemented by Asian Disaster Preparedness Centre (ADPC), Bangkok Together with National Society for Earthquake Technology –Nepal (NSET). It is to be filled by relevant ADPC Staff taking information from respective agency/office during/after consultation meeting with the organization. Please affix any relevant information, data sheet, publication, dissemination material etc. with this questionnaire, if available

#### A: General Information

1.1	Agency name	
1.2	Year of establishment	
1.3	Agency Types	
1.4	Working Area	<input type="checkbox"/> <i>Ntional Level</i> <input type="checkbox"/> <i>City / Local Level</i>
1.5	Legal mandate under which the agency operate	

1.6 Organogram (*attached in a separate sheet*)

1.7 Specific responsibilities of Chairman and Other professionals

Sl. No.	Designation	Responsibilities

1.8 Do you think present organizational structure is effective for fulfilling its mandate? ☐ Yes ☐ No

1.9 If **No**, How could it be improved?

1.10 Do you think existing number of staffs is fine for fulfilling its mandate? ☐ Yes ☐ No

1.11 If **No**, in which departments do you think increase/decrease is necessary?

#### B. Disaster Related Materials and Provisions

2.1 Mandated DM related activities

Major activities
<i>a.</i> <i>b.</i> <i>c.</i> <i>d.</i>

3.3 Does the agency possess any emergency response plan/ contingency plan? ☐ Yes ☐ No

3.4 Plan preparation

Sl. No	levels	Name of the office	Designation of the officer responsible
<i>Normal activity Plan</i>			
1	National		



2	Local/City		
<i>Emergency response/ Contingency Plan</i>			
3	National		
4	Local/City		

3.5 How plans are prepared? ☐ Through consultation with professional within organization ☐ Through hiring external consultants

3.6 At which administrative level operational decisions are made?

Situation	Designation of the key persons making decisions	
	National	Local
During normal time		
During emergency		

3.7 How operational decisions are executed in the field level?

Situation	Execution Process	Designated persons
During emergency		

3.8 How accomplished tasks are reported back to the top management?

Situation	Process
During emergency	

3.9 Major problems being faced by the organization?

Situation	Type of problem(S)
During normal time	
During emergency	

3.10 What are the major opportunities that the organization could offer?

Situation	Type of opportunity
During normal time	
During emergency	

3.11 What kind of functional relationship does the organization need with other organizations to address Disaster Management?

Situation	Type of relationship
During normal time	
During emergency	

### C. Existing Capacities for Disaster Management

4. Offices responsible for conducting emergency operation (if any):

Sl. No.	Name of the office(S)	Address	Level*
01			
02			

\* use National, Local / City level in the last column

## 5. Human Resource:

### 5.1 Staffing Pattern:

Staff in Number							
Level	For everyday operation				Emergency Response		
	Managerial	Technical		Volunteer	Managerial	Technical	
		Full time	Part time			Full time	Part time
National							
Regional							
City							

### 5.2 Person(S) in charge for emergency operations

Sl. No	Level	Designation	Working division	Work place
1	National			
3	City			

## 6. Disaster Management Inventories for Emergencies:

List are attached in separate sheet.

### 7. Please list the 3 most relevant publications (e.g., annual report) of your agency

[Please provide these publications if possible]

I.

II.

### E. Contact Detail:

#### 8. Contact Detail:

8.1 Mailing Address of Agency:

8.2 Focal Point/ Contact Person:

Management:	Name: Designation: Tel.: Mob: Fax: Email:
Operational:	Name: Designation: Tel.: Mob: Fax: Email:

Information Collector	Supervisor
Name:	Name:
Signature: .....	Signature: .....

Date				
				2008



## Inventory Data Collection Form for Medical Services

Date:.....

A. Name of the Hospital/Clinic: .....

B. Address:..... Ward No:..... City:.....

C. Year of Establishment:.....

D. Type of facility:.....

E. Ownership Type: ☐ Public ☐ Private ☐ Other ☐

(Please use √ Tic Marks)

**Codes:**

**City:**

1 = Dhaka

2 = Chittagong

3 = Sylhet

**Types of facility:**

1 = Clinic

2 = Dispensary

3 = OPD

4 = Normal Bedded Hospital

5 = Specialized Hospital

6 = Referral Hospital

### 1. Human Resources

A. Doctors (Please use separate sheet if needed)

Sl. No.	Specialization	Regular*					Consultant	Others	Total
		Professor	Associate. Professor	Assistant Professor	Registrar	C/A			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

NB. \*Incase of hospitals other than medical college/universities please use any column to indicate number of regular doctors available

B. Other Medical staffs

Type	Regular	Part time	Total
Nurses			
Paramedics			

### 2. Facility (Medical)

Types	Beds		Operation Theater(OT)		ICU/CCU Beds	Ambulance	Pathological Lab	Blood Bank	Blood transfusion facility	X Ray	CT scan/MRI
	Regular	Emergency	Regular	Emergency/casualty							
Number							Y	Y	Y	Y	Y
							N	N	N	N	N

NB: Put √ mark on 'Y' if the facility is available and on 'N' if it is not available

Note: Any Documents about manpower and inventory (if available) about medical services please attached with this form.

### 3. Support facilities

Types	First Aid and primary Trauma care facility	Dispensary	Social welfare Services	Dietary and nutrition services	Linen services	Transport services to medical personnel	Emergency Communication	Emergency Power Supply	Emergency Water Supply
Y= Available	Y	Y	Y	Y	Y	Y	Y	Y	Y
N= Not available	N	N	N	N	N	N	N	N	N

### 4. Utility Services

Utility Services (Please put / Tic Marks if the services are available)

**Water**      ☐ *Underground Reserve Tank,*      ☐ *Pipe Network*      ☐ *Deep tube well*  
**Gas**      ☐ *Pipe Network*      ☐ *LPG Cylinder*  
**Electricity**      ☐ *National Grid*      ☐ *Generator*      ☐ *IPS*

### 5. Do the medical service/ hospital possesses material and equipment for treatment of following medical conditions?

☐ *Circulation maintenance*      ☐ *Orthopedic*  
☐ *Airways management*      ☐ *Miscellaneous*

### 6. Emergency Management System

Trained in Emergency Management System				
Doctors				
Nurse				
Paramedics				
Other Staffs				

### 7. Is there any written /documented emergency preparedness/management plan for the hospital?

☐ Yes      ☐ No

If yes, please attach it with this questionnaire

### 8. Is there any specific financial allocation for emergency causality management in this hospital?

Yes ☐      No ☐

If yes, what is the yearly allocation in BDT?

BDT

### 9. Emergency Contact Person:

Name:

Designation:

Mobile:

Telephone:

Signature, Surveyor

Signature, Supervisor

.....

.....

Seal of the  
Hospital

Note: Any Documents about manpower and inventory (if available) about medical services please attached with this form.

**Template  
for  
National Earthquake  
Contingency Plan**

**Bangladesh**

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**Chapter 6      CAPACITY BUILDING, AWARENESS CREATION & ADVOCACY TO  
SUPPORT PLAN IMPLEMENTATION**

- 5.3 Emergency Response Tasks as per Functional Groups Recovery phase (activities following a disaster event)

**Chapter 7      ACTIONS TO SUPPORT IMPLEMENTATION OF THE CONTINGENCY  
PLAN**

- 7.1 Establishment of EOC at the city
- 7.2 Training & capacity building,
- 7.3 Awareness creation,
- 7.4 Establishment of reporting system for reporting the      Readiness of Institutions
- 7.5 Pre-Positioning of Emergency Facilities at important urban centers and critical locations,
- 7.6 Resource mobilization for addressing the gaps      (purchase of equipments, training & capacity building, awareness creation, pre-positioning of emergency facilities Etc)



**Template  
for  
City level Earthquake  
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  - 8.3 Awareness creation,
  - 8.4 Establishment of reporting system for reporting the  
readiness of Institutions
  - 8.5 Pre-Positioning of Emergency Facilities
  - 8.6 Resource mobilization for addressing the gaps (purchase  
of equipments, training & capacity building, awareness  
creation, pre-positioning of emergency facilities Etc)
- 
-

**Template  
for  
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AWARENESS CREATION, REPORTING, PRE-POSITIONING OF EMERGENCY  
FACILITIES, RESOUC E MOBILIZATION FOR PURCHASE OF EQUIPMENTS**

- 7.1      Assessment of Existing Capacity (Man power, equipment and material)
- 7.2      Gap Analysis (Man power, equipment and material)
- 7.3      Process for addressing the gaps
- 7.4      Action Plan for Enhancement of Capacity

	SI_N	Name	Inventory_Type	Owner	Number	Location	Route_Id
1	1	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
2	2	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
3	3	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
4	4	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
5	5	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
6	6	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
7	7	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
8	8	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
9	9	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
10	10	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
11	11	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
12	12	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
13	13	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
14	14	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
15	15	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
16	16	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
17	17	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
18	18	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
19	19	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
20	20	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
21	21	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
22	22	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
23	23	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
24	24	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
25	25	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
26	26	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
27	27	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
28	28	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
29	29	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
30	30	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.



	SI N	Name	Inventory Type	Owner	Number	Location	Route Id
31	31	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
32	32	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
33	33	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
34	34	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
35	35	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
36	36	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
37	37	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
38	38	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
39	39	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
40	40	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
41	41	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
42	42	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
43	43	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
44	44	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
45	45	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
46	46	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
47	47	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
48	48	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
49	49	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
50	50	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
51	51	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
52	52	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
53	53	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
54	54	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
55	55	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
56	56	Car/Jeep	Transport Vehicle	Care, Dhaka Office	1	Dhaka	.
57	57	Road Roller(8-10	Road Construction	RAJUK	7	Rajuk, Dhaka	.
58	58	Road Roller(4-6	Road Construction	RAJUK	1	Rajuk, Dhaka	.
59	59	Tare Roller	Road Construction	RAJUK	2	Rajuk, Dhaka	.
60	60	Chain Dozer	Road Construction	RAJUK	3	Rajuk, Dhaka	.

	SI N	Name	Inventory_Type	Owner	Number	Location	Route_Id
61	61	Tyre Dozer	Road Construction	RAJUK	3	Rajuk, Dhaka	.
62	62	Pay-Loader	Road Construction	RAJUK	2	Rajuk, Dhaka	.
63	63	Track	Transport	RAJUK	1	Rajuk, Dhaka	.
64	64	Dump Trac	Waste Management	RAJUK	1	Rajuk, Dhaka	.
65	65	Scraper	Road Construction	RAJUK	1	Rajuk, Dhaka	.
66	66	Trailer	Waste Management	RAJUK	1	Rajuk, Dhaka	.
67	67	Water Car	Water Supply	RAJUK	1	Rajuk, Dhaka	.
68	68	Mobile Workshop		RAJUK	1	Rajuk, Dhaka	.
69	69	Break Down(Minic		RAJUK	1	Rajuk, Dhaka	.
70	70	Generator (20KV)	Electricity	RAJUK	2	Rajuk, Dhaka	.
71	71	Power Hamer	Electricity	RAJUK	6	Rajuk, Dhaka	.
72	72	Exvator		RAJUK	1	Rajuk, Dhaka	.
73	73	Bum Trac	Transport Vehicle	DESA	4		.
74	74	Jeep	Transport Vehicle	DESA	4		.
75	75	Tractor	Transport Vehicle	DESA	4		.
76	76	Pick-Up	Transport Vehicle	DESA	8		.
77	77	Doctor	Skilled Manpower	Army	.		.
78	78	Female Doctor	Skilled Manpower	Army	.		.
79	79	Medical Assistan	Skilled Manpower	Army	.		.
80	80	Ambulance	Transport	Army	.		.
81	81	Mobile Hospital		Army	3		.
82	82	Airplane	Transport	Army	6		.
83	83	Bull Dozer/Wheel	Transport	Army	2		.
84	84	Dumper	Transport	Army	.		.
85	85	Crane	Transport	Army	.		.
86	86	Water Purificati	Water Supply	Army	1		.
87	87	Grader		Army	.		.
88	88	Trac 3 ton	Transport	Army	4		.
89	89	Mobile Gas/Elect	Electricity	Army	.		.
90	90	Water Pump(Mobil	Water Supply	Army	.		.

	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
91	91		Racker Trac	Transport	Army	2		.
92	92		Doctor	Skilled Manpower	Navy	6		.
93	93		Female Doctor	Skilled Manpower	Navy	1		.
94	94		Medical Assistan	Skilled Manpower	Navy	15		.
95	95		Ambulance	Transport	Navy	4		.
96	96		Mobile Hospital		Navy	1		.
97	97		Airplane	Transport	Navy	6		.
98	98		Bull Dozer/Wheel	Transport	Navy	2		.
99	99		Dumper	Transport	Navy	2		.
100	100		Crane	Transport	Navy	1		.
101	101		Water Purificati	Water Supply	Navy	1		.
102	102		Grader		Navy	2		.
103	103		Trac 3 ton	Transport	Navy	10		.
104	104		Mobile Gas/Elect	Electricity	Navy	6		.
105	105		Water Pump(Mobil	Water Supply	Navy	2		.
106	106		Racker Trac	Transport	Navy	2		.
107	107		Doctor	Skilled Manpower	Air force	.		.
108	108		Female Doctor	Skilled Manpower	Air force	.		.
109	109		Medical Assistan	Skilled Manpower	Air force	.		.
110	110		Ambulance	Transport	Air force	.		.
111	111		Mobile Hospital		Air force	1		.
112	112		Airplane	Transport	Air force	6		.
113	113		Bull Dozer/Wheel	Transport	Air force	2		.
114	114		Dumper	Transport	Air force	.		.
115	115		Crane	Transport	Air force	.		.
116	116		Water Purificati	Water Supply	Air force	1		.
117	117		Grader		Air force	.		.
118	118		Trac 3 ton	Transport	Air force	.		.
119	119		Mobile Gas/Elect	Electricity	Air force	.		.
120	120		Water Pump(Mobil	Water Supply	Air force	.		.

	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
121	121		Racker Trac	Transport	Air force	.		.
122	122		Doctor	Skilled Manpower	BDR	.		.
123	123		Female Doctor	Skilled Manpower	BDR	.		.
124	124		Medical Assistan	Skilled Manpower	BDR	.		.
125	125		Ambulance	Transport	BDR	5		.
126	126		Mobile Hospital	Medical	BDR	.		.
127	127		Airplane	Transport	BDR	6		.
128	128		Bull Dozer/Wheel	Transport	BDR	6		.
129	129		Dumper	Transport	BDR	2		.
130	130		Crane	Transport	BDR	1		.
131	131		Water Purificati	Water Supply	BDR	3		.
132	132		Grader		BDR	2		.
133	133		Trac 3 ton	Transport	BDR	14		.
134	134		Mobile Gas/Elect	Electricity	BDR	6		.
135	135		Water Pump(Mobil	Water Supply	BDR	2		.
136	136		Racker Trac	Transport	BDR	4		.
137	137		Roller - Steel D	Road Construction	RHD	627		.
138	138		Roller - Tyre	Road Construction	RHD	32		.
139	139		Roller - Baby	Road Construction	RHD	62		.
140	140		Roller - Shipfoo	Road Construction	RHD	0		.
141	141		Soil Compactor -		RHD	15		.
142	142		Soil Compactor -		RHD	93		.
143	143		Dozer - Chain	Road Construction	RHD	26		.
144	144		Dozer - Tyre	Road Construction	RHD	1		.
145	145		Motor Grader	Road Construction	RHD	34		.
146	146		Pay Loader	Road Construction	RHD	22		.
147	147		Water Tank	Water Supply	RHD	58		.
148	148		Trailer		RHD	10		.
149	149		Crane - Tyre		RHD	7		.
150	150		Crane - Chain		RHD	12		.

	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
151	151		Fork Lifter		RHD	3		.
152	152		Truck - Flat Bed	Transport	RHD	281		.
153	153		Truck - Dump		RHD	50		.
154	154		Excaator		RHD	8		.
155	155		Others	Others	RHD	94		.
156	156		Wheel Dozer	Road Construction	CDA	1		.
157	157		Pay Loader	Road Construction	CDA	1		.
158	158		Road Roller	Road Construction	CDA	2		.
159	159		Tyre Roller	Road Construction	CDA	1		.
160	160		Trac	Transport	CDA	1		.
161	161		Jeep	Transport	SCC	1		.
162	162		Jeep	Transport	SCC	1		.
163	163		Jeep	Transport	SCC	1		.
164	164		Jeep	Transport	SCC	1		.
165	165		Jeep	Transport	SCC	1		.
166	166		Pick-Up	Transport	SCC	1		.
167	167		Pick-Up	Transport	SCC	1		.
168	168		Ambulance	Transport	SCC	1		.
169	169		Ambulance	Transport	SCC	1		.
170	170		Trac	Transport	SCC	1		.
171	171		Trac	Transport	SCC	1		.
172	172		Trac	Transport	SCC	1		.
173	173		Trac	Transport	SCC	1		.
174	174		Trac	Transport	SCC	1		.
175	175		Trac	Transport	SCC	1		.
176	176		Trac	Transport	SCC	1		.
177	177		Trac	Transport	SCC	1		.
178	178		Trac	Transport	SCC	1		.
179	179		Trac	Transport	SCC	1		.
180	180		Trac	Transport	SCC	1		.

	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
181	181		Trac	Transport	SCC	1		.
182	182		Trac	Transport	SCC	1		.
183	183		Tractor	Transport	SCC	1		.
184	184		Tractor	Transport	SCC	1		.
185	185		Tractor	Transport	SCC	1		.
186	186		G M Road Roller	Road Construction	SCC	1		.
187	187		Joseph Road Roll	Road Construction	SCC	1		.
188	188		Vibratory Road R	Road Construction	SCC	1		.
189	189		Soil Compactor	Construction	SCC	1		.
190	190		Hydraulic Beam L	Construction	SCC	1		.
191	191		Trac	Transport	SCC	1		.
192	192		Water Tank	Water Supply	SCC	5		.
193	193		Tractor Trolley	Transport	SCC	3		.
194	194		Water Boucher(20	Water Supply	WASA	4	Whole Dhaka	.
195	195		Deep Tube well	Water Supply	WASA	500	Whole Dhaka	.
196	196		Fixed Generator	Electricity	WASA	300	Whole Dhaka	.
197	197		Mobile Generator	Electricity	WASA	10	Wasa, Kawran Ba	.
198	198		Central System O		WASA	1	Wasa, Kawran Ba	.
199	199		Emergency Cell a	Electricity	WASA	1	Wasa, Kawran Ba	.
200	200		Wireless Set	Communication	WASA	25	Whole Dhaka	.
201	201		Motor Car	Transport	WASA	38	Wasa, Kawran Ba	.
202	202		Pick-Up	Transport	WASA	45	Wasa, Kawran Ba	.
203	203		Zip	Transport	WASA	16	Wasa, Kawran Ba	.
204	204		Microbus	Transport	WASA	11	Wasa, Kawran Ba	.
205	205		Trac	Transport	WASA	4	Wasa, Kawran Ba	.
206	206		Sewer Clining Tr	Transport	WASA	8	Wasa, Kawran Ba	.
207	207		Others Vehicle	Transport	WASA	41	Wasa, Kawran Ba	.
208	208		Water Vehicle	Water Supply	FSCD	58		.
209	209		Toying Vehicle	Transport	FSCD	66		.
210	210		Pump	Water Supply	FSCD	133		.

	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
211	211		Generator	Electricity	FSCD	22		.
212	212		Battery Charger	Electricity	FSCD	48		.
213	213		Foam Trolley		FSCD	8		.
214	214		Smog Ejector		FSCD	33		.
215	215		Breathing Appara		FSCD	92		.
216	216		Driving Apparatu		FSCD	14		.
217	217		Compressor Machi		FSCD	13		.
218	218		Lock Cutter(Sma	Rescue Equipment	FSCD	70		.
219	219		Hodge Clamp	Rescue Equipment	FSCD	4		.
220	220		Suction Hodge	Rescue Equipment	FSCD	470		.
221	221		Delivery Hodge	Rescue Equipment	FSCD	2024		.
222	222		Ordinary Nagel	Rescue Equipment	FSCD	232		.
223	223		Fog Nagel	Rescue Equipment	FSCD	15		.
224	224		Revolving Nagel	Rescue Equipment	FSCD	11		.
225	225		Fire Break Nagel	Rescue Equipment	FSCD	10		.
226	226		Debugger Nagel	Rescue Equipment	FSCD	15		.
227	227		Hand Control Bra	Rescue Equipment	FSCD	109		.
228	228		Foam Making Bran	Rescue Equipment	FSCD	93		.
229	229		Ground Monitor	Rescue Equipment	FSCD	17		.
230	230		Gus neck	Rescue Equipment	FSCD	5		.
231	231		Julius Pike	Rescue Equipment	FSCD	8		.
232	232		Twin-One Branch	Rescue Equipment	FSCD	13		.
233	233		Dividing Breechi	Rescue Equipment	FSCD	81		.
234	234		Collecting Breec	Rescue Equipment	FSCD	19		.
235	235		Connecting Box	Rescue Equipment	FSCD	20		.
236	236		Inline Injector	Rescue Equipment	FSCD	49		.
237	237		Extension ladder	Rescue Equipment	FSCD	48		.
238	238		Huck Ladder	Rescue Equipment	FSCD	10		.
239	239		Autos cape	Rescue Equipment	FSCD	8		.
240	240		Chain Pole	Rescue Equipment	FSCD	4		.



	SI	N	Name	Inventory_Type	Owner	Number	Location	Route_Id
241	241		Snag Cutter	Rescue Equipment	FSCD	9		.
242	242		Multi Purpose Sa	Rescue Equipment	FSCD	2		.
243	243		Power Chain Saw	Electricity	FSCD	2		.
244	244		Ele Chain Saw		FSCD	1		.
245	245		Power Round Saw		FSCD	1		.
246	246		Power Curter	Electricity	FSCD	2		.
247	247		Huts Ja		FSCD	.		.
248	248		Huts Hydraulic C		FSCD	1		.
249	249					.		.
250	250					.		.
251	251					.		.
252	252					.		.
253	253					.		.
254	254					.		.
255	255					.		.
256	256					.		.
257	257					.		.
258	258					.		.
259	259					.		.
260	260					.		.
261	261					.		.
262	262					.		.
263	263					.		.
264	264					.		.
265	265					.		.
266	266					.		.
267	267					.		.
268	268					.		.
269	269					.		.
270	270					.		.

## Brief Project Concept

**A. Project Name:** A Web-based Digital Contingency Plan for Effective Decision-Making in Emergency Period

### Project Concept

- 1. Design of supporting data model** - Design of a data model that integrates web based GIS with multiuser data management system, standard format databases into a suitable and efficient framework for internet-based GIS analysis and reporting. The data model will identify how key indicators are combined and produce the desired output products and reports. GIS methods that will be used in the tool will drive the design of the data model.
- 2. Implementation and testing of data model** – Ensure that the adopted data model is compatible with proposed GIS methods and produces desired output based on the new integrated agency and cluster wise database.
- 3. Hardware setup and loading of supporting database** - Consolidation of database onto a robust server with high-speed internet connection with access to DMB's existing DMIC databases system. The database loading and test site will be at ADPC's office.
- 4. Design of model tool and output products** - Design of an ArcGIS Server-based tool (Map Server) and method for creating output products that is compatible with approved data model. The tool will be designed primarily for use by non-GIS people who will have little to no GIS technology training and will allow users to build complex spatial queries based on the data model. Execution of the geoprocessing services will occur on the remote server, where the data is located. An email will notify the user once geoprocessing is complete and model output and reports are ready for download. Users will have the option of visualizing model results using an Internet browser, Google Earth, or ArcGIS Explorer, a free viewer which offers direct connection to geodatabases, to open source Web Map Services (WMS).
- 5. Implementation and testing of tool** - Implementation and testing of the tool will be conducted using centralized and distributed databases within a variety of clients (e.g. Internet browser, Google Earth, ArcGIS Explorer).



# National Earthquake Contingency Plan

According to the Standing Orders on Disaster (SOD), of the Disaster Management Bureau under Ministry of Food and Disaster Management (MoFDM) is responsible for:

Advising the government on all matters relating to disaster management;

Maintaining liaison with different government agencies, aid-giving agencies, NGOs and Voluntary Organizations and ensure their maximum cooperation and coordination in all matters of disaster management;

## Contingency Planning Tasks

Task I: Determine status of contingency planning and design of interim contingency plan

Task II: Turn interim contingency plans into final versions (using geo-hazard vulnerability

[National Contingency Plan](#)

[National Inventory Database](#)

[Agency Level Contingency Plan](#)

[City Level Contingency Plan](#)

Exit



## Dhaka City Level Inventory Database

[Transportation](#)

Water Supply

Medical Services

Water Supply



Evacuation Route

Gas Services

Water Supply

Water Supply

Exit

## Transport Sector Inventory in Dhaka City

[Edit Database](#)

[Preview Report](#)



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