

## Institutional Analysis for Wastewater Agriculture and Sanitation in Rajshahi, Bangladesh



Sharfun Ara, Nubia Sandoval, Md. Maksudul Amin  
and Alexandra Clemett

2007



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June 2007

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Alexandra Clemett

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This report is one in a series of project reports written by the Wastewater Agriculture and Sanitation for Poverty Alleviation in Asia (WASPA Asia) project. The WASPA Asia project aims to develop and test solutions for sanitation and wastewater management, to reduce the risks from wastewater use in agriculture. The approach involves the development of stakeholder coalitions at town and national level, called Learning Alliances, which will bring together the main stakeholders into a participatory process through which actions will be planned and implemented in a sustainable manner.

These project reports are essentially internal documents intended to inform the future activities of the project, particularly in relation to the development of Learning Alliances and participatory action plans. The reports have been made publicly available as some of the information and findings presented in them may be of use to other researchers, practitioners or government officials.

The WASPA Asia project is funded primarily under the EU Asia Pro Eco II Programme of the European Commission. It is being undertaken by the International Water Management Institute (IWMI), Sri Lanka; COSI, Sri Lanka; the International Water and Sanitation Centre (IRC), the Netherlands; NGO Forum for Drinking Water Supply and Sanitation, Bangladesh; and the Stockholm Environment Institute (SEI), Sweden. The project pilot cities are Rajshahi City in Bangladesh and Kurunegala City in Sri Lanka.

*The WASPA Asia Project is funded under the EU Asia Pro-Eco Programme.*

*The content of this publication is the sole responsibility of the WASPA Asia Project team and can in no way be taken to reflect the views of the European Union.*

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## Acronyms and Abbreviations

BELA	Bangladesh Environmental Lawyers Association
BSCIC	Bangladesh Small and Cottage Industries Corporation
BWDB	Bangladesh Water Development Board
DPHE	Department of Public Health Engineering
DAE	Department of Agriculture Extension
DoE	Department of Environment
GO	Government Organization
GoB	Government of Bangladesh
LA	Learning Alliance
LGED	Local Government Engineering Department
MoFE	Ministry of Forest and Environment
MoLGRD&C	Ministry of Local Government and Rural Development & Co-operatives
NASIB	National Association of Small Industry, Bangladesh
NGO	Non-Government Organisation
NWP	National Water Policy
PAP	Participatory Action Plan
RCC	Rajshahi City Corporation
RDA	Rajshahi Development Authority
RMCH	Rajshahi Medical College Hospital
RMDP	Rajshahi Metropolitan Development Plan
UNO	Upazila Nirbahi Officer
WASPA	Wastewater Agriculture and Sanitation for Poverty Alleviation

## 1 Introduction

This report has been produced as part of the Wastewater Agriculture and Sanitation for Poverty Alleviation in Asia (WASPA Asia) Project, funded by the European Commission under its Asia Pro Eco II Program. The objective of the project is to improve the livelihoods of urban and peri-urban farmers who are using wastewater in agriculture; and the communities who are responsible for producing the wastewater or consuming the agricultural produce. To do this a holistic approach and sustainable solutions are required along the whole chain of wastewater production and use; from improved sanitation to contaminant reduction, waste treatment, disposal, safe use in agriculture and promotion of hygiene behavior. At the same time a change of practice is required to integrate wastewater planning into urban water resource management, simultaneously applying technical solutions for wastewater treatment and disposal, and a range of preventive measures to mitigate health risks in the short term.

Before any such changes can be proposed or implemented it is necessary to have an understanding of the current conditions prevailing in the urban and peri-urban area of the two project research cities, Rajshahi in Bangladesh and Kurunegala in Sri Lanka. These include: analyzing who is involved in wastewater production and use; wastewater quantity and source; the quality of wastewater; the impact of its use on agriculture and potential risks to health; and the sanitation conditions. To achieve this, a number of related studies have been undertaken under the WASPA Asia project, the results of which have been presented in a series of reports. This report presents the findings for the institutional assessment conducted in Rajshahi City in 2006 and 2007. The findings of this study will also be combined with the findings of the agriculture, sanitation and pollution reports to produce a more comprehensive report for Rajshahi City.

The main objective of the WASPA Asia project is to work with relevant stakeholders to develop participatory action plans to address issues relating to wastewater agriculture in Rajshahi and Kurunegala, and to learn lessons for other similar cities across Asia. This report identifies the stakeholders and institutions that may have an interest in the WASPA Project and forms the basis for understanding the responsibilities and activities of the relevant institutions in the fields of sanitation, wastewater management, agriculture and environment. This will assist with the understanding of who should be involved in the WASPA Project and how the project team could work with these organisations in an effective manner. It will also help in the development of the Learning Alliance (LA), and the creation and implementation of the Participatory Action Plans (PAPs).

The report includes information about institutions from local government departments, water and waste management departments, agricultural support services, health institutions and industry associations. These include: Rajshahi City Corporation (RCC) which is the key organization in waste management and infrastructure; Rajshahi Development Authority (RDA) which is in charge of designing the drainage plans; industry-focused organizations such as the Bangladesh Small and Cottage Industries Committee (BSCIC), National Association of Small Industries, Bangladesh (NASIB); the Rajshahi Medical College Hospital which discharges wastewaters which may contribute to drainage water pollution and which has a

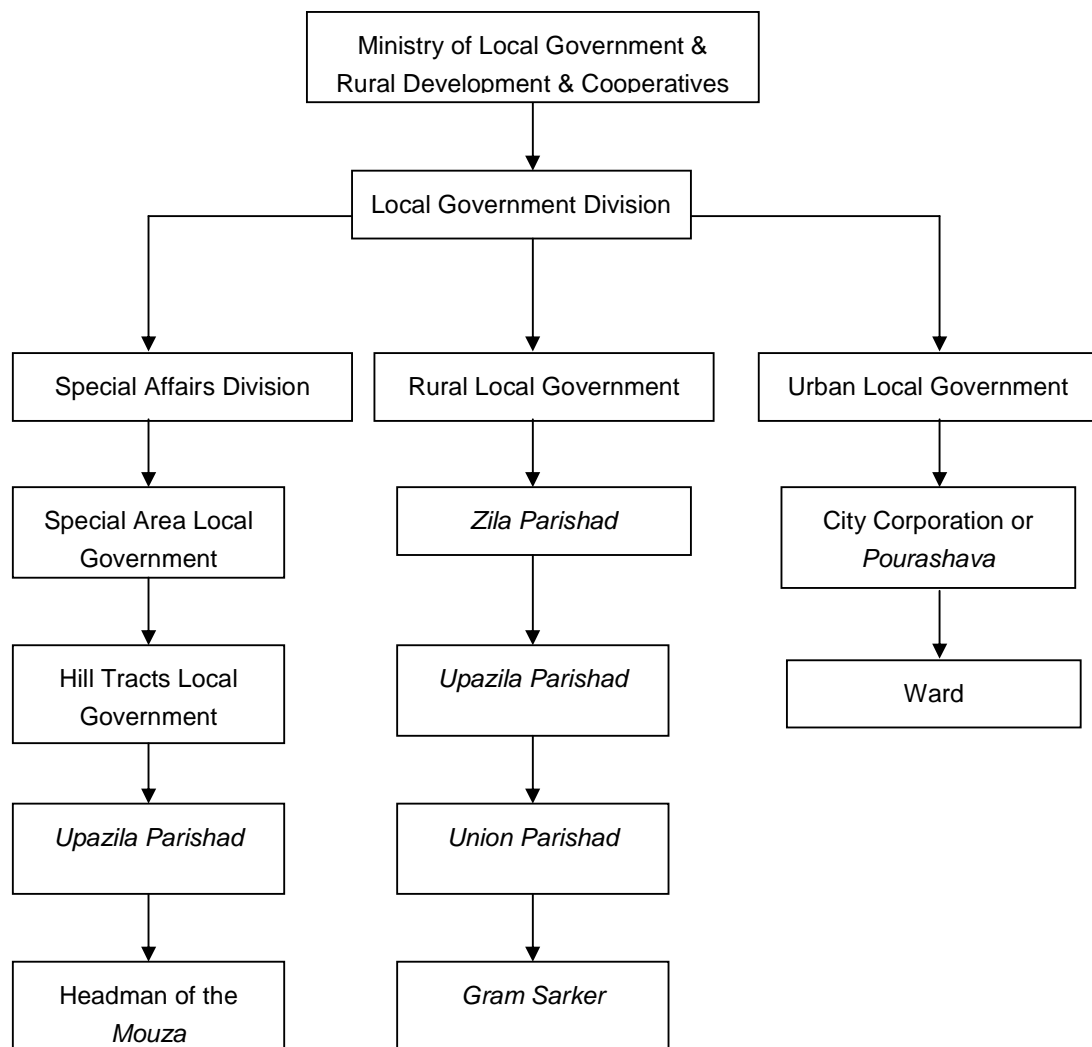
responsibility to support public health initiatives; and the Department of Agriculture Extension (DAE) which works on agriculture research and with farmers. Information on acts and regulations governing these institutions and the inter-relations has also been included, where they exist, in order to better understand the institutions roles and responsibilities. Both the *de facto* and *de jure* functioning of organization and their staff has been considered because they may be very different; however it is naturally more difficult to arrive at a sound understanding of the *de facto* situation (Buechler 2004).

The information presented here has been written using both secondary data gathered from websites, information sheets and annual reports as well as information gathered through meetings with relevant institutional stakeholders.

## 2 Local Government Structure of Bangladesh

The Ministry of Local Government and Rural Development & Co-operatives (MoLGRD&C) is the apex body of the local government structure. It is directly involved with the social, economic and cultural well being of the poor and disadvantaged and is mandated to implement and supervise a range of development activities at the grass root level. The Urban Government (*Pourashavas* and City Corporations) and the Rural Government (*Zilla Parishad*, *Upazila Parishad*, *Union Parishad* and *Gram Sarkar*) are the two types of local government that exist in Bangladesh (Figure 1). The system is slightly different in special designated areas such as the Chittagong Hill Tracts.

**Figure 1: Flowchart Structure of the Bangladesh Local Government**



Source: Mallick 2004

The Local Government Institutional Strengthening Report, (Local Government Commission 1997) described the responsibilities of these various local bodies. Short descriptions of these are given in the following sections, with particular reference made to those activities that may have a bearing on wastewater, agriculture, sanitation and health. The organizational structures at each level are also described.

## 2.1 Urban Local Government

The administration of the People's Republic of Bangladesh is executed through six Divisions: Dhaka, Chittagong, Khulna, Rajshahi, Barisal and Sylhet, which are governed by a Divisional Commissioner. The capital cities of these six Divisions now have the status of City Corporations whilst other municipal areas are termed "Pourashava" of which there were 223 in Bangladesh at the time of the 2001 Census (BBS 2001). An urban area must satisfy the conditions that three quarters of the adult male population in the area are chiefly employed in non-agricultural activities, have a minimum population of 15000 and an average of no fewer than 2000 inhabitants per square mile (Pourashava Ordinance 1977). In major urban areas there are also Wards, which are similar to the Union, being the smallest electoral unit in an urban area. Each Ward has a Ward *Parishad* (Council) (BBS 1993, p. 5).

The *Pourashava Parishad* (council) has a Chairman and a number of Commissioners as fixed by the Government, all of whom are elected by direct election by the adult population (Pourashava Ordinance 1977). The City Corporation *Parishad* are elected directly by the people and since 1994 so too are the Mayors who head the City Corporations. The tenure of an elected urban local government is five years. The last City Corporation elections were held in 2004 (UNESCAP). Each of the six City Corporations and a number of *Pourashavas* have a Chief Executive Officer (CEO) seconded from the central civil service. Under such situations all other officials, whether directly recruited by the *Pourashavas* or City Corporation, or coming on secondment, are directly under the CEO. He assists the Chairman or Mayor in the affairs of the *Pourashava* or Corporation. He is the custodian of all *Pourashava* or Corporation records and may also exercise magisterial powers (UNESCAP accessed 05.02.07).

*Pourashavas* and City Corporations have similar functions but the *Pourashavas* Ordinance passed in 1977 means that some of the functions that are obligatory for City Corporations as are optional for *Pourashavas*. In practice however this distinction is used for both. The mandatory functions are:

- Constructions and maintenance of roads, bridges and culverts;
- Removal, collection and disposal of refuse;
- Maintenance of public streets;
- Provision and regulation of water supply;
- Establishment and maintenance of public markets;
- Plantation and maintenance of trees on road sides;
- Regulation of unsanitary buildings, and prevention of infectious diseases and epidemics;
- Registration of births, deaths and marriages;

- Provision and maintenance of slaughter houses;
- Provision and maintenance of drainage;
- Control over the construction and reconstruction of buildings;
- Provision and maintenance of graveyards and places for cremation; and
- Control over traffic and public vehicles.

Some of the optional functions of relevance to the WASPA project are:

- Checking adulteration of food products;
- Control over private markets;
- Establishment of public dispensaries, provision of public urinals and latrines;
- Establishment of veterinary hospitals, registration of cattle sales and improvement of livestock; and
- Promotion of community development schemes.

In reality many of these functions are not performed adequately or indeed at all, especially the social functions, because they have insufficient funds as a result of poor and irregular collection of taxes and insufficient government grants. Local governments receive between 55% and 75% of their funds from revenue including taxes, rates and fees; the remaining portion is received from national government. As a result of the inadequacy of funds the functions that the urban local governments actually perform, though not always to a satisfactory level, are:

- Construction and maintenance of roads, bridges and culverts;
- Removal, collection and disposal of refuse;
- Provision of water supply;
- Provision and maintenance of street lighting;
- Establishment and maintenance of public markets;
- Provision and maintenance of graveyards and places for cremation;
- Registration of births, deaths and marriages;
- Provision and maintenance of slaughter houses;
- Provision and maintenance of parks and gardens;
- Naming of roads and numbering of houses; and
- Provision of nominal stipends to primary education institutions.

During the past decade, some *Pourashavas* and the City Corporations have also been carrying out an additional function (on a project basis) of slum improvement. The funding for this came from UNICEF. Dhaka City Corporation has even made the slum improvement an integral part of activities with its own funding and tries to rehabilitate slum dwellers and street hawkers (UNESCAP accessed 05.02.07).

## **2.2 Rural Local Government**

### ***Functions of the Zila Parishad***

The six Divisions are subdivided into a total of 64 *Zilas* (Districts), which are governed by a Deputy Commissioner (DC) as the Chief Civil Administrator (UNESCAP accessed 05.02.07).

The DC is the Executive Officer of the *Parishad* while the members, elected through direct votes of the local residents, are available as advisers to the *Parishad*. Non-elected staff in the *Zila Parishad* may be appointed directly or seconded from central government and all major government departments concerned with rural development have district offices with representatives being formally answerable to the DC through various committees, which he chairs, as well as the District Development Committee of which they are all members. In practice however the coordination through these systems is limited and departments maintain considerable autonomy (CARE 2002).

The local government Act 1988 provides for 12 compulsory and 69 optional functions for *Zila Parishads*. The most important functions are planning, promotion and execution of development and welfare programs within the district. The optional functions of the *Zila Parishads* relate to promotion of education, culture, social development, local economy, public health, public works, and religious institutions within the Districts.

### ***Functions of the Thana or Upazila Parishad***

The Districts are further subdivided into *Thanas* but some of these were upgraded between 1982 and 1990 to *Upazilas* (Sub-districts) and re-converted to *Thanas* after a subsequent structural change in 1991. There are currently 460 *Thanas* in Bangladesh, the headquarters of which are usually urban areas. The administrative head of the *Thana* is known as the *Thana Nirbahi Officer* (TNO) or sometimes the *Upazila Nirbahi Officer* (UNO). The continuous changes in the structure of local government, as exemplified in the nine pieces of legislation passed in regard to the local government since independence from Pakistan (Annex I), have no doubt resulted in confusion in the general population and to an extent within the local government itself.

The *Thana* or *Upazilla Parishad* includes officers and employees of all central government administration and development agencies who act as employees of the *Parishad*. In late 1998 the Government passed legislation reintroducing local government at the Upazila level with a directly elected Chairman, as proposed by the Local Government Commission (1997). However, the election has been postponed several times and currently the administration at the *Thana* level continues on the basis of the 1993 Thana Development Coordination Committee (TDCC) system (Westergaard 2000). The TDCC (also known as the UDCC) is comprised of the chairmen of the *Union Parishad* and three female UP members, all with voting rights. Senior officers of the government departments and agencies in the *Thana* are non-voting members of the TDCC. The TNO is the secretary, and Members of Parliament, whose constituencies fall within the *Thana*, act as advisers. The main responsibility of the TDCC is decided on the allocation of the funds for Union and *Thana* Development. The central government allocates the ADP among the *Thanas* on the basis of the following weights: population 40%, land area 30% and degree of backwardness 30%.

Functions of the *Upazila/Thana Parishad* have been divided into two groups: “retained subjects” and “transferred subjects”. Retained subjects of potential relevance to WASPA are: large scale industries; irrigation schemes involving more than one district; modernized district hospitals and hospitals attached to medical colleges; and flood control and development of water resources. Transferred subjects of potential importance for the project are: agriculture,

including extension services, input supply services and irrigation; health, including Upazila Health Complexes; the rural water supply and sanitation program; and fisheries and livestock development (Siddique 1994). In addition, the Union *Parishads* are responsible for adopting and implementation of poverty alleviation programmes directly by themselves and through NGOs and co-operatives. The *Thana/Upazilla Parishads* are also responsible for making integrated 5-year development plans for the *Thana/Upazilla* on the basis of plans submitted by the Union *Parishads*. The activities of the *Thana/Upazilla Parishads* in implementing district level economic, social and cultural development programmes and preparing project proposals for road, bridges and culverts are monitored by the *Zila Parishads* (UNESCAP accessed 05.02.07).

### **Functions of the Union Parishad**

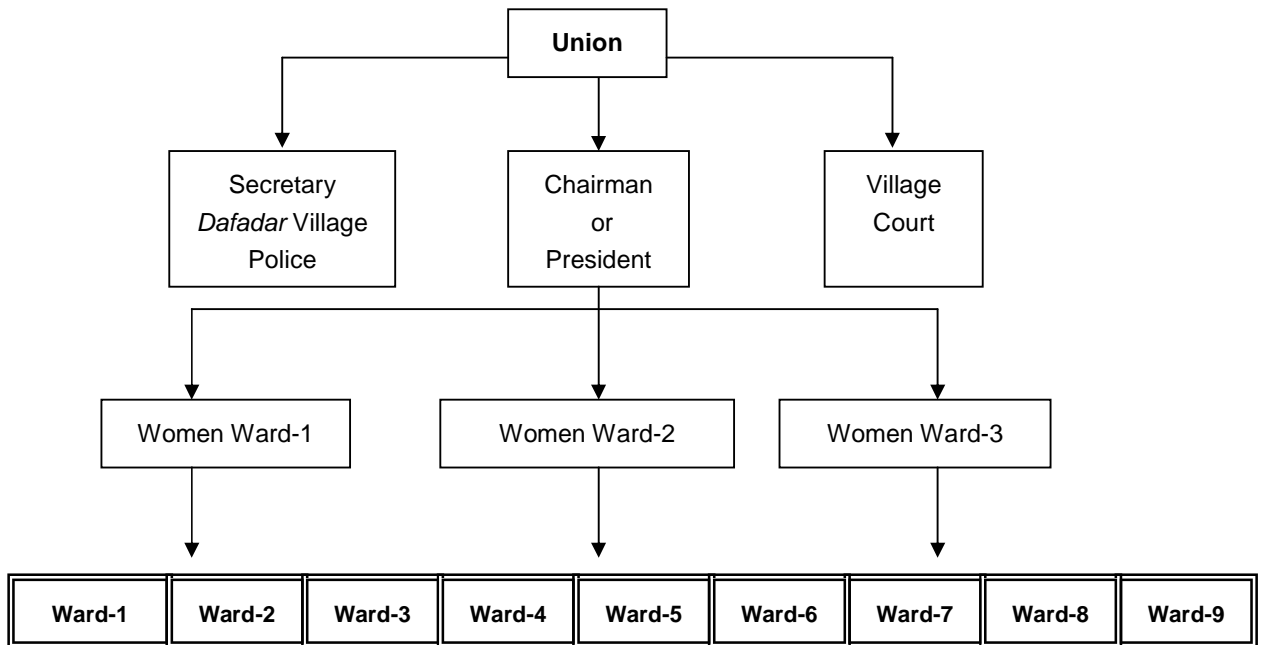
Below the level of *Thana/Upazila*, there are Unions and *Grams* (villages) of which there are approximately 4451 and 80000 respectively (UNESCAP accessed 05.02.07). The *Union* is the smallest electoral unit of a rural area and is comprised of *Mauzas* and villages. A *Mauza* is a revenue village with a jurisdiction list number and defined area; it may or may not be populated. A village is the smallest geographic rural area and may be the same as a *Mauza* or there may be more than one village in a *Mauza*. A village is always populated (BBS 1993, p. 5).

The Union *Parishad* is responsible for 38 functions in the categories of civic function, police and defense, revenue and general administration, development, and any other functions that may be transferred by central Government. The following functions are the most important in relation to the WASPA project: adoption and implementation of development schemes in the fields of agriculture, fisheries, livestock, irrigating and health; development of local resources and their uses; and motivation and persuasion of the people to install sanitary latrines.

Appointments to *Gram* and *Union Parishads* are always of local people and selection is undertaken locally. The Chairman of the *Union Parishad* is the Chief Executive. Each *Union Parishad* has a full time secretary, appointed by the Deputy Commissioner, a *dafadar* (messenger) and *chowkidars* (local policemen) appointed by the TNO (Figure 2). Half of the salaries of the *chowkidars*, *dafadars* and secretaries are paid directly by the central government and the *Union Parishad* pays the remaining half from its own income. Below the level of Chairman nine Ward Commissioners are elected and there is a provision that three female Ward Commissioners must also be elected (Figure 2).

CARE (2002) comment that the coordination within the UP is limited. They cite as the cause of this: the power of the Chairman, which often results in him taking decisions with a handful of people rather than in consultation with the UP; and the fact that government officials based at Union level are primarily answerable to their own departmental line managers and as a result communicate little with each other or other local representatives. CARE (2002) also acknowledge that the limited capacity for the UP to raise funds impairs their ability to implement activities and makes them dependent on resources received through official channels from higher levels. Despite this they manage to play a significant role in the management of local infrastructure projects.

**Figure 2: Organogram of the *Union Parishad***



Source: Mallick 2004

### ***Gram Sarkar***

*The Gram Sarkar* supports the *Union Parishad*, by collecting vital statistics and socio-economic data for their constituents; making plans for natural resources management; creating awareness of health care; maintaining law and order; encouraging participation of residents and NGOs in local government planning; and supporting development activities in agriculture. It is composed of 15 members who undertake their roles for a 5 year term. There is one Chairman who is the elected member of the Ward, one advisor who is the elected female member of the Ward, 10 male members, and three female members.

### **2.3 Extent of Public Participation**

The Constitution of Bangladesh, approved in 1972, emphasizes the need for establishing local government with a representative character (Chapter 3, Article 59) and implies direct participation of the people in constituting local bodies and in managing their affairs. However, adoption of the constitution and the people's involvement has been seen to be inadequate partly due to the many changes in the local government structure and also irregular elections. As a reactive measure, civil society groups are now coming forward to begin action and to encourage local governments to participate with them. (UNESCAP accessed 2007).

### 3 Local Government in Rajshahi

The key organizations involved in planning and development at local government level in Rajshahi are the Rajshahi City Corporation (RCC), the Rajshahi Development Authority (RDA), the Local Government Engineering Department (LGED) and the Department of Public Health Engineering (DPHE).

#### 3.1 Rajshahi City Corporation

Rajshahi City Corporation, which is financially supported by public taxes and government allocations as well as donor funds, is responsible for undertaking various development activities in the 48 km<sup>2</sup> area that constitutes their jurisdiction. The activities of pertinence to the WASPA project that RCC is responsible for include: development of water supply and disposal of solid wastes; the construction and reconstruction of roads and culverts; restoration of storm water and wastewater drains; eradication of mosquitoes; and the provision of health services to city residents through urban health centers and urban maternal health centers. Overall, RCC aims to make public recreational and private dwellings safe, hygienic and comfortable for its residents. These functions are stipulated in several laws which cover RCC's responsibilities regarding sanitation; unsanitary buildings notifications; removal, collection and disposal of refuse; latrines and urinals; water supply; and drainage and drainage schemes (Annex II).

In order to fulfill its solid waste management obligations RCC provides manpower to clean roads, drains and collect solid waste (Section 4.1 deals with this in more details). In terms of drainage water management, which also falls under the purview of RCC, there are two different types of drainage system in the city: man-made drains; and natural *khals* (drainage canals). Ten primary drains flow through RCC's area, almost all of which drain towards the north of the city due to the natural contours, despite the fact that the Padma River runs south of the city. Many drains discharge into *beels* (natural seasonal water bodies, like shallow lakes) in and around the city, or into the Baronai River in the north. Several of the drains are inadequate, in both width and depth, to deal with all the wastewater discharges, especially during the monsoon. This leads to water logging at certain points in the drainage system. The problem is compounded by poor design, lack of adequate maintenance and the daily disposal of solid waste into the channels (GoB 2003).

It is RCC's responsibility to implement the Drainage Master Plan 1994, which is to be executed in three phases. Two phases of the Drainage Master Plan have been undertaken; however shortfalls exist between the Drainage Master Plan 1994 and the length of drains that RCC claims to have completed. The main objective of the first phase of the Drainage Master Plan was to meet the physical needs regarding drainage and environmental sanitation up to the year 2000. Under the first phase 28 km of new drains were to be constructed and 57 km of existing *khals* and drains were to be rehabilitated (RCC 1994). The first phase of the completed drainage works includes 17.74 km of primary drains, 17.61 km of secondary drains and 9.41 km of tertiary drains. It has been assumed that RCC will continue to implement the

Drainage Master Plan without changes to the 1994 plan. RCC have, according to their planning and documentation, until 2010 to complete the second phase, which aims, through the construction of more drains, to address the existing water logging in the Rajshahi urban areas. The objective is to develop the environment of the RCC area and improve the economic capability of city residents in the long-term, by providing an effective and sustainable water drainage system. The implementation period commenced in April 2004 and is currently ongoing.

Rajshahi City Corporation also deals with the city water supply and community water stands. There are 785 community water stand posts, 85 on-street 'Dhop' water stands and 3,750 hand tube wells for drinking water purposes, as well as piped water supplies provided via 8 overhead tanks and 3 water treatment plants (RDA 2003).

Out of 45 production tube wells, 28 belong to RCC and the rest of them to other agencies. Up until 1995 there were 182 km (RDA, 2003) of water pipelines in the city (more recent data could not be obtained at the time). Rajshahi University, Rajshahi Medical College, Rajshahi Development Authority and some other large organizations have their own water supply facilities (RDA 2003).

The RCC is composed of several divisions including administrative and technical divisions. The larger divisions are sub-divided into branches. The Public Works Division includes branches for Development, Planning and Water Supply, which employ several engineers, mechanics and technicians. A summary of the RCC departments relevant to the WASPA Project is included in Table 1 and the activities required to be undertaken by the different branches of RCC are (GoB 1995):

- Accounts Division – draws up budgets and is accountable for looking after the costing side of RCC.
- Revenue Division – looks after the income side of RCC through: the Tax Collection Branch who collects taxes; Tax Imposition Branch which undertakes tax enforcement; and the license Branch which looks after the distribution of trade licenses.
- Public Works Division – undertakes works relating to development, water supply, planning, electricity, transportation and drainage construction, and implements proposed investment projects.
- Conservancy Division – undertakes solid waste management responsibilities.
- Public Health Division – works for the prevention of environmental pollution and eradication of mosquitoes. It also provides health services for the city. The Eradication of Mosquito Branch is responsible for cleaning and spraying the drains.

**Table 1: RCCs relevant divisions relating to water and sanitation services**

Division	Divisional Branch	Designations within Division
Secretary Division		Secretary, Personal Assistant, Manual Labor for Subordinate Services (MLSS)
	General Administration Branch	Deputy Secretary, Assistant Secretary, Principal Assistant, Senior Assistant, Record Keeper, Junior Assistant (Typists), Duplicating Officers, MLSS
Account Division		Budget Accounts Officer, Accounts Officer, Assistant Accounts Officer, Account Assistants, Junior Assistants (Typist), Record Keeper, MLSS
Revenue Division		Principal Revenue Officer, Revenue Officer, Personal Assistant, MLSS
Public Works Division		Superintendent Engineer, Personal Assistant, MLSS
	Development Branch	Executive Engineer, Assistant Engineer, Deputy-Assistant Engineer, Estimator, Draftsman, Senior Assistant, Treasurer, Junior Assistant (Typist), Service Assistants, Chainmen, MLSS, Gardener
	Planning Branch (Cell)	Assistant Engineer, Research Officer, Draftsman, Treasurer, Surveyor, Junior Assistant (Typist), MLSS
	Water Supply Branch	Assistant Engineer, Deputy Assistant Engineer, Senior Assistant, Junior Assistant (Typist), Collector, Service Assistant, Supervisor, Tube-Well Mechanic, Pump drivers, Electricians, Pipeline Mechanics, Assistant Tube-well Mechanics, Assistant Pump Drivers, Assistant Pipeline Mechanics, MLSS
	Electricity Branch	Assistant Engineer, Deputy Assistant Engineers, Street Light Monitor, Street Light Mechanics, Main Switch Operators, Street Light Helpers, MLSS
	Transport Branch	Assistant Engineer, Deputy Assistant Engineer, Senior Mechanic, Junior Mechanic, Drivers, Junior Assistant (Typist)
Conservancy Division		Principal Conservancy Officer, Conservancy Officer, Monitors, Conservancy Supervisors, Laborers
Public Health Division		Principal Health Officer, Typist, MLSS

Source: Government of the People's Republic of Bangladesh, Bangladesh Gazette, *Ordinance of Rajshahi City Corporation*, Ministry of Local Government Rural Development and Co-operation, 05/01/1995

RCC understands that in order to maintain its duties it needs cooperation from other authorities, in the areas of sanitation, waste management and drainage; however there is presently no formal relationship between RCC and the RDA, which would be their logical partner, especially in planning. RCC does interact with RDA to gain maps and land clearance certificates for their projects (RDA official *pers comm.* July 2007). The LGED collaborates with RCC in collaboration on some specific projects, specifically on technical aspects, however budgets for these projects are allocated to LGED. The DPHE is mainly responsible for developing water supply systems and passes the responsibility to RCC for their operation and maintenance (DPHE official *pers comm.* June 2007).

### 3.2 Rajshahi Development Authority

The RDA, headed by an appointed government official, functions under the Ministry of Housing and Public Works to formulate and support the implementation of development plans and schemes in a 364 km<sup>2</sup> area covering both Rajshahi City and the area around it. The RDA is mandated to work in collaboration with RCC, the Bangladesh Water Development Board (BWDB) and the Local Government Department (LGED) to ensure the implementation of plans. The official role of the RDA is to implement, prepare, monitor and evaluate plans, in which implementation relates to the acquisition of land and the provision of Clearance Certificates for that land (RDA official *pers comm.* June 2007). The RDA also directly implements a limited number of projects with funding from the Government of Bangladesh.

The RDA's main responsibility is therefore the preparation and implementation (with partners) of the Rajshahi Metropolitan Development Plan (RMDP) (2004-2024). This Plan includes future roads, drainage and water supply systems, distribution of educational institutions, health services, public open and recreational spaces, industrial establishments, commercial centers and lands likely to be developed. The Authority is also responsible for preparing master plans in-line with the general development plan indicating land use zoning and land reservations, water supply, sewerage and drainage (including approval for septic tanks), roads, highways, traffic circulation, community planning, housing, slum clearance and slum improvement (GoB 1976).

The current RMDP was designed by RDA to serve the needs of the Rajshahi City area from 2004 to 2024. The RMDP package consists of a Strategic Plan, Structure Plan or General Development Plan, Functional Master Plan and Detailed Area Plan (GoB 2004). The Plan has been designed by RDA and was approved by the relevant institutions including RCC, BWDB and LGED, which are responsible for its implementation in their respective jurisdictions and technical fields. The Plan acts as a Road Map for the future development of the city. For example, RCC is responsible for the implementation of road construction, drainage maintenance and operation and the water supply sections of the Plan within the RCC area area.

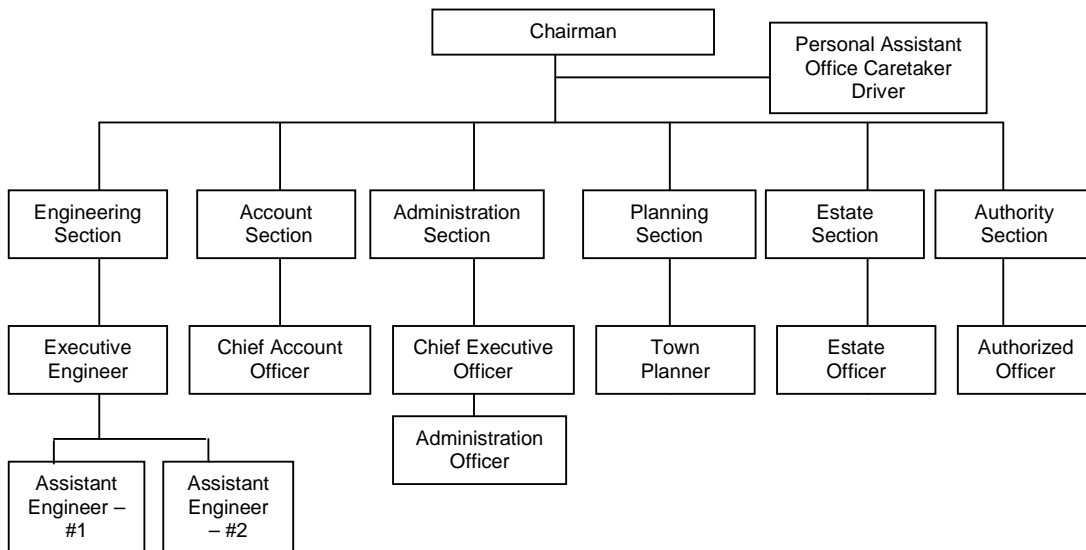
The organisational structure of RDA is such that there are six sections (Figure 3). The responsibilities of these sections include:

1. Engineering - implementing, monitoring, evaluating and acquiring land for development projects.
2. Accounting - billing and accounts related responsibilities.
3. Administration – maintaining rules for proper implementation, administration and services, taking action against individuals or organizations that do not comply, and recruitment.
4. Planning – developing the Master Plan for RDA and ensuring its implementation. They provide land clearance certificates and are also responsible for determining how land is used and by whom. For land obtained and used by RDA, the application process for a land clearance certificate is undertaken in the same

manner however the approval of these certificates is given by the District Commissioner of GoB, not by RDA themselves.

5. Authority - building plan approvals. (For RDAs own Building Plans, approval is made by the District Commissioner of GoB).
6. Estate – revenue collection of RDAs personal assets including bus and truck terminals and markets. They are also responsible for providing allotment to different residential areas (Meeting Minutes, June 2007)

**Figure 3: Organizational Structure of RDA**



Unlike RCC, RDA is not a utility services provider but deals mainly with the planning of development, infrastructure and future land use of Rajshahi City. The plans and projects should then be implemented by other organizations, but according to officials within RDA, the coordination between RDA and RCC only exists theoretically which is a major impediment to the implementation of the plans (RDA official *pers comm.* June 2007). RDA and RCC are separate autonomous institutions and there is no formal mandate for the two to be accountable to each other, and communication is made in both a formal and informal manner, although presently, there is little communication between them regarding their various development projects. The Planning Branch of RCC interacts with RDA to obtain maps as well as for Land Clearance Certificate applications. The LGED contacts RDA when it requires information regarding instructions or plans for rural infrastructure and roads to be constructed by them.

Documents or plans relating to sewage management are not usually shared with RDA as this is outside their responsibilities; however, projects relating to storm water collection involving roadside drains do involve RDA in coordination with other organizations. RDA creates Land Use Plans and approves Land Use Plans, otherwise penalties are issued: within Building Plans, septic tanks must be included.

### 3.3 Local Government Engineering Department

The LGED is responsible for rural infrastructure development. These responsibilities include: rural road construction and maintenance; bridge construction; installation of culverts; growth centre development; *hut-bazar* (village market) development; construction and repair of primary schools; small-scale water resources development; bio-gas plant construction; and implementation and monitoring of small-scale irrigation, flood control and drainage schemes at the *Upazila* and the Union levels. The LGED also provides technical support to the local government (*Pourashavas* and the *Zila Parishads*) on sustainable rural programs (LGED 2005).

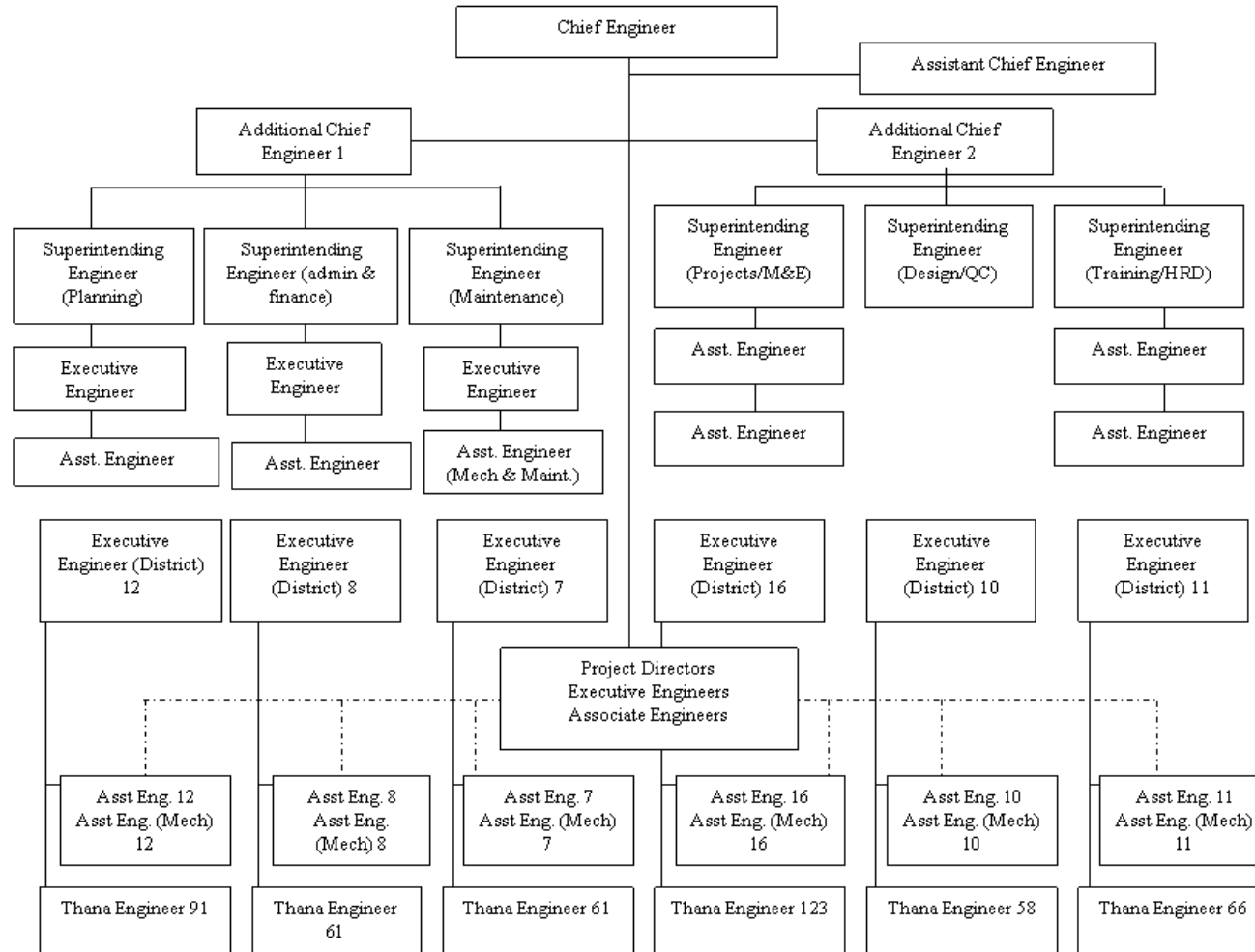
At the national level LGED is headed by the Chief Engineer who is supported by three Additional Chief Engineers, six Superintending Engineers, seven Executive Engineers and four Assistant Engineers at the LGED head quarters (Figure 4). There are 10 Circle offices at District level, each with a Superintending Engineer and 64 Executive Engineers, one in each District. There are also 128 Assistant Engineers at the District level and 476 *Upazila* Engineers at the *Upazila/Thana* level. The total number of engineers and other staff under the permanent establishment of LGED is 9357.

Under Rajshahi Circle there are nine LGED district offices located in Naogaon, Chapai Nawabgonj, Bogra, Joypur Hut, Pabna, Natore, Rajshahi and Shirajgonj. The organizational structure of LGED in Rajshahi District includes a Superintendent Engineer, an Executive Engineer, an Assistant Engineer and a Sub-assistant Engineer. There are also four additional sections in LGED Rajshahi office, the Accounts Section, the General Section, the Laboratory Section and the Mechanical Section. Two types of staff are found in each department: Government staff and Project staff (LGED 2005).

During the restructuring of the water sector by the Government of Bangladesh, LGED prepared guidelines on how to involve local people in water projects (Chadwick and Datta nd). Although LGED has no mandate to implement water supply and sanitation activities, they may implement these activities as components of larger projects. LGED have some collaboration with RCC and have a drainage construction program within the RCC boundary although they do not have any collaboration with RDA.

LGED do not generally have any solid waste and wastewater management projects within their jurisdiction nor do they have any future plans for wastewater management in the Rajshahi City area.

**Figure 4: National Organizational Structure of LGED**



### 3.4 Department of Public Health Engineering

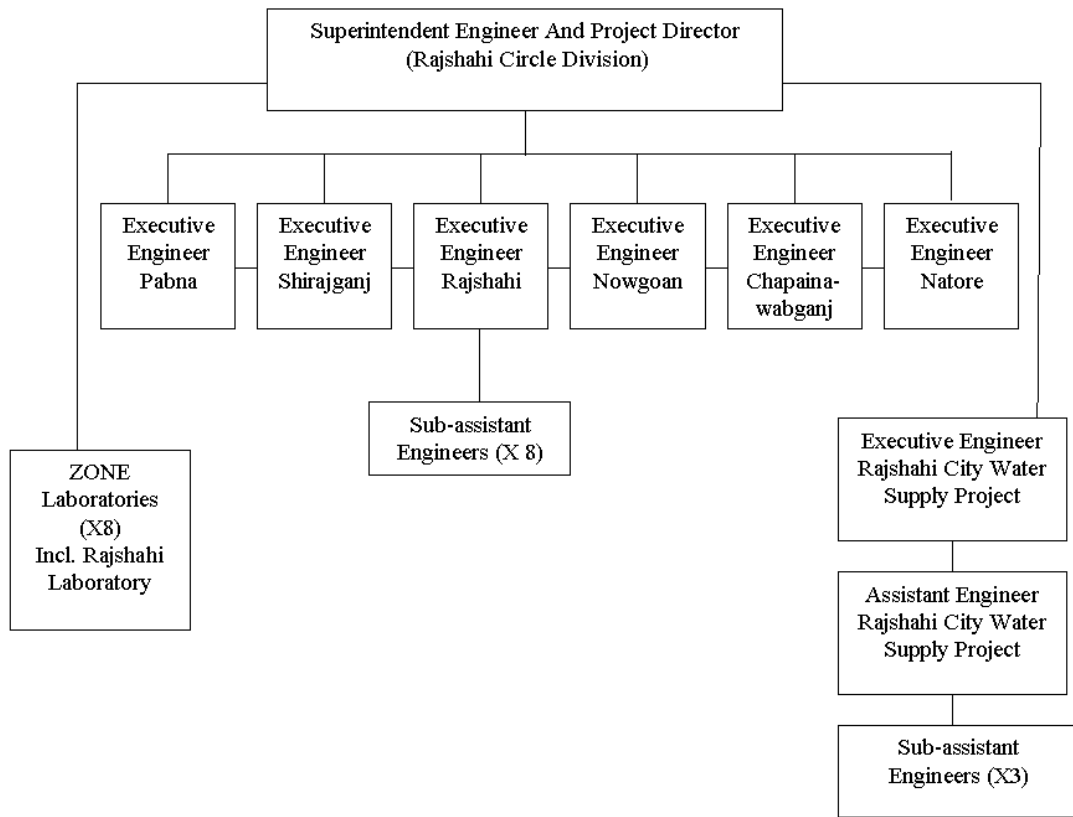
The Department of Public Health Engineering (DPHE) is a national agency under the Ministry of Local Government, Rural Development and Co-operatives. It is funded by the Government of Bangladesh and various international donors including the Danish Development Agency (DANIDA), USAID, the Asian Development Bank (ADB), the Islamic Development Bank (IDB) and the UK Department for International Development (DFID) and the United Nations Children's Fund (UNICEF) (Asfar 1999). The Department is mandated to provide safe drinking water, environmental sanitation and hygiene education throughout Bangladesh with the exception of three cities: Dhaka, Narayanganj and Chittagong, which are served under separate Water Supply and Sewerage Authorities (WASA). DPHE is required to initiate national policy frameworks and development plans for the water supply and sanitation sector and is responsible for planning, designing, implementing and monitoring water supply and sanitation projects in both rural and urban areas of the country, including Upazila towns and Paurashavas (GoB 1998).

The National Policy for Safe Water Supply and Sanitation 1998 governs the water supply and sanitation sector. The Government's goal is to ensure that all people have access to safe water and sanitation services at an affordable price, emphasizing behavioral changes and sustainability through user participation, planning, implementation, management and cost-sharing. The policy objective regarding urban sanitation is to ensure easy access to sanitary latrines for every urban household through technology options ranging from pit latrines to water borne sewerage. The policy states that users are responsible for the operation and maintenance of sanitation facilities and should bear its total cost. The functional responsibility for the sanitation sector is delegated to DPHE, whose role it is to ensure the coordination and advancement of this government policy amongst its stakeholders. DPHE also delivers hardware in close participation with local government institutions and training for maintenance of water supply and sanitation facilities (GoB 1998). In addition to DPHE, the LGED is also involved in planning and implementation of water and sanitation services in certain *Paurashavas* and growth centers identified by the Planning Commission under selected projects (GoB 1998).

Like the LGED, DPHE has a network of offices at *Zila* and *Upazila* level all over the country. The DPHE Rajshahi Circle Division consists of six Circle Districts: Shirajganj, Pabna, Nowgoan, Natore, Chapainawabganj and Rajshahi. An Executive Engineer heads each District office (Figure 5).

The DPHE Rajshahi Circle District Office consists of eight officials who provide water supply and sanitation support. DPHE Rajshahi is mainly responsible for development of water supply systems and passes operation and maintenance of these water supply systems to RCC. DPHE is presently not responsible for drainage in the Rajshahi City area; however, they are developing the sanitation system in Rajshahi through projects that they are undertaking with NGOs and donors in low income communities.

**Figure 5: Organizational Structure DPHE Rajshahi Circle Division**



For DPHE projects, two levels exist: Project Management and Project Implementation. At the Project Management Level, DPHE organizes a Project Management Unit, consisting of a Chairman (selected from the respective *Paurashava* or City Corporation) and a Member Secretary from DPHE. If the project is undertaken at the District Level, the Assistant Engineer will be selected as Member Secretary or if the project is at the Circle Level, then the Project Director will be selected as the Member Secretary. At the Project Implementation Level, DPHE organizes a Project Implementation Unit, consisting of a Technician of the *Paurashava* and officials of DPHE.

### 3.5 Paba Upazila Office

Also in the project area is a small part of Paba Upazila (formerly *Thana*), which is in Rajshahi District and is located to the west of the RRC area, with the *Upazila* office just outside the RCC boundary. It has approximately 40000 households and a population of 262251 in 2001, and covers a total area of 280 km<sup>2</sup> (BBS 2005). Paba Upazila is under the Rural Local Government of the MoLGRD&C and has eight Unions or Wards, 188 *Mauzas* or *Mahallas* and 262 villages.

Paba Upazila is not covered by RCC and RDA; instead the Paba Upazila Parishad implements development programs of the GoB at Upazila level. The Upazila Nirbahi Officer is responsible for supervising administrative and development works and preparing an *Upazila* development plan.

There are generally no drainage systems under the Upazila levels; although Paba Upazila includes two municipalities that have small drainage systems within the market places; these are maintained by the Municipal Authorities. There is no future plan to develop the drainage system. These municipal areas are not covered under the WASPA project as the focus on the project is Rajshahi City and its environs, which includes a small part on the boundary of RCC area and Paba Upazila at Bashuar Beel.

## **4 Water Resources Management**

There is one main body involved in water resource management in Rajshahi, this is the Bangladesh Water Development Board (BWDB), which is governed by the National Water Policy.

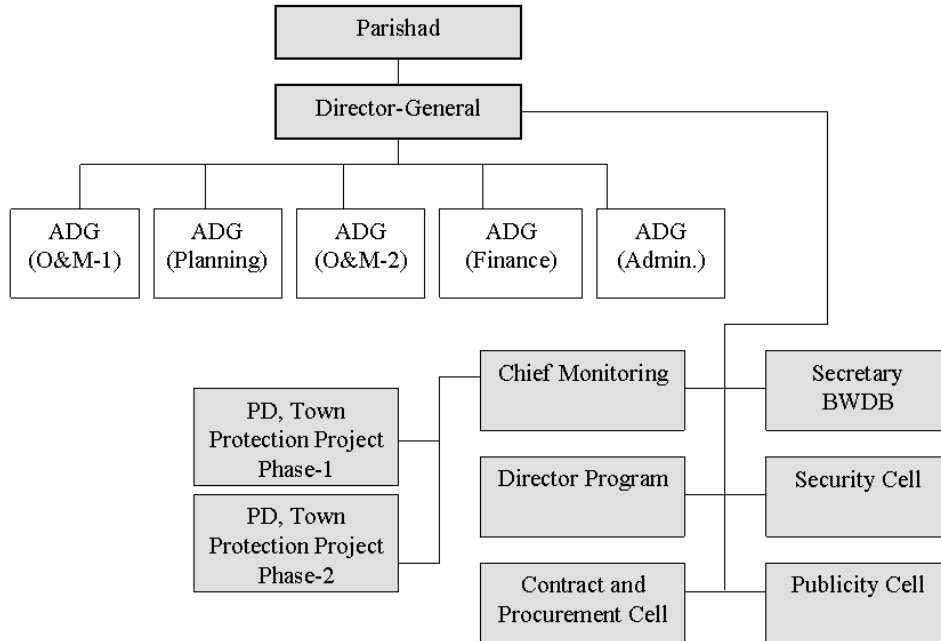
### **4.1 Bangladesh Water Development Board**

The BWDB started its operations in 1959 under the Bangladesh Water and Power Development Boards Order 1972 as a fully autonomous organization that was the principal agency of the government for management of the water resources of Bangladesh. The duties of the BWDB are stipulated in the BWDB Act 2000 that requires BWDB functions to be guided by the National Water Policy and National Water Management Plan (BWDB 2005).

The main responsibilities allocated to BWDB are to execute flood control, drainage and irrigation projects in order to boost productivity in agriculture and fisheries. In relation to this the specific interventions that BWDB might undertake are: construction of dams; re-excavation of water channels; soil conservation; riverbank protection; rainwater-harvesting for irrigation; environmental preservation; and drinking water supply. Other non-structural functions of BWDB include flood and drought forecasting, hydro-geological surveying, and establishing water user associations and other stakeholder organizations. This latter activity may be of particular relevance to the project, as the existence of appropriate organizations for wastewater management at the local level could significantly improve its productive benefits and help to minimize health risks.

The overall organizational structure of BWDB is shown in Figure 6. The Office of the Director-General is the upper management of BWDB and has the responsibility of fulfilling the mandate set down in the BWDB Act 2000 and other applicable laws, regulations and government policies. This office is also charged with all decision-making responsibilities and ensuring that all other offices function efficiently. The Administration Wing covers human resources and recruitment, and the Planning Wing provides inputs to, and technical reviews of, Five Year Development Plans; undertakes hydro-geological studies; and supports the Water Resources Planning Organization (WARPO) and other water sector agencies in the development of efficient water resources management and utilization plans. The Operation and Management (O&M) Wing deals with inventory of completed projects, and O&M of projects over 5000 ha.

**Figure 6: Organizational Structure of BWDB**



The BWDB has a large office in Rajshahi with a staff of 120 to 130 people. The Rajshahi office is managed by a Chief Engineer with the support of several engineers of various levels. The jurisdiction of the BWDB is outside urban areas and consequently the BWDB is not responsible for wastewater and drainage water within RCC area but their expertise and past work on irrigation, canal excavation and the Maghna Sewerage Study may mean that they have something to contribute to management of wastewater for agriculture; although this is likely to be in terms of advice rather than physical interventions, which remain firmly under the purview of RCC.

## **5 Effluent and Solid Waste Management**

The main organizations involved in the management of solid wastes and wastewaters are RCC, RDA and the Ward Commissioners. A description of what their mandate is and areas of responsibility are detailed below.

### **5.1 Rajshahi City Corporation**

As briefly described in section 2.1 of this report, RCC has a mandate to maintain wastewater drains and dispose of solid waste within its region. Approximately 200 million tons of waste is produced by city residents and a further 142 million tons is generated by various organizations within the city. A total of 934 staff including sweepers are provided by RCC to gather this solid waste and transports it to a dumping ground 6 km from the RCC area in Bonogram, Noadapara. The waste is collected from various points around the city and the residents must take responsibility for taking their rubbish to these places.

The Drainage Master Plan 1994, is currently being implemented by RCC, which involves the construction of wastewater canals to channel and dispose of urban run-off. Shortfalls between the Drainage Master Plan 1994 and its implementation have been noted in the drainage lengths developed (see Section 2.1 for further details). RCC is mandated to maintain these drains and to ensure they are cleaned and kept in good working order; however, due to lack of resources and funds, drains are maintained irregularly and solid waste can build up in the drains resulting in water logging and flooding. This is exacerbated by the natural contours of the city which means that the Padma River frequently overtops its banks and floods the city. When drains are cleaned it is done manually, which may pose a health risk to RCC workers.

RCC do not have any plans to develop a sewerage system and there is currently no government organization mandated to maintain or empty septic tanks. The existing law requires every house to have a septic tank and RDA ensures one exists in the building plans. Monitoring and maintenance does not however take place by RCC (who are the most appropriate organization of any to take responsibility for this) or any other organization. Similarly RCC have not inspected the storm water drains for the illegal connection of septic tanks although this is clearly taking place and the RCC are aware of the matter. Consequently they know that the problem exists but have no idea of its extent, the level of pollution or the potential health risk to residents. RCC offers septic tank cleaning services at a cost to residents requiring this service and, from July 2007, RCC intends to commence a new system regarding maintenance of septic tanks. RCC plans to notify its residents through daily newspapers that septic tanks require cleaning.

### **5.2 Rajshahi Development Authority**

As previously stated, RDA is responsible for preparing and implementing the Rajshahi Metropolitan Development Plan (RMDP), including sewerage and drainage systems, and for

approving building plans which must include the installation of septic tanks to ensure septic wastes do not enter the storm water collection drains. RDA will have an interest in waste management only within its area of responsibility, which is in the future planning of the city.

There is currently minimal interaction between RCC and RDA in terms of future master plans. RDA has some future plans for the development of the drainage system and movement of drainage water including the use of technology for wastewater purification. However, it is unclear when this will be, as the current RMDP is being implemented until 2024 with no foreseen changes to the original plan.

### **5.3 Ward Commissioners**

Ward Commissioners are the elected local officials in the RCC system, operating under the RCC banner for a four year term. The mandate of the Ward Commissioner is to ensure that the basic and fundamental rights of the people within his or her Ward are met. These rights and therefore the Ward Commissioners responsibilities include:

- Access to clean roads;
- Clean drains;
- Electricity provision;
- Provision for a safe environment under existing laws and regulations;
- Access to hygienic latrines;
- Provision of supportive health treatment facilities; and
- Ensuring access to education for all members of the ward.

The Ward Commissioners are dependant on the finances and staff of the RCC to undertake development activities at the Ward level. It is therefore important that WCs maintain a good working relationship with the RCC as they direct them. The work of RCC directly affects the ability of Ward Commissioners to implement their responsibilities, specifically in the field of waste management. RCC is required to make decisions for Rajshahi City including the wards; Ward Commissioners state the requirements of their respective wards to RCC and RCC decides whether the work will be undertaken according to the allocation of funds. So, although Ward Commissioners suggest interventions they are not the decision makers, though they are expected to implement the decisions made. These requirements may include matters relating to cleaning of streets and wastewater drains, or repairing street lights. RCC provides the labor to undertake such requirements and Ward Commissioners ensure that this maintenance work is being carried out.

The main source of income for RCC is the collection of different types of taxes such as the Holding Tax, Rickshaw Licenses and Trade Licenses. An official from RCC collects tax from the residents of each Ward. RCC then allocates the amount of funds available to each Ward area according to the initiatives required by each Ward Commissioner. These funds are limited and it is becoming more difficult for Ward Commissioners to cover all the needs of the people within their Wards including cleaning of wastewater drains.

## **6 Agriculture: the Department of Agriculture Extension**

The Ministry of Agriculture (MoA) is the apex body for the agriculture sector in the central government. It coordinates and supervises the activities of all the Agricultural Institutes and Directorates all over the country, specifically: undertaking planning and implementation of agriculture policies and projects; and establishing policies and regulations. The goals of the MOA are of self-sufficiency in food grain production (rice and wheat), and achieving profitable production of minor crops, so as to keep consumer food prices low and improve the nutritional status of the population. The MOA is also responsible for providing high quality infrastructure and government services that will enable farmers to produce and market products at low cost (<http://www.bangladeshgov.org/moa/moa.html>).

### **6.1 Agriculture Sector Policy Reforms**

The ministry has successfully undertaken a number of policy reforms and reached the goal of self sufficiency in rice production. It has also eliminated subsidies for fertilizer and facilitated private trade in fertilizer, minor irrigation equipment and seed. Structural adjustments started with the liberalization of trade in the minor irrigation sector in 1986 and were followed by the privatization of trade in fertilizer. The private sector has now taken over the importing of all fertilizers except urea (although they are not restricted from doing so). The government subsequently issued the revised Fertilizer Control Ordinance in 1995 in consultation with the private sector and the International Fertilizer Development Center (IFDC) for quality control and regulation of fertilizer prices. This has led to the increased availability and wider adoption of chemical fertilizer at the farm level and economic activities in rural areas have also increased due to the withdrawal of government from fertilizer distribution. They have also taken the policy decision to increase the use of organic and bio-fertilizers in association with the use of Diammonium Phosphate (DAP), blended (NPK) fertilizers and urea super granule, in order to reduce the pressure on urea and improve soil fertility.

Further development came with the New Agricultural Extension Policy (NEAP), which introduced the “Agricultural Support Service System” and improved extension services to farmers and grass roots level (Ministry of Agriculture 1996). The National Agricultural Policy (NAP) of 1999 commits to the:

- The timely supply of agricultural inputs at affordable prices;
- Development of action plans for agricultural credit and marketing of products;
- Government support to agriculture;
- Priority for the development of agro-based small and medium industries;
- Enhanced rate of private sector participation in various agricultural sectors;
- Agricultural mechanization;
- Pest management;
- Greater coordination between the Government, NGOs and private sector; and
- Improved nutrition, environmental protection and involvement of women in agriculture.

## 6.2 Agricultural Research in Bangladesh

The National Agricultural Research System (NARS) of Bangladesh consists of 10 research institutes (Table 2) under the umbrella of the Bangladesh Agricultural Research Council (BARC), as well as universities that have a casual working relationship with BARC and other related organizations.

**Table 2: Research Institutes under BARC**

<b>Ministry</b>	<b>Research Institute</b>
Ministry of Agriculture (MoA)	Bangladesh Rice Research Institute (BRRI)
	Bangladesh Agricultural Research Institute (BARI)
	Bangladesh Jute Research Institute (BJRI)
	Bangladesh Institute of Nuclear Agriculture (BINA)
	Bangladesh Sugarcane Research Institute (BSRI)
Ministry of Fisheries and Livestock (MoFL)	Soil Resources Development Institute (SRDI)
	Bangladesh Livestock Research Institute (BLRI)
Ministry of Commerce	Bangladesh Fisheries Research Institute (BFRI)
Ministry of Forest and Environment (MoFE)	Bangladesh Tea Research Institute (BTRI)
	Bangladesh Forest Research Institute (BFRI)

The BARC serves as the national coordinating organization for planning, integration and implementation of research on crops, livestock, soil, water, crop protection, agricultural engineering, forestry, fisheries, economics and social science. It also identifies problem areas in agriculture and prepares national plans for agricultural research within the framework of national policies and development goals. The Council collaborates with international and national research centers to ensure the rapid introduction, evaluation and use of improved agricultural technologies. The component research institutes have their own ordinances and separate mandates.

## 6.3 The Department of Agriculture Extension

The Department of Agriculture Extension (DAE), which has existed for over a century but only took its current form in 1982, is responsible for carrying out extension services at the local level under the supervision of MoA (<http://www.bangladeshgov.org/moa/moa.html>). The mission of the DAE is to provide efficient and effective needs based extension services to all categories of farmer, to enable them to optimize their use of resources, in order to promote sustainable agricultural and socio-economic development. It is committed to working with other stakeholders for the provision of effective and efficient extension services and is now responsible for:

- Motivating and helping farmers adopt improved production practices to increase their productivity and meet national consumption requirements;
- To provide farmers with the latest research and farm techniques;
- To help develop self-reliance by training local leaders for organized group action;

- To provide channels for service and information from the MoA;
- To provide an effective two-way communication link between agricultural research institutes and the farmers; and
- To serve as liaison agency between farmers and other agencies (public and private), that are concerned with socio-economic development (DAE accessed 2007).

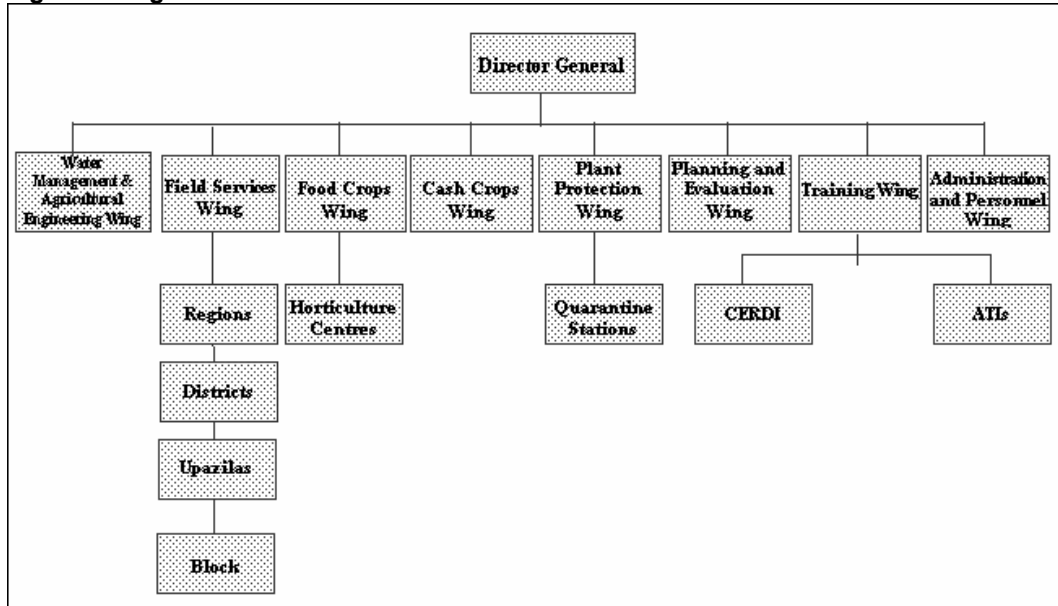
Specific activities implemented to achieve these aims include: setting up demonstrations of new technologies; arranging seed multiplication programmes to produce quality seeds; organizing agricultural fairs; producing information materials; arranging training programmes for farmers and staff; rehabilitation after natural disasters; Integrated Pest Management (IPM) and organic recycling; and preparing seasonal Crop Production Programs (*ibid*). The DAE ensures that it is up to date with research to provide effective extension services by being part of the National Agricultural Technical Co-ordination Committee (NATCC); the Research Institute Co-ordination Committee (RICC); the Research Institute Planning Meetings; and the Agricultural Technical Committee (ATC); DEA is also involved in research-extension workshops with the NARS and on-farm research. These organizations link to the research organizations mentioned previously through the head of the NATCC who is the Chairman of BARC.

The work of DAE is carried out through eight wings (Figure 7), which have the following responsibilities:

- Field Services Wing is responsible for providing extension services to farmers throughout the country.
- Training Wing is responsible for providing training services, which equip extension staff with the skills necessary to provide high quality services.
- Planning and Evaluation Wing is responsible for project preparation and on-going monitoring of projects, the Management Information System (MIS), and the evaluation of extension programs.
- Administration and Personnel Wing is responsible for human resource and financial management.
- Food Crops, Cash Crops, Plant Protection and Water Management and Agricultural Engineering wings are responsible for the providing technical support to the extension staff.

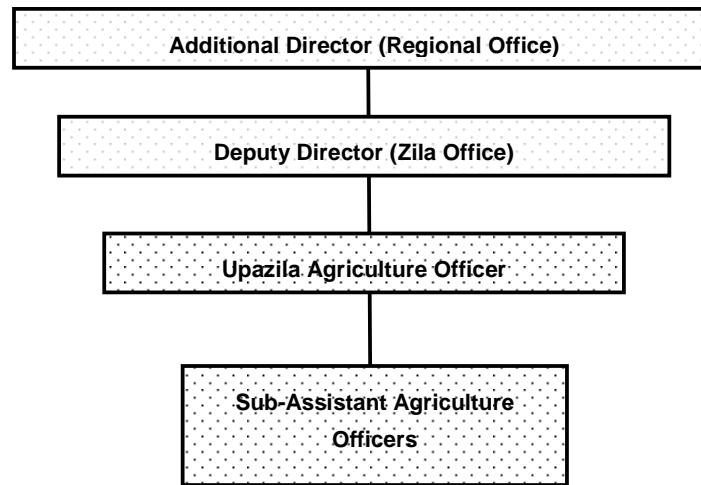
DAE has eight Agriculture Offices throughout Bangladesh, with the Head Office located in Dhaka. There are four Metropolitan Agriculture Offices located at Dhaka, two in Chittagong, one in Khulna and one in Rajshahi. A Director General heads DAE and an Additional Director heads each Agriculture Office in the regions with one Deputy Director heading each Zila (District) Office. All Upazila Agriculture Officers and Metropolitan Agriculture Officers are accountable to the Deputy Director of their District. Sub-Assistant Agriculture Officers provide technical support and extension services to farmers in the regions (Figure 8).

**Figure 7: Organizational Structure of DAE at National Level**



Source: DAE, accessed 2007

**Figure 8: Organizational Structure of DAE at Regional Level**



In the DAE Rajshahi Metropolitan Office 16 officials work as Sub-Assistant Agriculture Officers, clerks, accounts staff and caretakers. Sub-Assistant Agriculture Officers mainly provide technology based extension support to farmers to fill the existing gaps and increase income generation for farmers. The DAE is currently not undertaking any research or activities relating to wastewater farming and agriculture.

## **7 Special Wastes**

Special wastes in this document refers to all wastes that are not of domestic origin. In Rajshahi work by the WASPA team has identified that these essentially fall into two categories: industries; and hospitals and clinics. There are several institutions dealing with industrial activities in Rajshahi, including the Department of Environment (DoE), Bangladesh Small and Cottage Industries Corporation (BSCIC) and the National Association of Small and Cottage Industries (NASCI). A description of their roles and activities are included below. In terms of management of clinical waste this is less obvious but falls to the hospital management, the Clinics Association and the RCC.

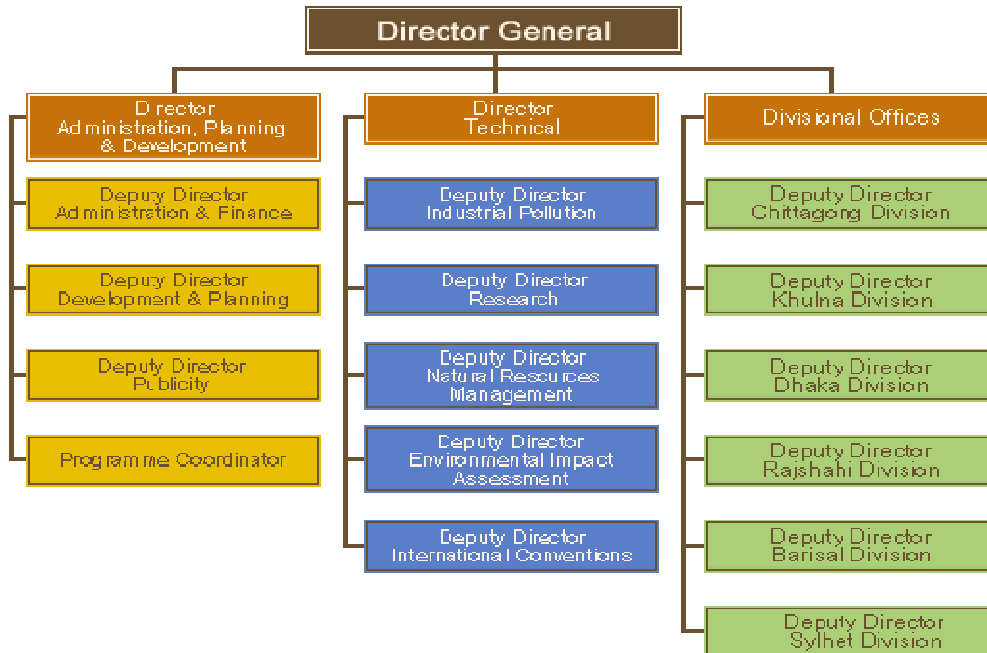
### **7.1 Department of Environment**

The DoE evolved in 1989 from the restructuring of the Environment Pollution Control Board which was formed in 1977. The purpose of DoE, which is under the Ministry of Forest and Environment (MoFE), is to ensure sustainable development, and to conserve and manage the environment of Bangladesh. It does this by creating public awareness of environmental management and legal obligations arising from several core pieces of legislation: the Environment Policy, 1992; the Environment Conservation Act, 1995 and subsequent amendments; the Environment Conservation Rules, 1997; the Environment Court Act, 2000 and subsequent amendments; and the Ozone Depleting Substances (Control) Rules, 2004 (DoE accessed 2007).

The DoE is physically structured such that it has a head office in Dhaka and six Divisional Offices located in Dhaka, Chittagong, Khulna, Bogra, Barisal and Sylhet, which carry out enforcement activities supported by laboratory analysis. For the purposes of implementing its activities it has two main functional areas: Administration, Planning and Development; and Technical, each of which is headed by a Director. There are four units under Administration, Planning and Development and five under Technical, each headed by a Deputy Director or equivalent (Figure 9).

The activities of DoE are organized into six core areas of: planning and development; documentation; compliance and enforcement; environmental awareness; laboratory analysis; and environmental clearances and environmental impact assessment (EIA) processing.

**Figure 9: Organizational Structure of DoE**



Source: DoE 2007

The closest DoE office to Rajshahi is located in Bogra, a two-hour drive away. This office does not have separate departments but staff members have specific roles and designations which cover the various required activities. Allocated to the Rajshahi Division is a Director followed by a Deputy Director (Technical) and two Assistant Directors (Technical) with 10 technical staff including Monitoring Officers, Laboratory Chemists and Technicians.

DoE does not currently possess any roles or responsibilities in wastewater management but is responsible for regulating industrial effluent and monitoring water quality. Of greatest relevance to the WASPA project is the role of DoE in defining the EIA guidelines and issuing Environmental Clearance Certificates to organizations who intend to set up an industry or undertake a development project. They are also involved in setting Environmental Quality Standards (EQS) for particular uses of water and for wastewater discharges to water bodies. As part of their role in pollution management they may inspect sites, plants, equipments, machinery, production or processes for the purposes of improving the environment, pollution control and mitigation. DoE can impose fines and jail terms for anyone who violates Environmental Laws (*ibid*).

Although DoE is officially responsible for monitoring industrial contamination for the purposes of verifying their EQS, in practice they do very little monitoring in Rajshahi, particularly in the industrial area and lack of manpower and funds, means DoE is severely constrained in its ability to perform its required activities.

DoE coordinates with other authorities on activities that have a bearing on its work, such as the Ministry of Fisheries, but this is limited.

## 7.2 Bangladesh Small and Cottage Industries Corporation

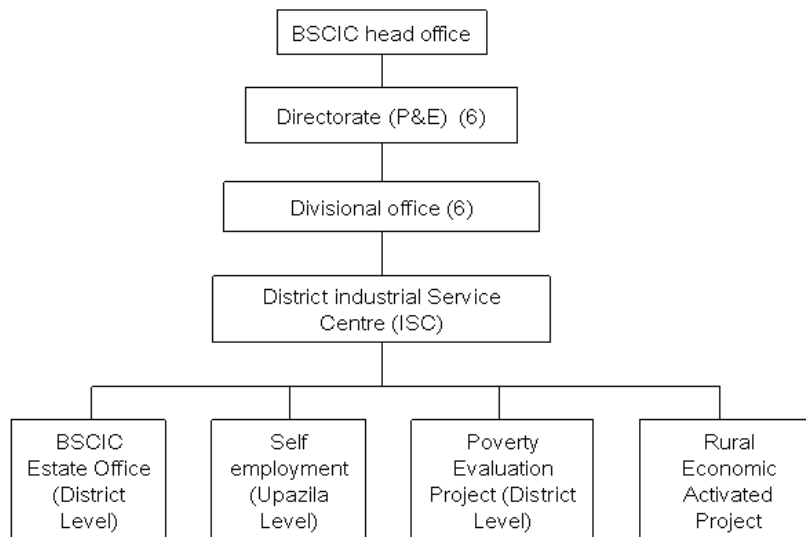
The BSCIC is a national organization established (initially under a different name), within the Ministry of Industries (MoI) by a Government Act in 1957, and amended in 1992 (MoI 2007). Its mandate is to create employment, alleviate poverty and balance regional development through the development of small and cottage industries<sup>1</sup> (SCIs) (MoI 2007). This is to be achieved by:

- Increasing and developing the production capacity of established SCIs;
- Supporting the development of new production units;
- Providing infrastructure facilities for industries; and
- Constructing and developing industrial sites with the necessary facilities.

BSCIC follows the Industrial Policy, formulated in 1999, the basic principles of which are to encourage the private sector to increase production and investment within the industrial sector as well as create a sphere of activities slanted towards private industries. As well as developing industrial plots for investment, BSCIC provides services such as pre-investment counseling and post-investment extension services to all business owners and investors (MoI 2007).

BSCIC has its headquarters in Dhaka and has Regional Offices in the six Divisions of Bangladesh. Each Division has a number of Industrial Estates, with one in each District of Rajshahi Division. At the District Level, there are three categories of Industrial Estates which differ only in the number of workers in each (Figure 10).

**Figure 10: BSCIC Organizational Structure**



<sup>1</sup> Small Industry "will mean enterprises employing fewer than 50 workers excluding the cottage units and/or with a fixed capital investment of less than taka 100 million.

Industrial Estate Committees are formed within each District, which are headed by the District Chief of BSCIC and consist of officials who are in charge of providing allotments around BSCIC areas (Table 3).

**Table 3: Industrial Estate Committee Set Up**

<b>Designation</b>	<b>Position</b>
District Chief of BSCIC	Chairman
The head of the respective Industrial Service Centre	Secretary (Member)
The Leading person of TNT board	Member
The Leading person PDB/RIB	Member
The Chairman of Industry Association	Member
The Chairman of NASCIB at District Level	Member
The head of the Department of Public Health Engineering	Member
The Chairman of the respective City Corporation	Member
The Official of the respective Industrial Estate	Member

There are also 16 Industrial Service Centers at Regional Offices that deal with projects and have an official located at each Industrial Estate. The responsibility of the Industrial Service Centre is to provide facilities for new industries in the region and for those present to run effectively. The Estates Offices located at District level are responsible for providing infrastructure facilities and collecting revenue from the industry owners. The Estate Officer may cancel the allotment of land if industry owners violate BSCIC rules.

Within the industrial area, BSCIC is in charge of all the drainage construction, water supply, culverts, and electricity supply as well as maintenance services. BSCIC is only responsible for maintenance of infrastructure provided within their areas and is not responsible to manage wastewater nor to assist the industries to manage their wastewater. BSCIC seeks assistance from the RCC regarding infrastructure support and maintenance support when shortages of funds occur.

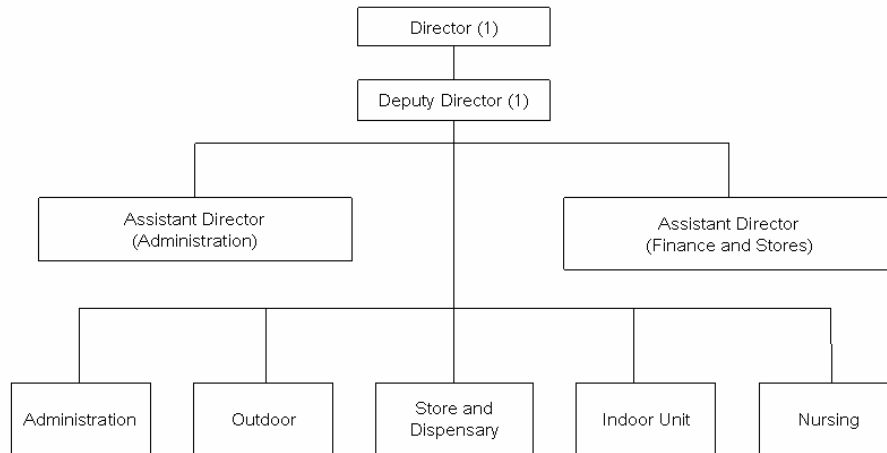
### **7.3 National Association of Small and Cottage Industries, Bangladesh**

The head office for NASCIB is in Rajshahi with other offices located in each district of Bangladesh. The NASCIB works predominantly with silk industries and collaborates with BSCIC under the Industrial Service Center umbrella. NASCIB was established to provide facilities and solve the existing problems of the Small and Cottage Industries. It is also mandated to give guidance to the industry on production and give indications on how to develop industrial organizations. An elected President and Vice-Presidents head the NASCIB for a two year terms with 13 executive members representing a total 222 members in Rajshahi.

#### 7.4 Rajshahi Medical College Hospital

Rajshahi Medical College Hospital (RMCH) is located in Laxmipur, Rajshahi and treats approximately 1150-1200 patients per day with 530 beds available. The organizational structure is such that there is a Director, Deputy Director and two Assistant Directors, one for Administration and one for Finance and Stores. Below the management structure are the medical staff and departments responsible for the daily operations of the hospital (Figure 10).

**Figure 10: Organizational Structure of Rajshahi Medical College Hospital**



The hospital authority is responsible for managing all the waste produced by the hospital. There is an incinerator on the premises and 70-80% of all solid waste produced is currently burnt on a daily basis. The remaining waste is disposed of in the normal urban waste system (which, as mentioned previously, is not especially efficient). Furthermore, the condition of the incinerator is poor and it is likely that it is not burning the waste satisfactorily (Meeting with Clinics Association, 20.06.07). In the past RCC was responsible for disposal of the solid waste produced by RMCH however this was not managed systematically therefore the hospital took over. There are presently no government policies on waste management for hospitals but RCC is involved in a WHO project to separate and properly dispose of medical and sharp waste.

The hospital does not presently manage or treat its liquid wastes. Large quantities of wastewaters are, according to the Deputy Director, RMCH (*pers. comm.*, 18.06.2007) produced from the Surgical Department of the RMCH however the quantities of wastewater discharged daily from the hospital or their impact are not known. The hospital does not have any proposals to improve its waste management practices at this stage.

#### 7.5 Clinics Association

The Clinics Association has a total of 57 Clinics that are members within the Rajshahi City area. These clinics are all privately owned or set up by donor funds. The Executive Body of

the Clinics Association consists of 12 elected members including a President, Vice President, Secretary and Treasurer.

The Private Clinic and Private Practice Ordinance, 1982 governs the legal set-up of clinics. The Ordinance states that Clinics must apply to the Director General of the Health Ministry or the Civil Surgeon to obtain a license and have to renew their licenses each year. The Ordinance, 1982 is restricted to the activities required to provide effective and efficient treatment and diagnostic services, and consequently does not cover such things as waste management. The current system is that RCC collects all solid waste from clinics and incinerates it. They previously requested that clinics separate their waste into certain categories based on hazard. The clinics still do this but RCC recombines the waste at the time of collection, which makes the process rather pointless. The clinics are not prepared at present to seek their own solutions for solid waste management because of the cost implications (Meeting with Clinics Association 20.06.07).

With approximately 40 beds located within an average clinic in Rajshahi, they use large quantities of water for washing, cleaning and sterilizing. Septic wastes of clinics are disposed of into septic tanks; other wastewaters such as those produced from hand basins used for general washing (grey water) and patient care are disposed of into the wastewater city drains without infrastructure for treatment. An approximate figure of 150 liters of water per day for 30-40 patients has been provided. The domestic wastewaters and clinical wastewaters are combined within the drains.

The Clinics Association is particularly interested in the health implications of using drainage water for irrigation and the affect to consumers within the Rajshahi region.

## 8 Other Relevant Organizations

### 8.1 Rajshahi University

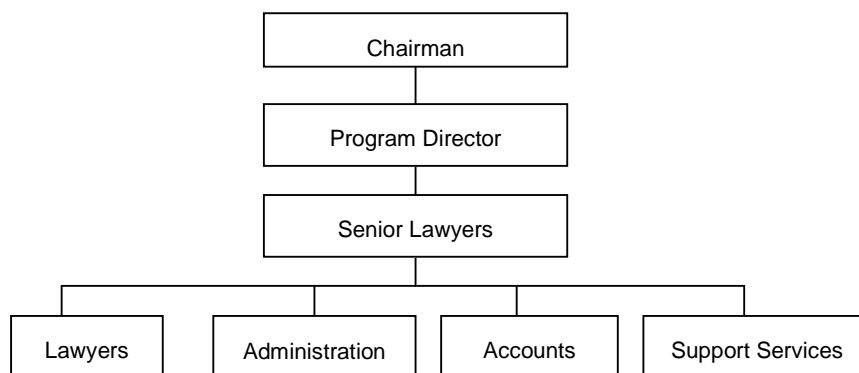
Rajshahi University, located within the Rajshahi City was established in 1953 and currently had approximately 25000 students and 1040 lecturers in 47 departments within seven faculties and undertakes research in several areas of relevance to the WASPA project, including: aquaculture technology, water resources and livelihood in fisheries. One of the current research projects undertaken by the Fisheries Department of Rajshahi University is on “Enhancement of aquatic food production in urban and peri-urban wastewaters”, which has clear linkages to the WASPA project, but no work has been carried out or publications produced on wastewater agriculture to date (Meeting minutes 20.06.07).

### 8.2 Bangladesh Environmental Lawyers Association

The Bangladesh Environmental Lawyers Association (BELA) is a non-governmental organization formed in 1993 by a group of lawyers with the objective of promoting environmental justice. The formation of BELA was in a response to the global call to protect and conserve the natural environment that has strong justification in a rural agronomy based country like Bangladesh (BELA nd). Since its inception the organization has adopted various means to create awareness amongst major players and the people to activate environmental legislation, emphasizing wider advocacy in law making and policy planning. BELA concentrates its effort mainly on public interest litigation and research.

BELA has six Divisional headquarters and two liaison offices in Tangail and Cox’s Bazar. BELA is headed by a Chairman and a board of directors who set the direction of the organization (Figure 11).

**Figure 11: Organizational Structure of BELA**



In the BELA office in Rajshahi there is a Project Manager, an Accounts Officer, an Office Assistant and two Field Officers.

BELA is funded predominantly by donors. Cases undertaken may be of national, community or individual concerns and are found in newspapers or by request from community members. BELA achieves its organizational objectives through: research, filing legal cases; sensitizing people to environmental issues; providing legal assistance; developing useful networks; and undertaking legislative advocacy. BELA has instituted cases related to a wide range of issues such as river pollution, labor welfare, compensation for losses inflicted by development projects, encroachment and destruction of important wetlands and relocation of industry and is currently undertaking the project: "Promoting Environmental Justice", funded by the Manusher Jonno Foundation, in Rajshahi (NGO Forum and BELA Meeting Minutes 24.06.07).

## 9 Discussion

The Institutional Analysis has some important implications for the WASPA project as it identifies institutions that should have a significant role in the LA and PAP. Involving such players in the Learning Alliance will require coordination with government departments and other institutions.

There are several government organizations of importance due to their involvement in drainage management, water management, waste management and sanitation. However, the key institution mandated to manage wastewater drainage related issues in Rajshahi is RCC. RCC's activities are pertinent to the WASPA Project with functions stipulated in laws highlighting RCC's responsibilities in sanitation and disposal of solid wastes as well as drainage schemes. Any proposed activities towards wastewater management must be undertaken in consultation with RCC.

Along with RCC's mandate to manage solid wastes, Ward Commissioners, who operate under RCC, also undertake the role of ensuring that solid waste management activities are implemented in their Wards. Therefore, in order to improve the solid waste situation, the project should work closely with RCC and WCs to implement effective solid waste management activities in Rajshahi.

The institutional framework in Bangladesh is complex, and the institutional set-up in Rajshahi consists of an elected representation as well as administrative bodies. The administrative part includes, amongst others, RCC and RDA. The institutional information, gathered indicates that there are gaps mainly due to the complex institutional set-ups and the lack of coordination between institutions such as RDA and RCC, which are under different government ministries. Other constraints include the lack of manpower available to enforce responsibilities related to wastewater management and drainage maintenance.

There is also currently little coordination between other organizations with similar or overlapping mandates. For example DoE and BSCIC do not collaborate extensively to ensure harmful industrial wastes are not discharged into the canals. DoE is responsible for monitoring industrial contamination but they have no office in Rajshahi and, in practice, monitoring of local industrial discharges and pollution in Rajshahi does not take place to any significant level. The WASPA Asia Project needs to build synergies where relevant and possible. RCC is aware that it needs the cooperation of other authorities to fulfill its duties however in practice such cooperation is limited.

As there are no organizations working directly with wastewater farmers, collaboration with DAE will be beneficial to effectively communicate with and train farmers on more effective use of wastewater to improve productivity and reduce health risks. DAE has not previously undertaken any research or activities relating to wastewater agriculture, but their experience in disseminating agriculture information to farmers is of high importance to the WASPA Project.

Groups such as BSCIC and NASCIB, the Clinics Association and Rajshahi Medical College Hospital are also important stakeholders as they are linked to the main polluter groups, although BSCIC and NASCIB are not responsible for managing wastewater or assisting the industries to do so and once the wastewater leaves the factory it is the responsibility of RCC. By law some industries are required to have effluent treatment plants and there are national standards governing the effluent quality discharges from industries, which are regulated by DoE, however there are no laws governing wastewater management of medical wastes. The Hospitals manage their own solid wastes and clinics rely on RCC to collect and burn their solid wastes, while wastewaters are managed internally as well as discharged externally into the wastewater drains with no external policies or infrastructure for treatment. Working with these groups would help to provide solutions to reduce waste and discharges entering the drains.

Other institutions such as BELA, who are involved in promoting environmental law and justice, may be involved in advocacy for ongoing enforcement of laws related to pollution and industries. Although the Rajshahi University has major research areas in aquaculture technology, water resources and fisheries-based livelihoods it has not produced research papers on wastewater management or its use in agriculture and may not be significant in the implementation of the project.

Even though there is a small part of the WASPA Project site located in Paba Upazila Pourashava area at Bashuar Beel, there are no drainage systems and the involvement of Paba Upazila has little significance to the WASPA Project. Likewise, LGED does not play a significant role in wastewater infrastructure in Rajshahi and are not likely to be involved in the implementation of the WASPA objectives, although they may provide guidance. DPHE is not active in the RCC area in urban sanitation except in some low income community areas and therefore has a limited scope to be involved in the project although they are an important source of knowledge. The BWDB has directly indicated that it does not undertake wastewater or agriculture irrigation responsibilities and is also not likely to be involved in the project.

## 10 Conclusions

The main objective of the WASPA Asia project in Rajshahi is to work with relevant stakeholders to develop PAPs to address issues relating to wastewater agriculture. The stakeholders and institutions from local government departments (RCC, RDA), water and waste management departments (RCC), agricultural support services (DAE), health institutions (RMCH and the Clinics Association) and industry associations (BSCIC and NASCIB) that may have an interest in the WASPA Project have been identified. An understanding of the responsibilities and activities of the relevant institutions in the fields of sanitation, wastewater management, agriculture and environment has been obtained which will assist with an awareness of who should be involved and how the project team could work with these organizations in an effective manner. This understanding will help develop the LA and implement the PAPs.

RCC is clearly the main stakeholder identified for the WASPA Project. Their significant role in constructing and managing the drainage system demonstrates clear responsibilities and mandates relating to wastewater and drainage management in Rajshahi. RCCs cooperation is key to development and implementation of the actions for the project and working closely with the RCC on waste management and drainage issues will assist in meeting the project's goals.

RCC is also mandated to undertake solid waste management activities. WCs, within RCC, can also implement solid waste management activities to improve waste management collection and will have positive implications for actions undertaken under WASPA.

The institutional framework in Bangladesh is complex, with overlapping jurisdictions, ministries and responsibilities. For example, RDA is responsible for planning and designing the drainage infrastructure whilst RCC is responsible for the construction and maintenance of the drains. The two authorities operate under different government ministries making it difficult to coordinate. There is presently little coordination between other institutions in relation to wastewater management, drainage management and pollution reduction. Therefore, working closely to bring institutions such as RCC and RDA together with other stakeholders may improve the wastewater management situation. The WASPA project goals and LA can provide a platform for these institutions to work together.

There are presently laws and regulations, which regulate industries, water management and the environment. Although these are limited they may be useful in mandating institutions to reduce pollution in drains. Institutions to work closely with to reduce effluent include BSCIC, RMCH and DoE. Working with the farmers themselves through DAE will also impact farming and improve community hygiene practices.

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## **Annex I: Local Governance Milestones since the Pakistan Period**

### *Pakistan Period*

- The Basic Democracies Order, 1959 covered both urban and rural local government. It provided for four tiers: Union Council, Thana Council, District Council and Divisional Council. Breakthrough. Abused for political purpose. Comilla Model - Thana Administration

### *Bangladesh Period*

- Bangladesh President's Order No. 7 of 1972 changed the name of union parishad to union panchayat. President's Order No. 22 of 1973 renamed it as union Parishad.
- Paurashava Act, 1973. Amendment in 1977.
- The Local Government Ordinance, 1976 created Gram Sabha, later named Gram Sarkar.
- The Local Government (Thana Parishad and Thana Administration Reorganization) Ordinance, 1982 introduced Upazila system with elected chairman.
- The Local Government (Union Parishad) Ordinance, 1983 (First Amendment 1993; Second Amendment 1997 - UPs sub-divided into 9 wards)
- The Local Government (Upazila Parishad and Upazila Administration Reorganization (Repeal) Ordinance, 1991
- Creation of the Thana Development Coordination Committee, 1992 with MPs as advisors.
- The Gram Parishad Act, 1997. High Court embargo
- The Upazila Parishad Act, 1998, not yet implemented.

Source: Local Democracy 2007

## **Annex II: Rajshahi City Corporation List of Relevant Laws**

### **Rajshahi City Corporation Laws 1987**

#### **(38 No. Law of 1987)**

This law is updated by the amendment laws and is explained as follows:

1. Rajshahi Pauro Corporation (amendment) ordinance, 1988 (5 no. Ordinance of 1988).
2. Rajshahi Pauro Corporation (amendment) law 1988 (11 no. Law of 1988).
3. The Local Government Laws Amendment Act, 1990 (Act No. LVI of 1990)
4. The City Corporations Amendment Ordinance, 1990 (Ordinance No. XXV of 1990) (Ceased to have effect)
5. The City Corporations Amendment Ordinance, 1991 (Ordinance No. V of 1991) (Ceased to have effect)
6. Rajshahi City Corporation (amendment) ordinance, 1991 (42 No. Ordinance of 1991) (In present withdrawn by 7 No. Law of 1992).
7. Rajshahi City Corporation (amendment) law, 1992 (7 No. Law of 1992).
8. Rajshahi City Corporation (amendment) law, 1993 (9 No. Law of 1993).
9. Rajshahi City Corporation (amendment) law, 1999 (4 No. Law of 1999).
10. Rajshahi City Corporation (amendment) law, 1999 (21 No. Law of 1999).

Clause 75: Responsibility for sanitation –

The Corporation shall be responsible for the sanitation of the City, and for this purpose, it may cause such measures to be taken as are required by or under this Ordinance.

Clause 76: In sanitary buildings -

(1) The Corporation may by notice require the owner or occupier of any building or land which is in any in sanitary or unwholesome state -

- a) to clean or otherwise put it in a proper state;
- b) to make arrangement to the satisfaction of the Corporation for this proper sanitation;
- c) to lime wash the building and to make such essential repairs as may be specified in the notice; and
- d) to take such other steps in regard to such building or land as may be so specified.

(2) If any requirement of a notice issued under sub-section (1) is not complied with, within such period as may be specified in the Notice, the Corporation may cause the necessary steps to be taken at the expense of the owner or occupier, and the cost so incurred by the Corporation shall be deemed to be a tax levied on the owner or occupier under this ordinance.

Clause 77. Removal, collection and disposal of refuse -

(1) The Corporation shall make adequate arrangements for the removal of refuse from all public streets, public latrine, urinals, drains and all buildings and land vested in the Corporation, and for the collection and proper disposal of such refuse.

(2) The occupiers of all other buildings and lands within Corporation shall be responsible for the removal of refuse from such buildings and lands subject to the general control and supervision of the Corporation.

(3) The Corporation may cause public dust-bins or other suitable receptacles to be provided, the Corporation may, by public notice, require that all refuse accumulating in any premises or land shall be deposited by the owner or occupier of such premises or land in such dust-bins or receptacles.

(4) All refuse removed and collected by the staff of the Corporation or under their control and supervision and all refuse deposited in the dust-bins and other receptacles provided by the Corporation shall be the property of the Corporation.

#### Clause 78. Latrines and urinals -

(1) The Corporation may, and if so required by the Government shall, provide and maintain, in sufficient number and in proper situation, public latrines and urinals for the separate use of each sex, and shall cause the same to be kept in proper order, and to be properly cleaned.

(2) The occupier of any premises to which any latrine or urinal pertains shall keep such latrine or urinal in a proper state to the satisfaction of the Corporation and shall employ such staff for the purposes as may be necessary, or as may be specified by the Corporation.

(3) Where any premises are without privy or urinal accommodation, or without adequate privy or urinal accommodation, or the privy or urinal is on any ground objectionable, the Corporation may by notice require the owner of such premises,-

- (a) to provide such, or such additional privy or urinal accommodation as may be specified in the notice;
- (b) to make such structural or other alterations in the existing privy or urinal accommodation as may be so specified;
- (c) to remove the privy or urinal; and
- (d) where there is an underground sewerage system, to substitute connected privy or connected urinal accommodation for any service-privy or service-urinal accommodation.

#### Clause 83. Hospitals and dispensaries -

(1) The Corporation may, and if so required by the Government shall, establish and maintain such number of hospitals and dispensaries as may be necessary for the medical relief of the inhabitants of the City, and the people visiting it.

(2) Every hospital and dispensary maintained by the Corporation shall be managed and administered in such manner as may be prescribed.

(3) Subject to any directions that may be given in this behalf by the Government, every hospital and dispensary maintained by the Corporation shall be provided with such drugs, medicines, instruments, appliances, equipments, apparatus and furniture in accordance with such scale and standards as may be prescribed.

#### Clause 85. Water supply -

According to the clause of 85,

1. Rajshahi City Corporation will provide a supply of sufficient quantity of fresh water for public and private purposes to the respective area of Rajshahi City Corporation subject to any law for the time being in force.
2. The Corporation may, and if so required by the Government shall, in the prescribed manner, frame and execute a water-supply scheme for the construction and maintenance of such works for the provision, storage and distribution of water as may be necessary.
3. Where a piped water supply is provided, the Corporation may supply water to private and public premises in such manner and on payment of such charges as the by-laws may provide.

Clause 86. Private sources of water supply -

- (1) All private sources of water within the City shall be subject to control, regulation and inspection by the Corporation.
- (2) No new well, water-pump or any other source of water for drinking purposes shall be dug, constructed or provided except with the sanction of the Corporation.
- (3) The Corporation may by notice require the owner or any person having the control of any private source of water-supply used for drinking purpose,-
  - (a) to keep the same in good order and to clean it from time to time of silt, refuse and decaying matter;
  - (b) to protect the same from contamination in such manner as the Corporation may direct; and
  - (c) if the water therein is proved to the satisfaction of the Corporation to be unfit for drinking purposes, to take such measures as may be specified in the notice to prevent the use of such water for drinking purposes.

Clause 87. Drainage -

- (1) Subject to any law for the time being in force, the Corporation shall provide an adequate system of public drains in city area and all such drains shall be constructed, maintained, kept, cleared and emptied with due regard to the health and convenience of the public.
- (2) Every owner or occupier of any land or building within City may, with the previous permission of the Corporation, and subject to such terms and conditions, including the payment of fees, as the Corporation may impose, cause his drains to be emptied into public drains.
- (3) All private drains shall be subject to control, regulation and inspection by the Corporation, and the Corporation may, in such manner as the by-laws may provide, require the provision, alteration, covering, clearing and closing of private drains.

Clause 88. Drainage schemes -

- (1) The Corporation may, and if so required by the Government shall, prepare a Drainage Scheme in the prescribed manner for the construction of drains at public and private expense, and other works for the effective drainage and disposal of sludge.
- (2) A Drainage Scheme prepared under sub-section (1) shall be submitted for approval to the Government, which may approve it, reject it, or approve it subject to such modifications as it may deem fit.

(3) The Drainage Scheme as approved by the Government shall be executed and implemented in such manner, within such period and by such authority as may be specified by the Government.

(4) The Corporation may by notice require the owner of any building or land within the City-

(a) to construct such drains within the building or land or the street adjoining such building or land as may be specified in the notice;

(b) to remove, alter or improve any such drains; and

(c) prohibit, by public notice, the use by the public for any of the said purposes of any place not so set apart.

