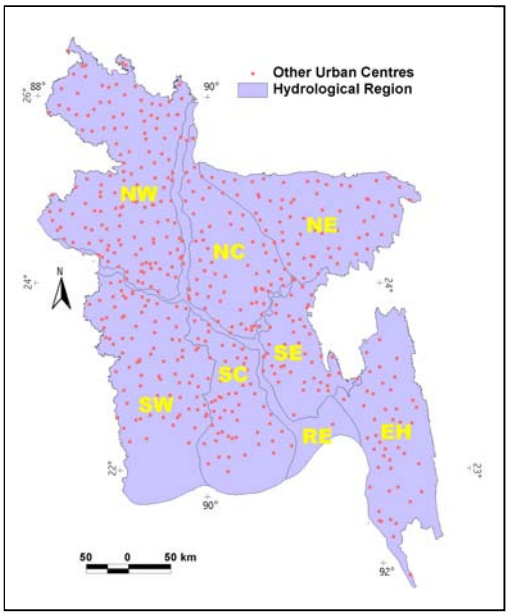
Large and Small Town Stormwater Drainage Ref: **TR 008**

Basic Data

NWMP Sub-sector **Towns and Rural Areas**

Region(s) **Nationwide**



Relevance to NWPo

There are no specific policy statements on stormwater drainage in the NWPo. However, there are subsidiary references which indicate that the NWMP should take full account of the need for efficient urban drainage networks to evacuate storm flows and reduce the impact of flood events.

Purpose of Programme

There are 522 towns (1991 Census) throughout the country: 44 large towns (more than 50,000 people) with a total population of 9.8 million in 2000; and 478 small towns (less than 50,000 people) with a combined population of 4.2 million. The total population of all towns (large and small) is expected to increase five-fold in the next 50 years, from nearly 14 million in 2000 to 36 million in 2025 and 67 million by 2050. Current estimates indicate that 35% of town populations are classified as living in poverty. At present, NWMP data indicate that 134 towns (26% of the total) are served with some form of stormwater drainage facilities, but most are inadequate and in poor condition with little or no regular maintenance. Natural drainage watercourses, concrete open channels and culverts are frequently blocked due to poor management of municipal solid waste and other debris. In addition, many stormwater drainage networks need substantial upgrading and effective planning to cope with future growth in the Large and Small Towns.

The programme will consist of upgrading and new stormwater drainage facilities in 388 Large and Small Towns throughout the country. Final option selection will depend on local conditions and requirements in each town, including:

(a) gravity or pumped systems;
(b) open or covered drainage networks; and
(c) need to set aside low lying areas for stormwater retention to reduce peak flows.

In all cases, it is envisaged that low cost and minimal maintenance solutions will be adopted. Many of the towns are expected to grow significantly over the next 25 years, so improved provision of stormwater drainage will be required. Effective urban planning should also take account of the needs and views of the poor who could be actively encouraged to participate in basic maintenance of the drainage networks.

Programme Outline

The rehabilitation, improvement and extension of stormwater drainage systems in the Large and Small Towns will be a continuous programme throughout the 25 years of the NWMP. The indicative breakdown by region is as follows:

Region	No of Towns	Towns with Stormwater Drainage		Towns Requiring Stormwater Drainage	
		No	%	No	%
North East	66	15	23	51	77
North Central	67	15	22	52	78
North West	151	41	27	110	73
South West	86	27	31	59	69
South Central	53	16	30	37	70
South East	48	12	25	36	75
Eastern Hills	46	8	17	38	83
Rivers and Estuary	5	0	0	5	100
Total	522	134	26	388	74

For planning purposes, the NWMP assumes the following targets for the completion of the stormwater drainage programme for Large and Small Towns: 25% by 2005; 40% by 2010; and 75% by 2025.

Financing Arrangements

The investment requirements will be funded by GoB, possibly with international donor assistance.

Local municipal authorities are responsible for the operation and maintenance of urban stormwater drainage facilities. It is essential that this function is carried out diligently and with adequate financial resources if the networks are to operate efficiently, especially in the wet season.

Objectives and Indicators

Objective	Suffix	Indicators/Means of Verification	Due
• Stormwater drainage programme prepared and agree	I1	• Signed programme/project documents	2005
• Stormwater drainage programmes implemented	I2	• Programme/project completion reports	2025
• Stormwater drainage installed in all large and small towns	K	• Survey reports	2025
• Large and small towns protected from flooding and stormwater run-off	D	• Duration of inundation	2025

Institutional Arrangements

Under existing institutional arrangements, the Bangladesh Water Development Board (BWDB) will be responsible for the planning, construction and maintenance of flood protection works in the large and small towns. In the planning and implementation stages, it is important that local communities and other stakeholders are consulted; and that any population resettlement is properly planned and carried out in a fair and appropriate manner.

In future, it is essential that BWDB carries out effective and appropriate maintenance on all flood protection works in order to ensure the integrity and security of the individual facilities. GoB and the local municipal governments will need to guarantee that BWDB has adequate annual financial resources to carry out this task. There is an opportunity for community-based organisations in the vicinity of the main flood defences to participate in these activities, providing BWDB provides expert supervision.

Local government will be the main agencies responsible for the implementation of the programme, with the support of the Ministry of Local Government, Rural Development and Co-operatives (MoLGRDC) and the Local Government Engineering Department (LGED). It is also important that local government inter-links the programme with its parallel responsibilities for supervision and enforcement of planning and building regulations to:

(a) ensure that private developers and public agencies include appropriate drainage facilities;
(b) prevent encroachment on open drains and water bodies, and infilling of natural water courses; and
(c) improve municipal solid waste management, collection and disposal.

In the poorer urban areas, local government actively encourage the participation of community based organisations and NGOs to plan, construct and maintain local drainage facilities.

Adequate maintenance, including structural repairs and regular cleaning (especially before and during the rainy season), is essential if existing and future drainage systems are to work efficiently and effectively for all inhabitants, especially among the urban poor. Local government should actively develop a strategy which involves maintenance contracts with the private sector and community-based organisations.

References and Documentation

(a) Chapter 7, Development Strategy Report, March 2001
(b) National Water Resources Database in WARPO

Linkages

The development programme to augment and improve stormwater drainage systems in the Large and Small Towns should be linked and co-ordinated with other NWMP programmes, namely:
(a) BWDB Capacity Building (ID 010);
(b) Disaster Management Bureau Capacity Building (ID 008);
(c) Capacity Building for Other Organisations (ID 009);
(d) Support to the Preparation of New Legislation (EE 001);
(e) Water Resources Legislation - Preparation of Supporting Ordinances (EE 003);
(a) Field Testing & Finalisation of Guidelines for Participatory Water Management (EE 006);
(b) Raising Public Awareness in the Wise Use and Management of Water (EE 010);
(c) Large and Small Towns Water Supply and Distribution Systems (TR 003);
(d) Large and Small Towns Sanitation and Sewerage Systems (TR 005);
(e) Large and Small Towns Flood Protection (TR 007);
(f) National Clean-up of Existing Industrial Pollution (EA 002);
(g) National Pollution Control Plan (EA 001);
(h) National Water Quality Monitoring (EA 003); and
(i) Public Awareness Raising and Empowerment in respect of Environmental Issues (EA 010).

The Inventory and Asset Management Plan of the Water and Sanitation Sector (MC 001) is also relevant here.

In addition, planning and implementation should be co-ordinated with the respective Local Government authorities (District towns, Paurashavas (municipalities), Upazila headquarters and urban growth centres), Ministry of Local Government, Rural Development and Co-operatives (MoLGRDC), Public Health Engineering Department (DPHE), Local Government Engineering Department (LGED), Urban Development Directorate (UDD), Ministry of Health (MoH), Ministry of Industry (MoI), Department of Environment (DoE), WARPO, NGOs and other interested parties.

Risks and Assumptions

Risks associated with the implementation of the stormwater drainage programme are institutional, financial and social.

The institutional risks are that local government will continue to under-perform in this sector due to inadequate funding, lack of enforcement of planning regulations and poor management. These limitations can be overcome with:
a secure pipeline of funds for capital works and maintenance;
more effective commitment to and enforcement of planning regulations;
effective solid waste management; and
active involvement of community-based organisations.

Financial risks relate to the possibility that adequate funds will not be forthcoming for the programme itself and appropriate regular maintenance. Local government, in partnership with the responsible agencies, must address this issue to ensure that the necessary funds are committed in accordance with the NWMP strategy.

The social risks are that poor and disadvantaged groups in the large and small towns will be neglected not only in terms of adequate drainage but also the lack of planned settlement and slum upgrading schemes which will limit encroachment over drains and natural water courses. These risks can be mitigated by a more inclusive approach to planning and implementation of drainage facilities which involves consultation and active participation in both construction and maintenance.

Assumptions:
Materials used for construction of new systems will give the assumed working lives.
Construction of new systems is adequately supervised so as to minimise future operation and maintenance.
Technical skills will be adequate to enable the efficient and effective O & M of the drainage systems.
The operating utility will be able to run the storm function without political interference.
Full cost recovery is affordable.
Environmental risks can be successfully mitigated.

Large and Small Town Stormwater Drainage

Ref : **TR 008**

Cluster :	**Towns and Rural Areas**	Region(s) :	**All**
Focus/Foci :	**Stormwater Drainage**	Location :	**Nationwide**
Start Year[1] :	**2003** Duration[2] : **25 year(s)**	Agency(s) Responsible :	**Paurashavas** (Lead) **LGIs** (Supporting)
Short Description :	§4.6 says that "Lack of proper sanitation and drainage facilities, …. are the primary causes of diseases in the urban areas". Storm water drainage is an increasing problem in urban areas, as the construction of buildings and paved areas has progressively increased run-off. At the same time, pressures on land has caused natural drainage channels to be filled in and built upon. Encroachment on watercourses and water bodies has progressively reduced natural drainage. No urban areas have adequate storm drainage at present. This programme provides resources for a nationwide installation/upgrading and maintenance of stormwater drainage facilities in large and small towns. These will most probably be gravity systems which although cost-effective, will require regular adequate maintenance.		

MIS Links

Cost Calculation :	TR Programme costing.xls	Map :	TR 008 Map.jpg
Disb't Schedule :	TR Programme costing.xls	Description :	TR 008 PgP.doc

Finance

	Costs		Private	Funding (%) GoB	Beneficiaries	Expected by ProgrammeYear
Total Capital[3]	**64,000.00**	MTk	**0%**	**100%**	**0%**	**25**
Ultimate Recurring	**7,040.00**	MTk/yr	**n/a**	**50%**	**50%**	**26**

Date of Data : **31** (dd) **07** (mm) **01** (yy)

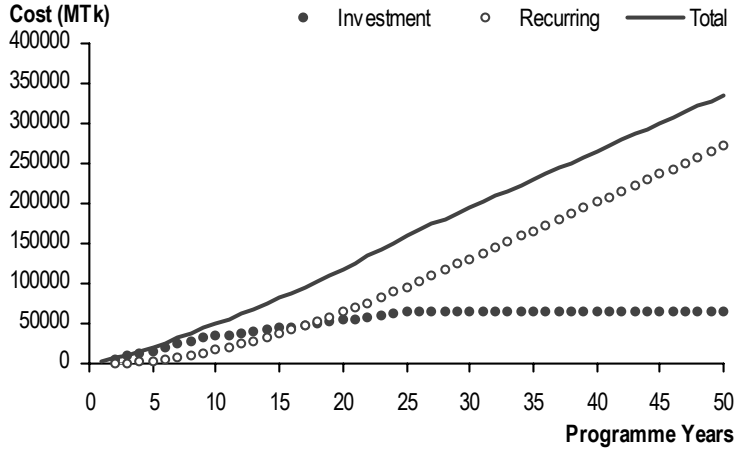
Status : **Identified**

Financial Base Year: **mid-2000**

Planned Expenditure (to date) : **0** MTk

Actual Expenditure[4] (to date) : **0** MTk

Stacked Cumulative Cash Flow Chart



Monitoring

Objective	Indicator	Present Status[5]
• Stormwater drainage programme prepared and agree	• Signed programme/project documents	NYD
• Stormwater drainage programmes implemented	• Programme/project completion reports	NYD
• Stormwater drainage installed in all large and small towns	• Survey reports	NYD

Notes : 1. Indicative 2. Until commissioning 3. Inclusive of planning, design ,supervision 4. For future monitoring purposes and NWMP updates
5. Present Status keys: NYD- Not yet due, IP- In progress, D- Done

National Water Management Plan

Programme Costing Sheet

Programme Ref	**TR 008**
Title	**Large and Small Town Stormwater Drainage**

Assumptions:

Taka/US$ 51.000 | TA duration 0.0 years | Investment duration 25.0 years | All prices in mid-2000 values

Item	Unit	Quantity	Rate US$	Rate Tk'000	Amount TkM	O&M %	O&M/yr TkM
Technical Assistance							
Expatriate consultants (all-in rate)							
Senior National consultants (all-in rate)							
Mid-level National consultants (all-in rate)							
Sub-totals							
Other general TA programme costs							
Specific other TA programme costs							
Total TA Costs							
TA costs for this programme are included in the capital costs							
Investment items - short term							
Gravity and pumped drainage infrastructure					12,000.0	*11.0%*	1,320.0
Investment items - term							
Gravity and pumped drainage infrastructure					20,000.0	*11.0%*	2,200.0
Investment items - short term							
Gravity and pumped drainage infrastructure					32,000.0	*11.0%*	3,520.0
Total Investment Items					**64,000.0**	***11.0%***	**7,040.0**
Overall Programme Costs					**64,000.0**		**7,040.0**