



REPUBLIC OF GHANA

TEMA MUNICIPAL ASSEMBLY

**TOWN ENVIRONMENTAL SANITATION DEVELOPMENT
PLAN
- OYIBI -**

FEBRUARY, 2008.

EXECUTIVE SUMMARY

This Oyibi Town Environmental Sanitation Development Plan (TESDP) provides a non-technical summary of the various remedial actions required to improve on observed poor environmental services.

This plan derives much of its information and data, and therefore its focus from the preliminary results of the Environmental Sanitation Assessment and Audit sponsored by the Community Water and Sanitation Agency –Greater Accra Region (CWSA-GAR) for four towns in three districts of the Greater Accra Region – Oyibi (Tema Municipal Assembly, TMA), Abokobi (Ga East District Assembly, GEDA), Dawa and Asutsuare (Dangme West District Assembly, DWDA).

The TESDP closely follows the generic format prepared for use by cities under the Urban Environmental Sanitation Project series (UESP-I and UESP-II), aspects of the Guidelines for Preparing Waste Management Plans published by the Environmental Protection Agency (EPA) and MLGRDE, and the Operational Manual for Planning, Budgeting, Monitoring and Evaluation, for Water and Environmental Sanitation prepared by the National Development Planning Council (NDPC) and the Community Water and Sanitation Agency (CWSA).

Following basic tenets of strategic planning, this initial TESD planning is a dynamic process and the plan will evolve as experience is gained and the required accompanying institutional structures improve.

This plan covers five main components of an integrated scheme for improving (i) storm-water drainage and sullage conveyance, (ii) excreta management, (iii) refuse collection and transport, (iv) wetland management and (v) management support for implementation.

The sub-projects to be considered under the first package of this plan form part of the iterative process of developing TESDP for Oyibi. All sub-projects will be implemented by the TMA through its relevant departments and units- the Municipal Planning Coordinating Unit (MPCU and Municipal Water and Sanitation Team, MWST) as well as the Environmental Health Management Department (EHMD), and Municipal Works Department (MWD) and the Katamanso Zonal Council (KZC).

The pilot under Excreta Management will be facilitated by CWSA-GAR and the drainage scheme will be facilitated by TMA with support from the Hydrological Services Department (HSD) with inputs from the Department of Feeder Roads (DFR).

The Municipal-Based Water and Sanitation (DBWS) component of the GoG/Danida-Water and Sanitation Sector Support Programme Phase 2 (WSSPSII) will finance the pilot of Excreta Management up to US\$ 13,550 as part of CWSA-GAR's on-going work (see details in accompanying Summary of Sub-projects and Financing plan).

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1 INTRODUCTION

The purpose of this strategic Town Environmental Sanitation Development Plan (TESDP) for Oyibi, which covers the period 2008-2015, is to set out a strategy for improving Oyibi's environmental conditions by gradually and incrementally reducing the poor environmental burden due to indiscriminate disposal and littering of refuse. The focus and direction of this plan is influenced by the results of the environmental sanitation assessment and audit carried out in Oyibi as part of preparatory activities. The TESDP is strategic in nature in the sense that it covers all the key categories of environmental sanitation and identifies the facilities needed to provide comprehensive services under each component; describes the implementation and financing arrangements for each component; and sets priorities for achieving the overall goal of the relevant sector policy, as well as plans and/or programmes of the Tema Municipal Assembly (TMA).

To implement this strategy TMA will (i) establish/strengthen its Environmental Health and Management Department; (ii) systematically improve data gathering for development planning; (iii) promote provision of services by the private sector, where viable; and (iv) secure financing to improve drainage and watershed management, refuse management as well as for a mix of household, and public facilities to serve the town. In all the interventions sustainable operations and management will be important considerations, particularly, ensuring payment for recurrent costs of services.

The plan differs from a traditional District Water and Sanitation Plan (DWSP) or a master plan in that it (i) tailors recommended technical options to each type of housing area in the town, (ii) considers user preferences and willingness-to-pay, (iii) uses a planning horizon of 10-15 years, while emphasizing actions that can be taken now, and (iv) breaks the overall plan into project components that can be implemented independently but which together provide the whole range of environmental sanitation services to achieve the overall aim of health improvement.

For this very first attempt at preparing a TESDP for Oyibi, a planning frame of 2008 – 2015 is employed to be consistent with MDGs.

The intent is to gradually introduce a means of providing integrated interventions and begin to address the issues confronting Ghana's small and medium-large towns that have similar challenges as cities but hitherto do not receive adequate attention. The plan endorses the use of a range of proven technologies which address the needs of all segments of the urban population, recognizing resource constraints, and paying due attention to willingness and capacity of users to pay for improved services.

Box 1.1: Strategic ESDP Elements

- Medium term planning horizon 10 – 15 years
- Strategic focus to meet overall goal of policy, plan or programme
- Focuses on integrated development of interventions
- Defines priority interventions over short term for remedial actions and improving on plan requirements e.g. *start-up years*' (1-3 years) projects, studies and institutional restructuring
- Considers all related sectors under environmental sanitation and requires inter-agency collaboration, coordinating unit or department in DA responsible for environmental sanitation

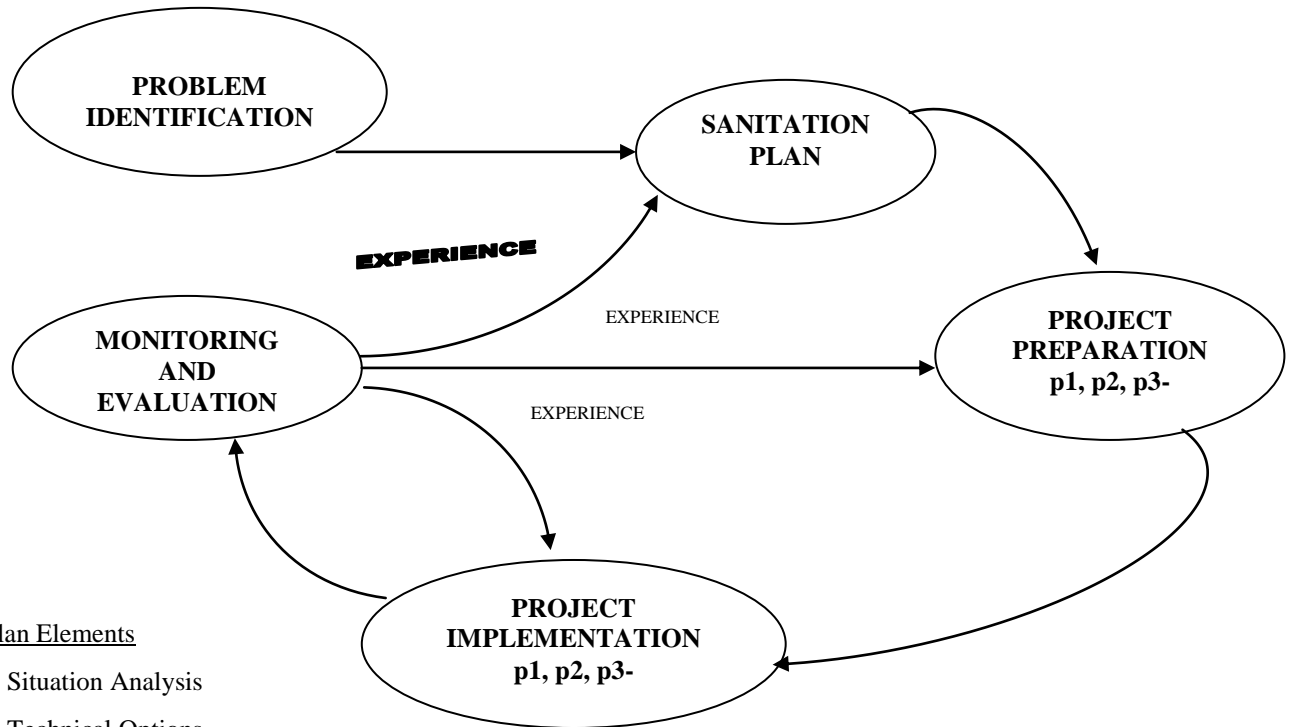
Box 1.2: DWSP Elements

- Short-term planning horizon typically 1-3 years, with annual roll-over delivery
- Focuses on single facility (commodity) e.g. water and related hygiene and sanitation
- Developed/Facilitated by one sector agency to aid project specific outputs e.g. CWSA
- Project based and often end as plan for distribution of facilities based on demand
- Often Relies on project-type implementation for delivery of outputs e.g. MWST

Box 1.1 & 1.2: Comparison between elements of Strategic ESDP and DWSP

Priorities change with time and strategies will be redefined as experience is gained. Accordingly, the TESDP will be updated regularly with gradually improving data on services and coverage. This iterative process is shown in Figure 1.1.

Figure 1.1 THE STRATEGIC SANITATION PLANNING PROCESS



Plan Elements

- Situation Analysis
- Technical Options
- Financial Options
- Institutional Options
- Implementation Strategy

2 SITUATION ANALYSIS

PROFILE OF OYIBI

2.1 Location

Oyibi is located 40km from Accra off the Adenta-Dodowa Highway within the Tema Municipal Assembly with a projected current population of about 1,568.

2.2 Institutions and Services

These include schools, churches, mosque and health post

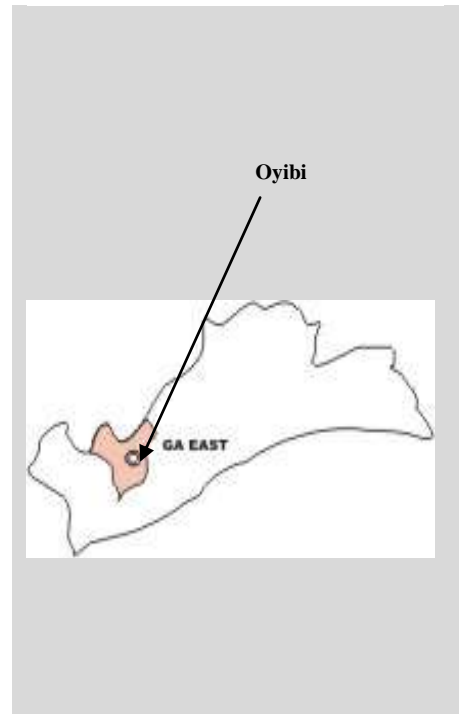


Table 2.1 Population Projection

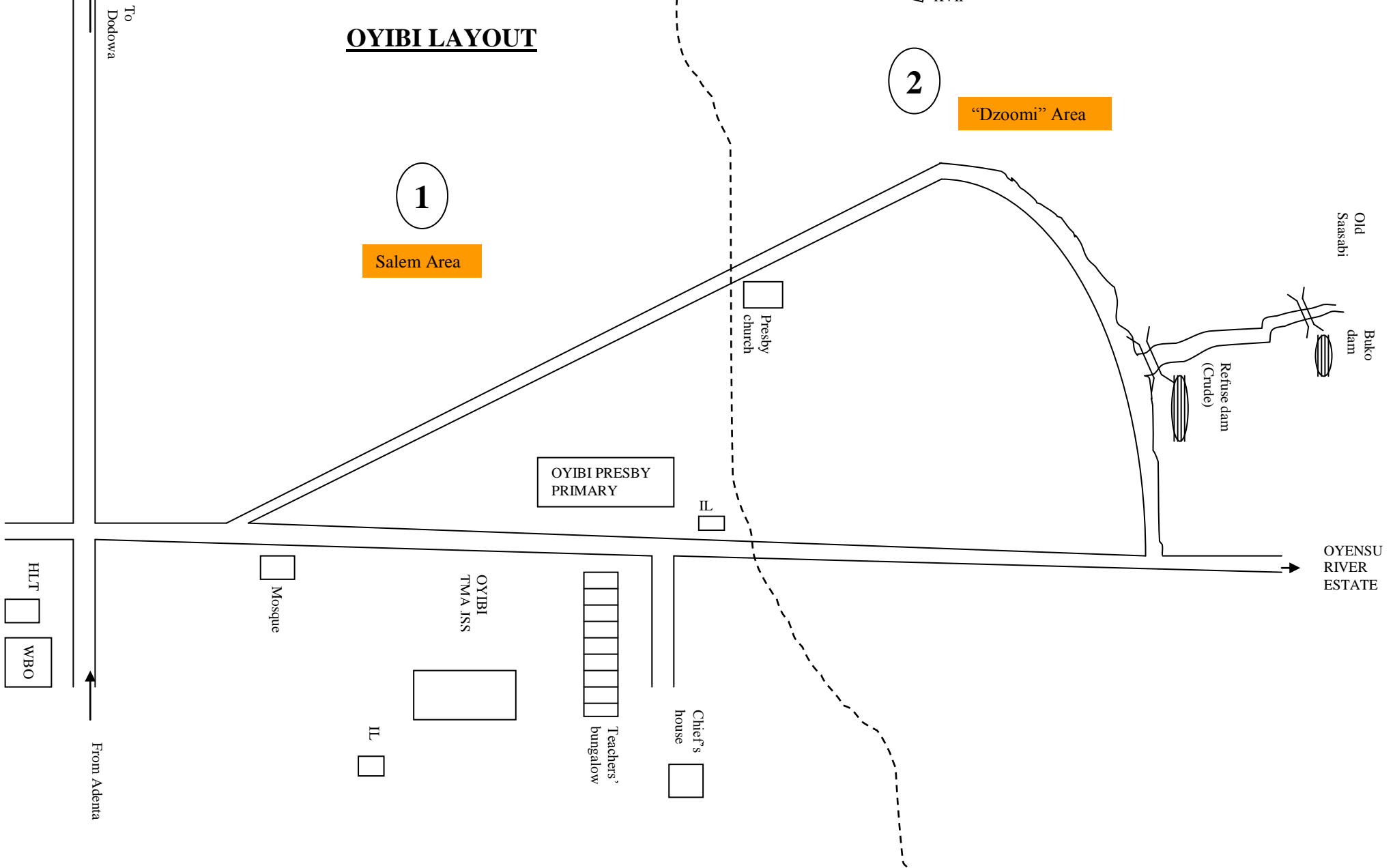
Town	Growth Rate (%)	2000	2007	2015
Oyibi	2.7	1,160	1,568	2,213

COMMUNITY PROFILING FORM OYIBI

ENVIRONMENT CATEGORY	DESCRIPTION
WATER SHED MANAGEMENT	<ul style="list-style-type: none"> • Storm water runoff into Buko Dam. Swine contamination • Human activities ie bathing and fishing during festivals (shrine) • Lack of protection with vegetative cover
WATER SUPPLY	<ul style="list-style-type: none"> • Existing six (6) stand pipes supply water from Old Saasabi and Kpone Seduase pumping stations powered by diesel engine under the Oyibi Area Water scheme board • Water is connected to houses at the estates only; other premises fetch from public stand pipes. • Raw water consumption from Buko Dam
WASTE WATER DISPOSAL	<ul style="list-style-type: none"> • Waste water from bathrooms disposed mainly through shallow earth channels and use of catch pits which serve as breeding grounds for mosquitoes • Few houses have constructed soakaway pits.
LIQUID WASTE DISPOSAL	<ul style="list-style-type: none"> • One old 12 seater public toilet with offensive odour nuisance • Very few household have toilet facilities hence the incidence of indiscriminate defeacation.
SOLID WASTE DISPOSAL	<ul style="list-style-type: none"> • Crude dumping site • Indiscriminate dumping behind premises attracting swine, rodents and insects of public health importance.
STORM WASTE DISPOSAL	<ul style="list-style-type: none"> • Predominant erosion which has lead to the exposure of sections of water lines. • Lack of drains • Defective and poorly constructed culverts and stagnation of runoff water
PROMINENT FEATURES	<ul style="list-style-type: none"> • Oyibi Area Water Supply Scheme • Accra Grammar School • Cemetry in the middle of community
FOOD SECURITY AND SAFETY	<ul style="list-style-type: none"> • Peasant farming inadequate to feed residents • Processing of farm produce pepper on bare ground • Food items purchased from madina, dodowa somanya, Accra markets etc • Market days proposed but market yet to be constructed

ENVIRONMENTAL SCAN OYIBI COMMUNITY

STRENGTH	WEAKNESSES	OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • High population density (10,000 inhabitants. • Vibrant chief and Assembly member • Availability of land for infrastructural development and farming. • Human resource development at the estates and valley view university 	<ul style="list-style-type: none"> • Mass Unemployment • Lack of commercial activities. E.g. no market stalls; lorry park etc 	<ul style="list-style-type: none"> • Location of valley view University • Oyibi area water scheme • Police station • Health centre • Springing up of estate development e.g. Ayensu estates KAS estates Paradiso estates • Connected to National grid. 	<ul style="list-style-type: none"> • Poor road network • Lack of storm drains • Lack of sanitary facilities ie only one public KVIP toilet facility; no communal refuse containers • Lack of electricity at the only health centre eg vaccines may loose its potency etc. • Location of health centre (2km from community) • Lack of access road to health centre to cater for emergencies • High overhead expenditure in operation and maintenance (oem) of Oyibi area water scheme pump house



3 OVERVIEW OF ENVIRONMENTAL SANITATION

3.1 Stormwater Drainage and Sullage (grey-water) Conveyance

Oyibi is generally a high lying area with no drainage systems and experiences severe erosion after rains. Poor drainage has led to the formation of deep gullies and in some cases exposed water transmission lines. To compound the problem of storm water conveyance, the few existing culverts in the town are heavily silted

Wastewater generated from households are not properly disposed of. As a result wetlands and shallow depressions serve as options for sullage disposal.

3.2 Excreta (Faecal liquid waste) Management

From the Environmental Sanitation Assessment and Audit, about 18.2 percent of residences in Oyibi have home latrines. 17.6 percent of inhabitants resort to the bush, 19.4 percent, use facilities of their neighbours and 44.8 percent use public toilets.

Public latrines in Oyibi are in a deplorable state due to poor maintenance. This situation explains the slow emergence of the practice of defecating in the bush which if not checked will further aggravate the already unhealthy situation.

Public Sanitation Facilities: A unique feature of sanitation in Oyibi, as in other small towns, is the reliance on public latrines, as some 44.8 percent of the population depends on these facilities. But for the currently deplorable state of the only public toilet available, the dependency state would have been higher.

School Sanitation: There is one primary (Oyibi Presby) and one junior secondary school in Oyibi. Each of these schools has been provided with an 8 seater institutional KVIP sponsored by CWSA-GAR.

3.3 Watershed Management

The lack of drainage and conveyance facilities and a means of effective management of debris and silt from the undulating terrain of Oyibi mean that all surface runoff, sullage and faeces, all end up finally in the Buko Dam.



Plate 1: Exposed water supply pipelines due to severe erosion..



Plate 2: : Old dilapidated 12 seater KVIP.



Plate 3: : Faecal matter floor of privy rooms.



Plate 3: Buko dam-A source of water for some residence with vegetation growth

3.4 Solid Waste Management

Institutional, technical and financial constraints hinder efficient solid waste management in Oyibi. Uncontrolled dumping at open community spaces (due to the absence of communal containers) is common.



Plate 4: Uncontrolled dumpigng

3.5 Water Supply

For the purposes of completeness, the status of water supply situation is described here (as captured by the environmental sanitation audit) to provide the outlook of Oyibi town supplies with expected improvement and the consequent wastewater that will be generated.

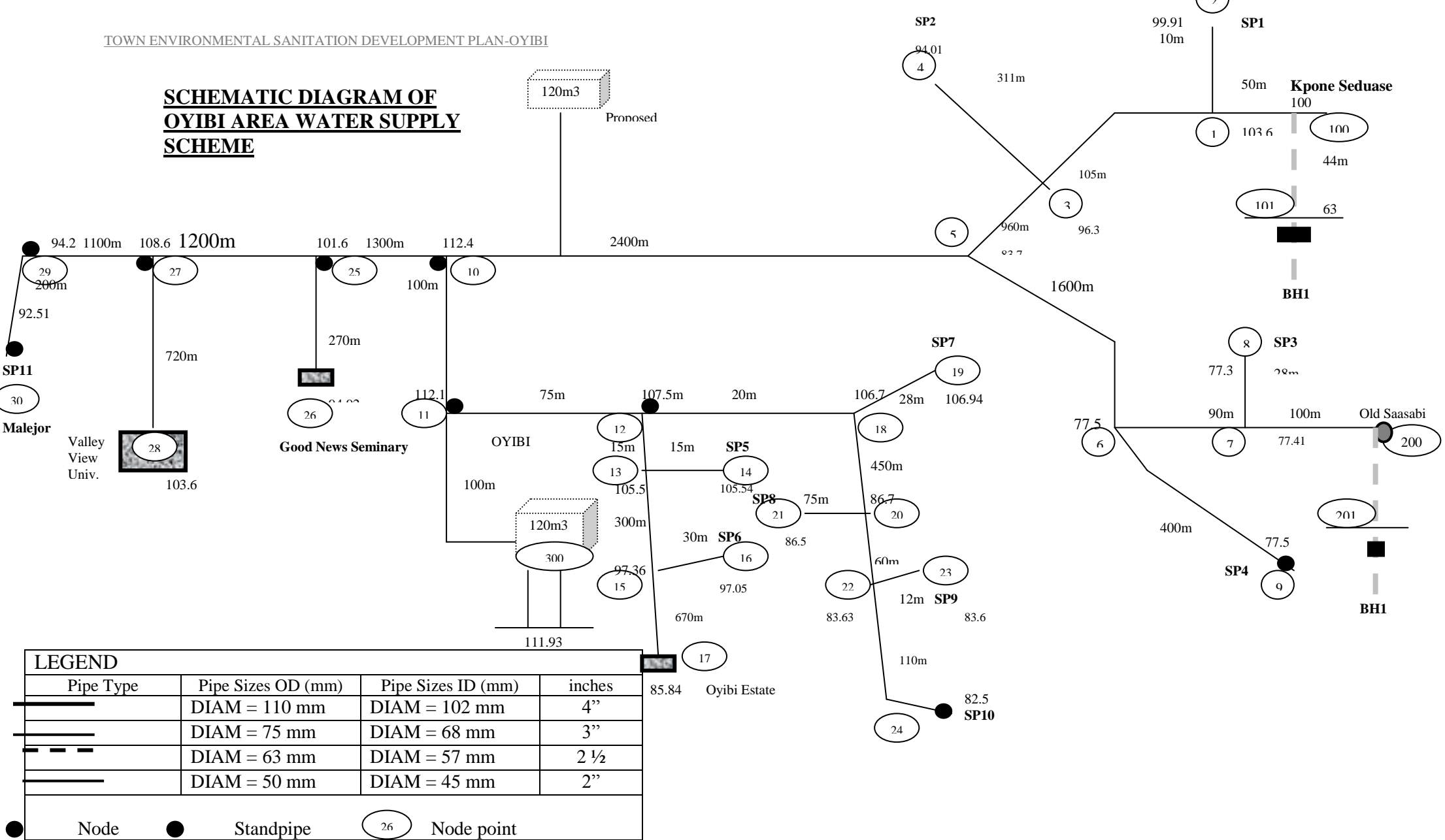
The Greater Accra Region Community Water and Sanitation Agency, with support from DANIDA and in collaboration with the TMA, drilled a high yielding production borehole each at Kpone Seduase and Old Saasabi in 2002. Communities and institutions within the supply area of the Oyibi Area Water Supply Scheme include Old Saasabi, Oyibi, Kpone Seduase, Malejor, Oyibi Estates, Good News Theological College and Seminary, Valley View University, Mensah Bar and New Saasabi.

The Oyibi Area Water Supply Scheme was designed as a “floating system”. Here, the pump input is equal to the maximum daily demand and the reservoir is sited at the highest elevation in the system making up the difference between the pumped input and peak demand. The reservoir has a capacity of 120m³/day and is elevated about 6.0m above ground.

The two boreholes have safe yields of 11.88m³/hr and 9.72m³/hr for Old Saasabi and Kpone Seduase respectively. These boreholes are installed with SP 14A-18 and SP 14A-13 Grundfos submersible pumps at Old Saasabi and Kpone Seduase respectively with a pumping regime of approximately 13 hours each.

The transmission and distribution systems consist of a network of pipeline of varying sizes between 100mm and 200mm in diameter. The system is linked to 11 standpipes with bulk supply for institutions/housing estate within the catchment area. There also exist some number of air isolating valves and washout valves within the system set up.

SCHEMATIC DIAGRAM OF OYIBI AREA WATER SUPPLY SCHEME



LEGEND			
Pipe Type	Pipe Sizes OD (mm)	Pipe Sizes ID (mm)	inches
	DIAM = 110 mm	DIAM = 102 mm	4"
	DIAM = 75 mm	DIAM = 68 mm	3"
	DIAM = 63 mm	DIAM = 57 mm	2 1/2"
	DIAM = 50 mm	DIAM = 45 mm	2"
	Node		Standpipe
			Node point

4 SERVICES IMPROVEMENT PROGRAMME

4.1 Minimum Service Standards

The overall service goal is the provision of improved environmental sanitation facilities to serve the whole of Oyibi. To reduce the environmental burden and enhance the quality of residents of Oyibi, the following policies, guidelines and service standards as well as those to be developed by relevant authorities from time to time, will be adhered to:

Environmental Assessment Regulations, LI1652, June 1999, EPA

Manual on Health Promotion, December 2001, MLGRD

Management of Environmental Sanitation Services Guidelines, March 2002, MLGRD

Manual on Prosecution, May 2002, MLGRD

Best Practice Environmental Guidelines Series No.1, Ghana Landfill Guidelines, July 2002, EPA/MLGRD

Best Practice Environmental Guidelines Series No.2, Guidelines for the Management of Health Care and Veterinary Waste in Ghana, July 2002, EPA/MLGRD

Best Practice Environmental Guidelines Series No.3, Manual for the Preparation of District Waste Management Plans in Ghana, July 2002, EPA/MLGRD

Manual on Environmental Health Inspections, October 2002, MLGRD

Management of Public Toilets Guidelines, January 2003, MLGRD

Environmental Sanitation Services Monitoring Guidelines, January 2003, MLGRD

Manual for the Operation of Septage Treatment Plants, May 2003, MLGRD

Operational Manual for Planning, Budgeting, Monitoring and Evaluation, Water and Environmental Sanitation, December 2004, NDPC/CWSA

Guidelines for Small Town Systems, 2005, CWSA

4.2 Drainage and Sullage (grey-water) Conveyance Improvement Scheme

In Oyibi, the priority intervention for drainage and sullage conveyance is promoting the construction of roadside drains along the road that leads into the town and soakpits.

From field observations one of the critical factors of the poor drainage situation in Oyibi is the lack of drainage structure and the poor construction and maintenance of existing culverts. A limited study of possible remedial actions for improving drainage will be carried out and it will include the institution of a community-level operation and maintenance management.

4.3 Excreta Management (faecal liquid waste) Improvement Programme

The Town Environmental Sanitation Plan is a comprehensive plan for providing improved household sanitation services to the entire Oyibi township covering homes, institutions and public facilities.

Home Latrine Promotion Programme: under this programme, TMA will support vigorously household latrine promotion in collaboration with key social partners. User education and establishment of community participation framework (Community-Led Total Sanitation, CLTS) using the Water and Sanitation Development Board (WSDB) as core group will be pursued. The enforcement of bye-laws by TMA, particularly, those concerning the construction of latrines by

landlords will be appropriately applied. Awareness raising and hygiene education will be supported through the Sub-district Environmental Health Office.

Funds for the training of artisans and the construction of squat slabs will be generated from special sanitation promotion fund to be created by TMA from DACF and other sources. TMA will investigate how to harness the dominance of the Oyibi WSDB to implement the latrine promotion programme. It is essential that the methods used in previous interventions be studied to afford copying for replication. Therefore the on-going DBWSC mode of latrine promotion will be adhered to until the expiry of that programme in 2008.

School Sanitation and Hygiene Education: as part of this programme an assessment of the SHEP programme will be carried out to find out its effectiveness in schools. The SSHE programme is aimed at improving the conditions and reinforcing proper sanitation and hygiene behaviours and attitudes through use of improved facilities. Based on the assessment of SHEP effectiveness, Teaching and Learning Materials will be provided as part of re-orientation training of SHEP facilitators.

Public and Neighbourhood Facilities Improvement Programme: This programme is aimed at rehabilitating existing but dilapidated facilities and instituting efficient management of the facilities. To start, there is the need for the rehabilitation of the existing 12 seater public toilet located in Oyibi. This will be complemented by the establishment of private management franchises, as already practiced, for sustainable operation and maintenance management.

4.4 Solid Waste Management Improvement Programme

Currently, secondary storage facilities are not available in Oyibi. To prevent indiscriminate littering and the widespread dumping, there is need for provision of communal storage facilities.

The immediate intervention is to evacuate refuse from communal dump sites and identify appropriate sites for secondary facilities (communal containers). Site improvement will be carried out at each of these sites including restoration of wetland pits.

4.5 Improvement of Wetland Management

The Buko dam which is used by the community during their festival needs to be desilted, fenced and trees planted to improve on its ecological properties. There is the need to explore other benefits of the dam such as conversion into a fish pond for fish farming.

4.6 Programme for Institutional and Management Support

The delivery of the various components of the Town Environmental Sanitation Development Plan and their management depends on improving the capacity of the front-line institutions responsible for the services. As a matter of strategy although financing of the various components may come from different sources, each of these sources will contribute to the implementation of a single, comprehensive and integrated capacity development programme anchored around the Municipal Environmental Health Management Department (including MWST) of TMA and the Katamanso Zonal Council covering Oyibi.

The immediate support will be to strengthen and improve the EHMD in TMA including provision of equipment and refurbishment of offices and the provision of targeted training to its staff.

Relevant staff of GEDA will be given specific training, including the following:

- Training in ESICOME, enhanced enforcement of environmental sanitation bye-laws and prosecution
- Training in Preparation of District Environmental Sanitation Strategies and Action Plans (DESSAPs)
- Health impact profiling and planning for environmental sanitation services
- Project Management etc.

PROGRAMME PACKAGES UNDER THE OYIBI ESDP (2008-2015)

Component 1: Drainage and Sullage Conveyance Improvement Scheme

- Phase 1: - Promoting the construction of soak pits by households
- Phase 2: - Construction of drains to improve storm water conveyance.
 - Provision of drain maintenance equipment

Component 2: On-site Sanitation Promotion Programme

Home latrines

- Promote user education and establishment of community participation framework (through CLTS) around WSDB.

School Facilities

- Provision of Teaching and Learning Materials (TLMs) for hygiene promotion
- Training of School SHEP facilitators

Public Facilities

- Rehabilitation/construction of neighbourhood /public facilities.
- Establishment of private management franchises for operation and maintenance and cost recovery.

Component 3: Solid Waste Management Improvement Programme

- Immediate evacuation of refuse from communal dump sites
- Identify appropriate sites for secondary storage facilities (communal containers) based on housing distribution;
- Provision of communal containers at selected sites;
- Establish improved collection scheme

Component 4: Improvement of Wetland Management

- Desilt Buko dam
- Plant buffer trees and fence Buko dam

Component 5: Management Support

Technical Assistance - including project(s) preparation

Training

- o Training in ESICOME, enhanced enforcement of environmental sanitation bye-laws and prosecution
- o Training in Preparation of District Environmental Sanitation Strategies and Action Plans (DESSAPs)
- o Health impact profiling and planning for environmental sanitation services
- o Project Management etc.

5 INSTITUTIONAL ARRANGEMENTS

5.1 Tema Municipal Assembly (TMA):

In line with National Policy, the TMA will gradually move away from direct provision of environmental sanitation services, and instead will promote active involvement of both communities and the private sector in their delivery. As part of its functions, the TMA will refine and periodically update the TESDP, mobilise resources to implement it, supervise the design and construction of the facilities, oversee service contracts, and set and enforce regulations on waste discharges.

5.2 Environmental Health and Management Department

In line with Local Government Act, 1993 (Act 462) and the Environmental Sanitation Policy the TMA's Waste Management Department (WMD) and the Environmental Health and Management Department (EHMD) are responsible Environmental Protection and Standards Enforcement, Food and Water Hygiene, Environmental Health Promotion, and Wastes Management. The Liquid Waste section will manage the programmes for households (home latrine promotion), public facilities (neighborhoods, and commercial areas), and schools. And the solid waste section will manage the programme for solid waste improvement, sillage and drainage infrastructure. The responsibilities of the two section managers include planning, community liaison, monitoring and evaluation, and the supervision of service contracts. The Environmental Health and Management Department is responsible for promotion of hygiene education and the traditional aspects of premises inspections and enforcement management.

The Municipal Planning Coordinating Unit (MPCU) will coordinate and liaise with CWSA, development partners, NGOs other external agencies and facilitate the rolling out of these programmes during the initial period. The WMD will manage the relevant sub-components of the TESDP such as Excreta Management. The Municipal Works Department will be responsible for all works in support of the WMD.

5.3 Katamanso Zonal Council (KZC)

The KZC will be the first-line institution responsible for dealing directly with the community. The functions, as stipulated, in the Establishment Instrument of the TMA, will include:

Validating data and designs; community mobilization; identification of needs and appraisal of applications for assistance; validating type of on-plot sanitation technologies and their suitability; soliciting community views and comments on capital and, O&M costs of facilities; responsible for managing franchises and quality of services by operators under guidance of WMD and the EHMD; validate completion of projects and programmes; managing participatory monitoring and evaluation of programmes and projects.

5.4 Other Ministries, Departments and Agencies (MDAs)

In order to effectively coordinate the implementation of the various components of Oyibi TESDP, there is need for the involvement of several agencies besides TMA and CWSA-Greater Accra Region as initiators of this plan. As indicated under Section 5, the sources of financing for implementing the TESDP make this essential. The mandates and facilitation roles of CWSA-GAR, EHSD (MLGRDE), and Department of Feeder Roads, and the central implementation responsibility of TMA and its departments need to be presented clearly.

6 IMPLEMENTATION PACKAGES

The facilities required to provide immediate interventions are set out in Table 6.1. As the TESDP evolves and more data becomes available the subsequent years interventions shall be defined to cover up to 2015. The facilities under the various components are grouped into financing packages; the first of which would be what CWSA-GAR will fund. The estimated cost of each package is also given in Table 6.3.

In summary, the total cost of the first package for the Oyibi TESDP is estimated at **US\$ 321,411** out of which **69.2%** would be for remedial intervention to improve drainage, **8.4%** for Excreta (liquid waste management) which includes Home Latrine Promotion (1.2%), neighbourhood and public facilities (7.0%), School Sanitation and Hygiene Education (0.3%). Of the remainder **9.0%** will be for the Solid Waste Improvement Programme, **0.9%** for improvement of wetland and **12.4%** is for implementation and management support. It is expected that TMA will seek financing through its share of DACF and HIPC fund, donor-supported programmes and internally generated funds including household levies.

Table 6.1 Facilities to be provided under the proposed TESDP Financing Packages

Component Description	Total	Package 1	Package 2	Package 3
1. Drainage and Sullage Improvement				
Construction of soakaway pits by houses	125	50	50	25
Construction of secondary drains	2,000	1000	1,000	
2. Excreta (Liquid Waste) Management				
Home Latrine Promotion				
On-plot sanitation in high/medium density areas (No.)	125	50	50	25
Artisan Training and Support to Sanitation Marketing (No.)	5	2	2	1
School Sanitation and Hygiene Educ.				
Provision of TLMs for Hygiene Promotion (No.)	20	10	10	
Training of SHEP Facilitors (No.)	5	2	2	1
Public Facilities Programme				
Neighbourhood latrines (No.)				
Rehabilitate/Construct 1 unit 20 seater KVIP	1	1		
Commercial Area latrines (No.)				
Replace existing facilities				
Construct new facilities				
3. Solid Waste Management				
Develop improved collection programme (No. of Houses)	125	50	50	25
Provide Communal Containers (No.)	2	1	1	
Upgrade Selected sites (No.)	2	1	1	
4. Improvement of Wetland Management				
Desilting the Buko Dam and fencing				

6.1 MA-level Programme Management

While the TESDP is dedicated to Oyibi Township there is need for close administration by the TMA. For the timely updating and further improvement of the TESDP, the TMA shall allocate program management resources to enable its departments bare the extra costs of managing the various components of the plan including hiring of specialist input for carrying out issue-specific studies, appraisals and timely technical and financial auditing. The TMA will ensure that institutional strengthening and capacity building is harmonized and comprehensive to allow

specific programmes buy into it. An amount of \$40,000 is earmarked for the start-up phase (2008) of implementing the TESDP.

Table 6.2 DA-Level Management Support (US '000)

Institutional Strengthening	Total	2008	2009	2010
Project Mgt Support (incl. Consultants)	25	10	10	5
Development/Review of TESDP	30	5	15	10
Capacity Devp. & Training	25	5	10	10
Community Management Framework	15	5	5	5
Refurbishment of EHMD and Sub-Municipal Office	20	10	5	5
Provision of Office Equipment (EHMD/MTC)	15	5	5	5
Total	130	40	50	40

Note: Development/review of TESDP include preparation of drainage plan, developing Community Management Framework (for the AAC) & other studies

Specific Studies: as part of the implementation of the first package of the TESDP, a number of issue-specific studies will be carried out. To respond to the immediate needs of Oyibi the following studies will be carried out. In addition the status of the various facilities and amenities listed under Annexes A-E will have to be updated regularly by the team responsible for the oversight of the update of the TESDP:

- Artisan Training and Sanitation Marketing Programme
- Community Management and Services Promotion frameworks (e.g. Community-led Total Sanitation) and roles of relevant groups (e.g. WSDB) and Katamanso Zonal Council

To ensure proper ownership of the TESDP by TMA, the Katamanso Zonal Council and traditional authorities, it is essential that the gathering of data and update of the TESDP be done in a participatory manner involving all key stakeholders.

Table 6.3 Costs for Components Studies, Sub-projects, and Institutional Strengthening for Comprehensive Environmental Sanitation Coverage – Year 2015 (US\$ 546,906million)

Component Description	Total (US\$)	Package 1		Package 2	Package 3
		\$	%		
1. Drainage and Sullage Improvement					
Construction of soakaway pits by houses	6,831	2,732	0.9	2,732	1,366
Construction of secondary drains	311,543	218,579	68.0	92,896	0
Provision of Maintenance Equipment	3,000	1,000	0.3	1,000	1,000
<i>Sub-total</i>	321,306	222,311	69.2	96,628	2,366
2. Excreta (Liquid Waste) Management					
Home Latrine Promotion					
On-plot sanitation in high/medium density areas	6,250	2,500	0.8	2,500	1,250
Artisan Training and Support to Sanitation Marketing	3,250	1,300	0.4	1,300	650
School Sanitation and Hygiene Educ.					
Provision of TLMs	600	300	0.1	300	-
Training of SHEP Facilitators	1,250	500	0.2	500	250
Public Facilities Programme					
Neighbourhood latrines					
Rehabilitate/Construct 1 unit 20 seater KVIP	22,500	22,500	7.0	-	
Commercial Area latrines					
Replace existing facilities	-	-	-	-	
Construct new facilities	-	-	-	-	
<i>Sub-total</i>	33,850	27,100	8.4	4,600	2,150
3. Solid Waste Management					
Develop improved collection programme	3,750	1,500	0.5	1,500	750
Provide Communal Containers	5,000	2,500	0.8	2,500	-
Upgrade Selected sites	50,000	25,000	7.8	25,000	-
<i>Sub-total</i>	58,750	29,000	9.0	29,000	750
4. Improvement of Wetland Management					
Desilting the Buko Dam and fencing	3,000	3,000	0.9		
<i>Sub-total</i>	3,000	3,000	0.9		
5. DA-Management Support					
	130,000	40,000		50,000	40,000
<i>Sub-total</i>	130,000	40,000	12.4	50,000	40,000
	546,906	321,411	100	180,228	45,266

6.2 DBWSC Financed Sub-Projects

As part of the District-Based Water and Sanitation (DBWS) Component of the second-phase of Danida Water and Sanitation Sector Programme Support (WSSPSII), the CWSA-Greater Accra Region will provide US\$ 13,500 of the first stage implementation over a three year period to cover provision of aspects of home latrine promotion including artisan training. Counterpart funds for this include US\$ 13,500 from the TMA.

The DBWSC financed sub-projects will be carried out as part of on-going programmes by CWSA-GAR and the actual sub-project items will be finalized with TMA and actual work commenced during 2008. A separate report “*Summary of Sub-projects and Financing Packages*” presents the proposed items to be financed. The subprojects and activities related to the Excreta Management Component (home, school and public facilities) will be completed by the TMA with the assistance of local consultants. CWSA-GAR will facilitate the implementation process following the national procurement guidelines and CWSA’s procedures.

6.3 Human Resources Development

The Waste Management Department (WMD) and Environmental Health Management Department (EHMD): The WMD and EHMD, Katamanso Zonal Council (KZC) and private service operators are at the center of the TESDP. Consequently, it is important that the EHSD, Town councilors (including Assembly-members) and private operators (including artisans) are trained to carry out their responsibilities in implementing town-wide programmes.

Through the implementation of first stage sub-projects under Package 1, staff of EHMD and private operators will gain experience in all aspects of managing and implementing the proposed TESDP. Key areas of specialization and resource persons for the component(s) will be identified and linked to TMA staff (WMD, EHMD, MPCU) responsible, so they can obtain ongoing support from local experts. Key areas of specialisation for which the TMA departments (with WMD and EHMD as the focus) are responsible and for which resource persons are needed include:

- Monitoring, evaluating and refining the TESDP.
- Financial management of the EHMD and accounting.
- Management of service/construction contracts.
- Management of the TESDP funds.
- Management and training of on-site construction contractors and inspectors.
- Management and training of service franchise managers for public latrines
- Monitoring wastewater discharges.
- Promotion of environmental sanitation through CLTS.
- Sanitation marketing and user education.

The implementation of the above capacity building programmes will be tied closely to initiatives under the Second Urban Environmental Sanitation Project (UESP-II) of which TMA is a beneficiary municipality. UESP-II is implementing an institutional strengthening and capacity building component in order to support the longer term sustainability of the urban environmental sanitation sector through the development of adequate capacity of the central, regional and local levels of government. For beneficiary metropolitan and municipal Assemblies, including TMA, the support will develop their capacity to manage environmental sanitation services through the establishment of sustained institutional and financing mechanisms and more effective policy framework.

The issue of effective management of services in small communities and towns under TMA will be given attention as part of this TESDP.

On-site sanitation construction artisans, contractors and inspectors: Artisans and selected contractors will be given the opportunity to participate in periodic workshops so that they can learn to build all types of household sanitation systems including single and twin-pit VIP latrines, pour flush toilets, septic tank systems, and treatment and disposal units. In addition they will be trained to market their services to individual households, to prepare design sketches and quotations, and to keep appropriate records. Staff of EHMD responsible for administering the funds for delivering of TESDP will be trained to review design proposals and cost estimates, process loan requests and inspect construction of household VIP latrines, public and neighbourhood facilities, and drainage systems.

- Public latrine managers: franchise managers of public and neighbourhood facilities will be trained to operate and maintain the facilities, to collect revenues, and to keep technical and financial records.
- Homeowners and residents: Households will be informed of the technical options, encouraged to upgrade their household facilities, and information provided on use and maintenance of facilities through meetings organized by the DAC and through local radio.

- School children: Selected teachers and health education extension workers will be trained in participatory/interactive training techniques and appropriate training and teaching materials provided. User education will focus on the proper use of latrines, including cleansing materials and hand washing, and procedures for keeping latrines clean. Hygiene education material to be produced will cover environmental cleanliness; excreta, sullage and solid waste disposal; personal hygiene and food hygiene. Special workshops will also be organized through Parent and Teacher Associations to encourage proper use and maintenance of school and household facilities.

6.4 Monitoring and Evaluation

Monitoring and evaluation is an important part of strategic environmental sanitation planning, since it is the means by which the TESDP is refined and updated. In the initial stages monitoring and evaluation will focus on implementation arrangements and quality control, but in the long run it must also include forward looking planning to ensure that the TESDP keeps up with changing circumstances in Oyibi and that future financing is arranged well in advance. Monitoring and evaluation is the responsibility of the EHMD supported by the MPCU (and MWST), as each must track progress of the component for which the respective units (including DWD when it becomes established and functional) are responsible, identifying strengths and weaknesses of implementation strategy and modifying the approach as required. TMA departments will be assisted in this by local consulting firms that specialise in urban environmental sanitation planning, the CWSA-GAR,s MOM unit, and by the EHSD (MLGRDE). The framework for Environmental Sanitation Assessment and Audit will be updated as elements become clearly defined through its routine application. In addition to ongoing involvement by each of these groups, it is important that periodically (e.g. every two years) the TESDP and its focus be appraised to bring emerging international experience to bear on implementation arrangements. The implementation packages of the TESDP need to be monitored and evaluated periodically, including the following:

Public latrine programme

- Performance of franchise operators including condition of facilities, sludge levels, rehabilitation/repair work required, general operation and maintenance, record keeping, and feedback from operators and users.
- Performance of septage hauling operations, quantities of sludge collected, dumping practices, and costs of operations including treatment and disposal
- Revenue collection, record keeping, and payments to KZC and TMA.
- Periodic estimate of revenue and assessment of the financial viability of the franchise operator's business.
- Performance of twin versus single pit facilities, WC systems and user preferences for each.

Home latrine programme

- Quality of construction of each licensed artisan
- Contracting and construction management.
- Operation and maintenance of facilities.
- Number of persons using the facilities.
- Nuisance problems like flies and odours.
- Marketing and user feedback.
- Cost reducing measures.
- Effectiveness of CLTS based on WSDB

School sanitation program

- Quality of construction.
- Operation and maintenance of facilities including condition of facilities, sludge levels, nuisance problems, and repair work required.
- User training and hygiene education.
- Number of pupils using the facilities.
- User feedback.

Environmental Health and Management Department

- Management capability and progress of each component.
- Accounting system and financing plan.

ANNEX A: SANITATION TECHNOLOGY OPTIONS

Description of Facilities

The strategic sanitation planning process emphasises mix of different types of technologies and levels of service instead of the selection of a single technology for the entire town. In reviewing options for selection, the following range of technologies was considered;

KVIP

WC/Septic Tank

Pour/flush toilet

Aqua privy

Vault chamber

Ecological sanitation options (including Van's Biological Toilet – VBT, etc)

Ventilated Improved Pit Latrines

A ventilated improved pit (VIP) latrine is a traditional latrine to which a vent pipe covered with a screen has been added to minimize odour and fly problems. In urban areas where available land is limited, an offset, double-pit design, fitted with either a squat plate or seat (KVIP), is recommended. Such a design can easily be retro-fitted into an existing house and is almost maintenance-free. When a pit is full, it is sealed for 18-24 months during which wastes undergo decomposition and pathogens are destroyed. The decomposed pit contents can then be removed manually without health risks and used as a soil conditioner.

The offset pit can be sized according to the number of users and enlarged at a later time if necessary. The usual usage population is 25-30 person or 5-6 households for a single-seater alternating twin-pit KVIP latrine and around 15 persons or 3 households for the ordinary VIP latrine. KVIP latrines are advantageous because no water is required for flushing and all kinds of anal cleansing materials can be used without threat of blockage. In addition, they can accommodate the water needed for anal cleansing if that is preferred. Wherever, a property has sufficient space to allow a detached latrine to be constructed and then moved when filled with solids, a single, deep-pit model will yield major savings as it is one-third the price of a twin-pit latrine.

Septic Tank and Drain Field Systems

Low volume flush toilets (WCs) with septic tanks are a relatively expensive but good option. Wastewater flows from the home by gravity to a septic tank which is usually a double-chambered, watertight, concrete tank where heavier solids settle to the bottom and accumulate as sludge, and grease and lighter particles rise to the surface and form a scum. The clarified effluent then flows to a drain field. Septic tank systems are particularly advantageous as they can accommodate both excreta and sullage. A properly designed system can provide many years of good service, however, the tank will become blocked with solids if it is not cleaned out every 3-4 years and wastewaters will surface if the drainfield is not large enough to accommodate the wastewater flow. It is important that drainfields (either seepage pits or gravel filled trenches) are sized to provide one square meter of infiltration area for every 10 to 25 liters/day of wastewater, depending on the soil permeability. A simple percolation test can be used to determine the proper design factor.

Factors that affect household choice of improved sanitation facilities

In reviewing the mix of technologies to match housing segments, each option is evaluated in terms of relevant technical, financial, social-cultural and institutional factors:

Technical considerations include the type of housing, water supply facilities, geological conditions and operations and maintenance requirements. Where premises connections of water supply is high (more than 85%), in *high housing -density areas* simplified sewerage may be the viable option, as there is insufficient open space for WC/septic tank drainfields, inadequate room on ground floors of buildings for VIP latrines. In the *medium-density indigenous area* household latrines (VIP and pour flush) and WC/septic tanks are viable technologies, sewers are not possible at this time because of low-levels (less than 60%) of households with water in-house supply connections. In the *estate and low-density, newly developing area* all technologies are viable (considering water-dependent options).

Financial considerations included construction cost, operations and maintenance cost, and willingness-to-pay. Costs are location specific, and from costs comparisons carried out as part of Willingness to Pay for Improved Sanitation in Kumasi, generally sewer costs are inversely proportional to the population density; on a per capita basis construction costs of simplified sewers have been estimated to be between \$25-30 in the high housing-density areas with multi-storey buildings, \$35 in the medium-density areas with compound houses, \$80-95 in typical Estate-type areas, and \$230-250 in the low-density high-cost areas. Thus the capital cost of sewers in the low-density, high-cost area with large plots (50m x 50m) is nearly 10 times the cost of sewers in the high housing-density areas. These conclusions should be checked against user preference and willingness-to-pay, and to the extent possible various options made available to individual households.

Socio-cultural considerations are based on user preference. The results of the household survey conducted as part of Environmental Sanitation Assessment and Audit showed that the majority of people using WCs, and pit latrines rate them as good or fair in terms of cleanliness, privacy and convenience and are satisfied with them. However, people are not satisfied with the privacy and convenience provided by public latrines. Those people that prefer the VIP latrines usually do so because WCs require water that is expensive and sometimes unreliable, and because WCs might break or clog. In the estate and newly developing areas all houses are currently served by either individual or household WC/septic tank systems. They consider their current system to be satisfactory.

The above are only indicative to aid developing financing cost implications of what will be adopted. All home-owners are free to use the technologies of their preference, provided they meet guidelines for the construction of sanitation facilities issued by the MLGRDE.

ANNEX B: SCHOOL SANITATION FACILITIES

List of schools and inventory of existing sanitary facilities in schools

- Name of school
- Facility ID number
- Location (sub-metro area or sector)
- Type of school (primary, junior secondary)
- Cluster (ID number of adjacent schools)
- Number of students
- Type of sanitation facility (WC, aqua-privey, pan latrine)
- Number of cabins
- Condition

ANNEX C: PUBLIC SANITATION FACILITIES

List of Public Facilities in Neighborhood

- Facility ID
- Location (sub-metro area or sector)
- Type (WC, aqua-privey, pan latrine)
- Number of cabins
- Average number of users
- Condition

List of Public Facilities in Commercial Areas

- Facility ID
- Location (sub-metro area or sector)
- Type (WC, aqua-privey, pan latrine)
- Number of cabins
- Average number of users
- Condition

Inventory of sites should also cover user analysis and scheduling of implementation of sub-projects under Packages.

- Sample Design of facilities and block layouts.
- Preparation of contract document for franchise operation of the public facilities and program to train franchise operators.