African Water Facility
Facilité africaine de l'eau
Mobilising Resources for Water in Africa
Mobiliser des ressources pour l'eau en Afrique

Greater Freetown Water Supply and Sanitation Master Plan and Investment Studies

Project Appraisal Report

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African Water Facility

African Development Bank

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I. Table of Contents

II. List of Acronyms

AfDB..... African Development Bank
AWF ..... African Water Facility
D2B..... Develop2Build
DFID ..... United Kingdom Department for International Development
EPA ..... Environmental Protection Agency
FCC ..... Freetown City Council
GIS..... Geographic Information System
GoSL ..... Government of Sierra Leone
GVWC..... Guma Valley Water Corporation
IUWM ..... Integrated Urban Water Management
MAFFS ..... Ministry of Agriculture, Forestry and Food Security
MCC ..... Millennium Challenge Cooperation
MWR ..... Ministry of Water Resources
MHS ..... Ministry of Health and Sanitation
MLCPE ..... Ministry of Lands, Country Planning and Environment
NCCC..... National Climate Change Committee
NPAA..... National Protected Areas Authority
NRW..... Non-revenue water
NSCC..... National Secretariat for Climate Change
O&M..... Operation and maintenance
PTC ..... Project Technical Committee
SALWACO ..... Sierra Leone Water Company
SDG..... Sustainable Development Goal
SLRA ..... Sierra Leone Roads Authority
WAPFoR..... Western Area Peninsula Forest Reserve
WARDC..... Western Area Rural District Council

III. Logical Framework

Country and Project Name: Sierra Leone - Greater Freetown Water Supply and Sanitation Master Plan and Investment Studies
Purpose of the project: Prepare effective and efficient short and medium term investment projects in the water supply and sanitation system of Greater Freetown.

Results chain		Performance indicators			Means of verification	Risks/mitigation measures
		Indicator (including CSI)	Baseline 2016	Targets		
Impact	Contribute to sustainable human development through reduced incidence of water borne diseases.	Under five Mortality Rate (U5MR) Infant MR (IMR)	U5 MR: 217/1000 IMR: 128/1000	U5 MR: 100/1000 IMR: 50/1000 (2020)	JMP MICS Report DHS PRSP3 Agenda for Prosperity Progress Report	Assumption: Stability and overall economic progress
Outcomes	Activities in and related to water resources management in Freetown are being coordinated among relevant stakeholders (talk to each other on a working level).	No. of fully subscribed stakeholder coordination meetings held	0	>4/a (2018)	Project reports, Minutes of meetings of National Planning Committee	Risk: Lack of evidence of progress in governance and accountability in general and corruption perception indicators in particular hence diminishing donor appetite for the sector Mitigation: Consolidating and strengthening existing sector level coordination and accountability mechanisms among
	Investment for Greater Freetown (including the proposed new airport and satellite city) Water Supply and Sanitation Improvement and Expansion mobilised.	funds mobilised for immediate and short term investments value of funds pledged	USD 0	100 MUSD (2018)	Proceedings of Resource Mobilization Conference	
		Feasibility Report for medium term investments	0	1 (2018)	Proceedings of Donor Round Table	

		volume of investment projects procurement-ready	USD 0	300 MUSD (2018)	Project reports, Tender Documents and Engineers Estimates	donors and national stakeholders. Risk: Donor competition for prominence in the sector (or donor preferences militating against strengthened and more effective support to the sector). Mitigation: Ensure donor coordination and national stakeholder coordination meetings take place or a regular basis. Risk: Low interest in coordi-nation, inter-agency com-petition hinders coordi-nation. Mitigation: Awareness creation and information, demonstration of benefits of integrated planning.
Outputs	1. Coordination mechanism for IUWM is in place and operational.	Terms of Reference/ Operational Guidelines for National Planning Committee	0	TOR and Operational guidelines endorsed by stakeholder agencies by 3rd month of study	Endorsed TOR/Operational Guidelines Document	Risk: availability of data to enable effective analysis of the situation Mitigation: stakeholder coordination Risk: No agreement on Master Scenario / priority projects Mitigation: Early involvement of all relevant stakeholders.
		National Planning Committee meetings	0	6	Minutes of meeting	

	2.1 Freetown Integrated Water Supply Master plan is enacted.	Master Plan Report	0	1	Project reports	Risk: Insufficient financial means for implementation. Mitigation: Early donor involvement; Targeted packaging; Cost effective alternatives. Risk: Insufficient capacity to implement. Mitigation: Capacity assessment of stakeholders, and development of required capacity building.
	2.2 Medium term investment projects are prepared	TORs for consultancy services for design and procurement of medium term investments prepared	0	1	Project reports, TORs	
		Medium term project volume ready for procurement (design / build)	0	100 MUSD	Proceedings of Resource Mobilization Conference	
	3. Prioritised, short-term investment projects are prepared.	TORs for consultancy services for design and procurement of short term investments prepared	0	1	Project reports, TORs	

Key activities	Components	Inputs
	1 Coordination for IUWM Awareness creation on IUWM approach Design of coordination structure and mechanism Regular institutionalised coordination 2 Master Plan Development Diagnosis, scenarios comparison, master plan Prioritisation & Packaging medium term investments, conceptual design medium term investments, TOR for detailed design and tender documents (medium term investments) 3 Priority Investment Projects Priority investments 4 Project Management Project management	**Component** **Cost** Coordination IUWRM 67 200 € Master Plan incl. TA 1 882 575 € Investment Proposals 499 300 € Project Management 252 895 € Contingency 270 600 € Total 2 972 570 € AWF 1 985 500 € D2B 700 000 € GVWC 287 070 €

IV. Executive Summary

Background: In 2012 Sierra Leone experienced a rather severe outbreak of cholera, affecting over 5,000 people with 63 deaths in the Western Area from January to August 2012. The outbreak brought into sharp focus the magnitude of the task at hand of making safe clean water accessible to the people. In Freetown, the average daily output of Guma Valley Water Company (GVWC), a company owned by the Government and Freetown City Council that provides water supply services to the city of Freetown, is app. 70,000m³ per day as against a daily estimated demand of 130,000m³ per day. Water is rationed to many areas in the City with almost no customers getting 24-hour supply. In the peri-urban areas and the densely populated poor urban areas customers receive supplies once a week or none at all. National targets for water supply and sanitation are 74 % and 66 % respectively, as stated in the National Water and Sanitation Policy. While in terms of coverage the targets have been achieved, the actual situation with regard to system performance is different. The current status of most functional infrastructure in Freetown is to be characterized as aged and of insufficient capacity to cover current demand. Guma valley dam and network have been designed for approximately 300,000 people, serving currently approx. 1 million, a figure which is expected to rise up to 2 million in the foreseeable future. The majority of the distribution network dates mostly from 1961, with only one pressure zone for the entire network. While 300 to 400 leakages per month are being repaired, still many leaks are obvious throughout system. Furthermore, bundles of small diameter service pipes/connections often extend for hundreds of meters due to the limitation of the distribution pipe network. With regards to water resources, the current and potential future catchments are located in the Western Area Protected Forest Reserve. This area could provide sufficient resources for the water supply of the entire peninsula but catchments are threatened by erosion/degradation, inadequate land use management, including the issuing of building permits for publicly owned land, including GVWC assets. Government has also prioritised the alternative of the largest river in Sierra Leone (Rokel River) as a future source of water for the capital city.

Goal: The overall project goal is the preparation of effective and efficient short and medium term investments into the water supply system of Greater Freetown. The project's immediate outcomes will be twofold: 1) activities in and related to water resources management in Freetown are being coordinated among relevant stakeholders and 2) Investments for Greater Freetown (including the proposed new airport and satellite city) Water Supply and Sanitation Improvement and Expansion can be mobilised. These outcomes will contribute to sustainable human development through reduced water borne disease incidence and infant mortality.

Activities and Implementation: The project will provide three main outputs:

- An established IUWM co-ordination mechanism is operational,
- Freetown Integrated Water Supply Master plan is enacted, and
- Prioritised and medium term investment projects are prepared.

Project components comprise 1. Coordination for IUWM, 2. Master plan development and medium term investment projects, 3. Priority investment projects, and 4. Project management.

For project activities 1. to 3. GVWC will receive support from a consultant for all tasks which go beyond existing institutional capacities of GVWC.

Cost and Financing: The project cost amounts to EUR 2,972,570 € of which € 1,985,500 (66.8%) will be funded by the African Water Facility, D2B will contribute € 700,000 (23.5%) and Guma Valley Water Company will contribute € 287, 070 (9.7%).

Recommendation: Based upon a critical assessment of the relevance, effectiveness, and sustainability of the Project, as well as the credibility and capacity of the Implementing Agency, it is recommended that a grant of € 1,985,500 from the AWF be extended to the Republic of Sierra Leone for the implementation of the project described in this appraisal report.

1 Background

1.1 Project Rationale and Origin

1.1.1 In 2012 Sierra Leone experienced a rather severe outbreak of cholera, affecting over 5,000 people with 63 deaths in the Western Area from January to August 2012. The outbreak brought into sharp focus the magnitude of the task at hand of making safe clean water accessible to the people, and the consequences to society and the nation in general when the task of providing access to safe clean water is not properly and promptly addressed.

1.1.2 Women and children bear the overwhelming burden of collecting water in water-starved communities in the Western Area, often exposing themselves to great risks—rapes, teenage pregnancies are not uncommon—in doing so. Although 87.8% of the people in the Western Area have been assessed as having access to safe clean water, only 37.1% have access to pipe-borne water on premises; 53% of the people are without[1]. For this group of people, it means spending hours waiting in line to get water at street taps or from cut pipes in gutters, plus the associated high physical efforts required, or financial costs involved, in transporting the to their homes.

1.1.3 Over the past decades, the population of Freetown has grown rapidly to about 2 million, mainly as a result of rural-urban migration that was facilitated by the 10-year civil war. This development is assumed to continue, with a predicted annual urban population growth rate of 2,7% until 2030[2].

1.1.4 The drastic increase in the number of people living in Freetown and the Western Area was not matched by a similar increase in capital investments in the water supply and sanitation infrastructure. Subsequently, the gap between demand for water and available supply widened.

1.1.5 In Freetown, the average daily output of Guma Valley Water Company (GVWC) is app. 70,000m³ per day as against a daily estimated demand of 130,000m³ per day. Water is rationed to many areas in the City with almost no customers getting 24-hour supply. In the peri-urban areas and the densely populated poor urban areas customers receive supplies once a week or none at all.[3]

1.1.6 Recognizing this problem, GVWC requested financial assistance from the AWF to undertake detailed Technical Assessment Studies and develop a water supply masterplan including investment programs and the necessary financial inputs that will be required to provide an adequate and sustainable water supply and sanitation system for the Western Area for the next 15 years, giving current projections in population and economic growth.

[1] Sierra Leone Multiple Indicator Cluster Survey; UNICEF, 2010
[2] State of The World's Children 2015 Country Statistical tables; UNICEF, 2013
[3] The National Water and Sanitation Policy, Ministry of Energy and Water Resources, 2010

1.2 Sector Status and Priorities

1.2.1 The Sierra Leone Vision 2025 and the Poverty Reduction Strategy Paper (PRSP) aim at achieving a high quality livelihood for the people of Sierra Leone, attaining good governance through the rule of law and developing a strong and competitive economy.

1.2.2 The PRSP objectives for the water and sanitation sector are, among others, to provide safe drinking water and sanitation facilities for deprived communities in rural and urban areas, rehabilitate and reconstruct existing water facilities and to provide adequate liquid and solid waste disposal facilities in urban areas.

1.2.3 The objectives of the Water and Sanitation Policy are among others:

- to address cross-sectoral interests in water resources through integrated and participatory approaches in the planning, development and management of the water resources, and
- to improve the provision of safe water supplies and sanitation facilities in urban and rural areas through a coordinated approach, with the long term objective of achieving full coverage of piped water supply in the country.

1.2.4 One of the specific objectives of the Water and Sanitation Policy is to develop sustainable integrated plans for water resources development.

1.3 Institutional Set-up

1.3.1 GVWC was established by The Guma Valley Water Act (1961) as a company owned by the Government and Freetown City Council that provides water supply services to the city of Freetown.

1.3.2 The Ministry of Water Resources (MWR) is the overall authority and lead government institution on all water and water-related issues. It is responsible for the formulation of water policies, and their implementation, monitoring and evaluation, including drinking water for both urban and rural populations. It is also responsible for sector coordination, cross-sectoral planning, and sourcing funds for water projects.

1.3.3 The National Planning Committee, which is a statutory committee of the Ministry of Lands, Country Planning and Environment (MLCPE) will act as Project Steering Committee.

1.3.4 The Energy and Water Regulatory Commission is responsible for the economic regulation of water and related sanitation delivery.

1.3.5 Freetown City Council (FCC), established by the Local Government Act 2004, holds among its numerous devolved functions the responsibility for local level planning, the preparation of strategic local plans and land use plans.

1.3.6 The Ministry of Agriculture, Forestry and Food Security (MAFFS) is the main institution responsible for regulating and promoting the development of the agricultural sector. It is mandated to encourage management planning in all forests, emphasizing watershed protection. The Land and Water Development Department has a mandate to create an enabling environment for sustainable development and utilization of land and water resources.

1.3.7 Responsibilities for sanitation are dispersed and not well defined. The current institutional framework creates confusion over whether sanitation responsibility should fall

under the Ministry of Health and Sanitation (MHS), Environmental Protection Agency (EPA), the Ministry responsible for Local Government, or MWR (National Policy, paragraph 1.7.2). The Water Supply Division in MWR is responsible for maintenance of the sewerage system in Freetown, while the responsibility for liquid waste management in Freetown (pit latrines and septic tanks) lies with FCC.

1.4 Problem Definition

1.4.1 National targets for water supply and sanitation are 74 percent and 66 percent, respectively, as stated in the National Water and Sanitation Policy. While in terms of coverage the target has been achieved[4], the actual situation with regard to system performance is different.

1.4.2 The current status of most functional infrastructure in Freetown is to be characterized as aged and of insufficient capacity to cover current demand. Guma valley dam and network have been designed for approximately 300,000 people, serving currently approx. 1 million[5], a figure which is expected to rise up to 2 million in the foreseeable future.

1.4.3 The current main water source (Guma valley dam) has a reliable yield of 80 000m³/d, the non-revenue water is assumed to be in the range of 45%[6]. The projected demand for 2018 is app. 90,000m³/d[7]. Consequently, the supply is currently zoned and not permanent for the entire supply area.

1.4.4 The majority of the distribution network dates mostly from 1961, with only one pressure zone for the entire network. While 300 to 400 leakages per month are being repaired, still many leaks are obvious throughout system. Furthermore, bundles of small diameter service pipes/connections often extend for hundreds of meters due to the limitation of the distribution pipe network.

1.4.5 With regard to **water resources**, the current and potential future catchments are located in the Western Area Protected Forest Reserve. This area could provide sufficient resources for the water supply of the entire peninsula (according to the findings of the "Conservation of the Western Area Peninsula Forest Reserve" (WAPFoR) watershed project) but catchments are threatened by erosion/degradation, inadequate land use management, including the issuing of building permits for publicly owned land, including GVWC assets. Government has also prioritised the alternative of the largest river in Sierra Leone (Rokel River) as a future source of water for the capital city.

1.4.6 Sierra Leone is projected to be strongly impacted by climate change, especially through increases in extreme events and flooding that with affect already vulnerable populations. Large scale flooding events in Freetown are regular occurrences, with sanitation, storm water, and sewerage systems disrupted and affecting the incidence of water-borne pathogens. Climate variability contributes to deteriorating water security resulting in diminishing water availability for various developmental and environmental needs. The provision of infrastructure needs large scale investment over the planning period. Climate

[4] WHO/UNICEF JMP, 2015
[5] 986,000; census 2004
[6] STRATEGIC WATER SUPPLY AND SANITATION FRAMEWORK, Inception Report 2007
[7] STRATEGIC WATER SUPPLY AND SANITATION FRAMEWORK, Freetown Hydraulic Model 2018

Change scenarios and analysis will be incorporated within the processes associated with IUWM and Master Plan development for investment purposes. Improvements to the supply and distribution of water will help improve climate resilience of local communities.

1.4.7 In realisation of the poor state of affairs, Guma Valley Water Company in 2012 embarked on a series of transformation programmes spanning a 13 months period. During this period, revenue nearly tripled. There were marked reduction in the volume of water lost because of leaks, from 61% to about 45%. Service provision has improved generally, with waiting times for new connections and resolution of customer complaints reduced to days, down from months previously.

1.4.8 However, there is a natural limit to what internally driven reforms can achieve in terms of service improvements without a major capital injection. Nevertheless, the results of the transformation programmes demonstrate that the Management and Staff of GVWC are now motivated and ready to leverage any external assistance.

1.4.9 The core challenges to be addressed through the intervention and subsequent investments are the insufficient coverage, aged assets and fragile institutional environment.

1.5 Beneficiaries and Stakeholders

1.5.1 The beneficiaries of this project will be the population of Greater Freetown Area, who either do not have access to clean water, or have access that is intermittent and unreliable.

1.5.2 The stakeholders include:

- the Government of Sierra Leone,
- *Guma Valley Water Company, the utility providing water in Freetown and the body running this project,*
- Freetown City Council,
- Ministry of Water Resources,
- Ministry of Health and Sanitation,
- the Energy and Water Regulatory Commission,
- the National Water Resources Management Agency (pending approval of Bill),
- the Sierra Leone Water Company (for water supply outside of Freetown),
- Western Area Rural District Council, who is responsible for delivery of services in the rural areas of the peninsula (Greater Freetown),
- Ministry of Lands, Country Planning and Environment with its National Planning Committee, responsible for land use management / physical planning,
- the National Protected Areas Agency, recently established to take over the mandate for protection of gazetted natural resources assets (forests and national parks),
- Ministry of Internal Affairs, Local Government and Rural Development,
- the Environmental Protection Agency,
- the Sierra Leone Roads Authority,
- Ministry of Agriculture, Forestry and Food Security,
- National Climate Change Committee (NCCC) and National Secretariat for Climate Change (NSCC),
- Ministry of Works (building permits),

- the National Commission for Privatization, with oversight responsibility and reform of public enterprises (including GVWC),
- Development Partners and the donor community, and
- the inhabitants of Freetown.

1.6 Justification of AWF Intervention

1.6.1 The AWF's strategic plan 2017-2025 focuses on supporting project preparation, catalytic investments and investment promotion to help African countries meet the goals and targets for the water and sanitation sector set by the Africa Water Vision 2025 and SDGs. The proposed project is well aligned with the Africa Water Vision 2025, in particular as far as sustainable access to safe and adequate water supply and public awareness and commitment for sustainable water-resources management are concerned.

1.6.2 The project is in line with the AWF Strategic Pillar 1, i.e. project preparation. The identification of cost effective projects, both for immediate priority investments as well as medium term strategic investments, for submission to various funding agencies will be a direct output of the proposed project.

1.6.3 Under Strategic Pillar 3 the Facility supports investment promotion. The proposed project is also in line with this strategic priority by preparing a long-term strategic master plan, as well as short and medium term investment plans.

1.6.4 The AfDB strategy 2013-2022 formulates two objectives. The second objective is to ensure that inclusive growth is sustainable. One of the five operational priorities is infrastructure development. The proposed project obviously contributes to this strategy by basing the infrastructure development on an integrated planning approach with a strong focus on making infrastructure sustainable.

1.6.5 Lastly, the proposal is of course well aligned with AfDB's High Five priority on Improving the Quality of life for Africans.

2 The Project

2.1 Purpose

2.1.1 Purpose of this project is the preparation of effective and efficient short and medium term investments in the water supply and institutional aspects of sanitation systems of Greater Freetown.

2.2 Outcomes and impacts

2.2.1 The impact of the project will contribute to improved livelihood and sustainable human development through reduced incidence of water borne diseases. Children under five and their predominately female caretakers are mainly affected.

2.2.2 The project's immediate outcomes will be twofold: 1) activities in and related to water resources management in Freetown are being coordinated among relevant stakeholders and

2) Investments for Greater Freetown (including the proposed new airport and satellite city) Water Supply and Sanitation Improvement and Expansion can be mobilised.

2.2.3 These outcomes will contribute to sustainable human development through reduced water borne disease incidence and infant mortality.

2.3 Outputs

2.3.1 The project will provide main outputs as follows:

1. A coordination mechanism for IUWM is established and operational;
2. Freetown Integrated Water Supply Master plan is enacted and medium term investment projects are prepared;
3. Prioritised investment projects are prepared and funds mobilised for implementation; and
4. Environmental and Social Management Plan Prepared with particular focus on measures to protect the major peninsular water catchment area from further encroachment.

2.4 Components and Activities

2.4.1 General

2.4.1.1 The project layout is shown in Figure 1 below. The upper red box shows the proposed AWF project, focusing on creating an enabling environment for a future IUWM approach, the development of a Master Plan for a 15-year period including the preparation of investments projects based on the Master Plan as well as the definition of priority investments.

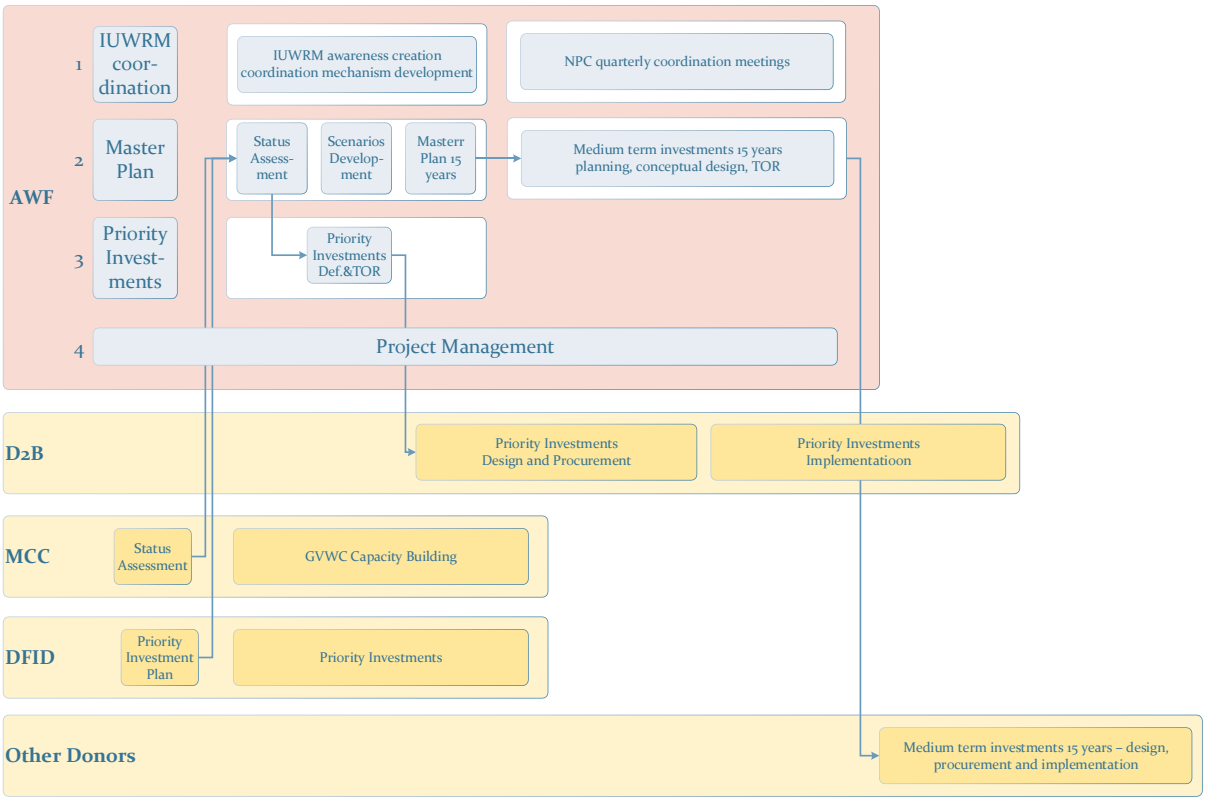


Figure 1: Project Structure (red background) and External Relations

2.4.1.2 Figure 1 furthermore shows how the proposed project is related to other actor's activities in the sector as explained in more detail in 2.4.1.4 (the four lower boxes).

2.4.1.3 The project components and activities are directly related to the project's outputs:

1. Coordination for IUWM
2. Master plan development and medium term investment projects
3. Priority investment projects
4. Project management

2.4.1.4 A number of project activities will be closely linked with activities of other actors, the most important being:

- MCC is planning to implement a project which will carry out a capacity assessment and provide capacity building for GVWC, assess the status of water treatment and water supply infrastructure (pipes ≥ DN100), develop a calibrated hydraulic model of the assessed water distribution network and integrate developed data in the existing GIS system;
- DFID is planning to support priority investments aimed at short term mitigation of the most pressing issues of the existing water supply system, in particular treatment plant. D2B will support GVWC with priority investments defined in the project.

2.4.2 Coordination for IUWM

2.4.2.1 While the water and sanitation policy asks for an integrated water resources management approach to ensure that water does not become a constraint to national development, mechanisms for coordination are not yet defined and operationalised. This project of developing a water master plan for Freetown is seen as an opportunity to initiate and support coordination for an integrated management of water resources in the Greater Freetown Area. One of the objectives of the Water and Sanitation Policy is to "address cross-sectoral interests in water resources through integrated and participatory approaches in the planning, development and management of the water resources".

2.4.2.2 Commonly, main reasons for isolated planning approaches without consideration of other relevant players' activities are insufficient knowledge and/or a wrong understanding of the IUWM approach. For this reason, it is foreseen to include awareness creation activities in the form of two workshops on IUWM in the early phase of the project. The target group for this awareness creation will be the project's stakeholders as defined in section 1.5.

2.4.2.3 At the same time, the project will look into currently existing coordination structures and mechanisms, e.g. the National Planning Committee, which could potentially be utilised to institutionalise a coordination mechanism for IUWM. Based on this assessment the project will propose the most suitable coordination structure and mechanism for IUWM. Furthermore, the project will support the relevant institution(s) to achieve the respective project output as defined earlier.

2.4.2.4 During the lifetime of the project, it will make sure that on the one hand regular institutionalised coordination happens, but also on the other hand support the establishment

of necessary framework conditions (e.g. in terms of budgetary, human resources) to guarantee, that this coordination can continue beyond the project's lifetime.

2.4.3 Master Plan – Study

2.4.3.1 The project will prepare a water master plan for Freetown; sanitation, defined as management of sewage and faecal sludge, solid waste and storm water, will be included as far as realistically possible and as far as mutual dependencies will allow.

2.4.3.2 The water master plan will by necessity not be limited to drinking water supply only but will consider other current and potential future users in the supply area, e.g. industry and commerce, institutions, urban agriculture, etc.

2.4.3.3 The boundaries for the master plan will be Greater Freetown Area as shown in Figure 2 below. This covers the currently served and unserved areas as well as future planned settlement areas. The fact that the boundaries go well beyond the service area of GVWC necessitates the incorporation of SALWACO, the water utility in charge of the southern peninsula, as an important stakeholder in the entire planning process.

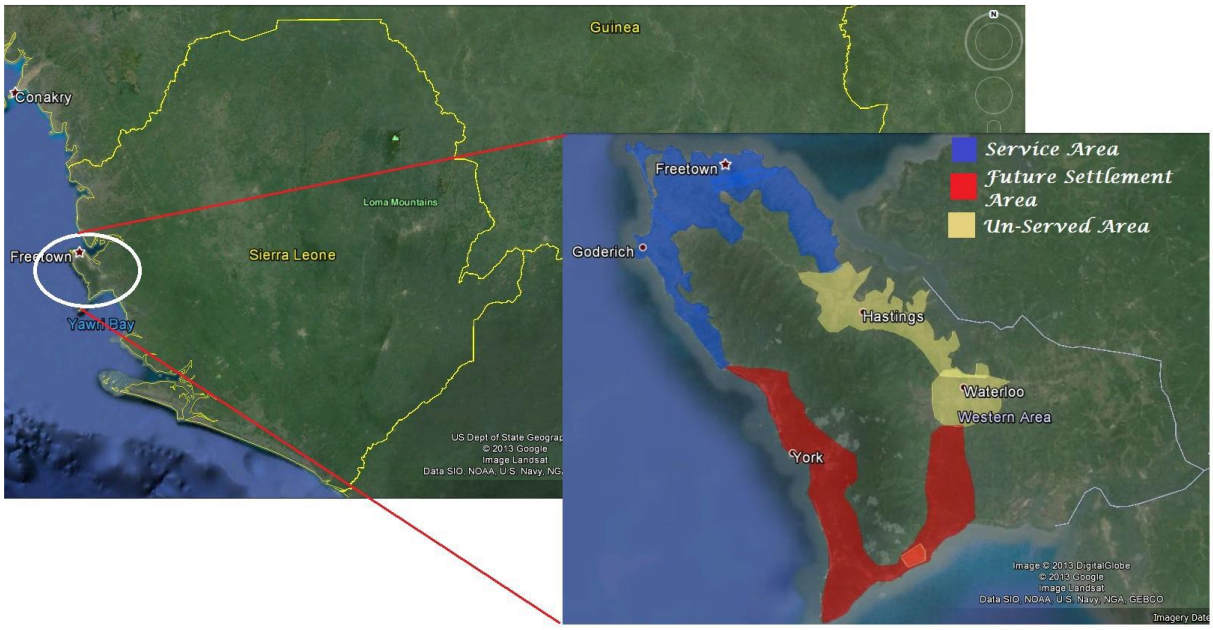


Figure 2: Master plan boundaries

2.4.3.4 In addition, the master plan will take into account that environmental, technical, economic and social conditions might significantly differ in the coming years from the current forecasts. Consequently, the plan must be sufficiently flexible and easily adjustable by GVWC after the end of the project.

2.4.3.5 Thus, the master plan development will emphasise the process orientation of the plan and the logical need for an institutionalised review as shown in Figure 3 below.

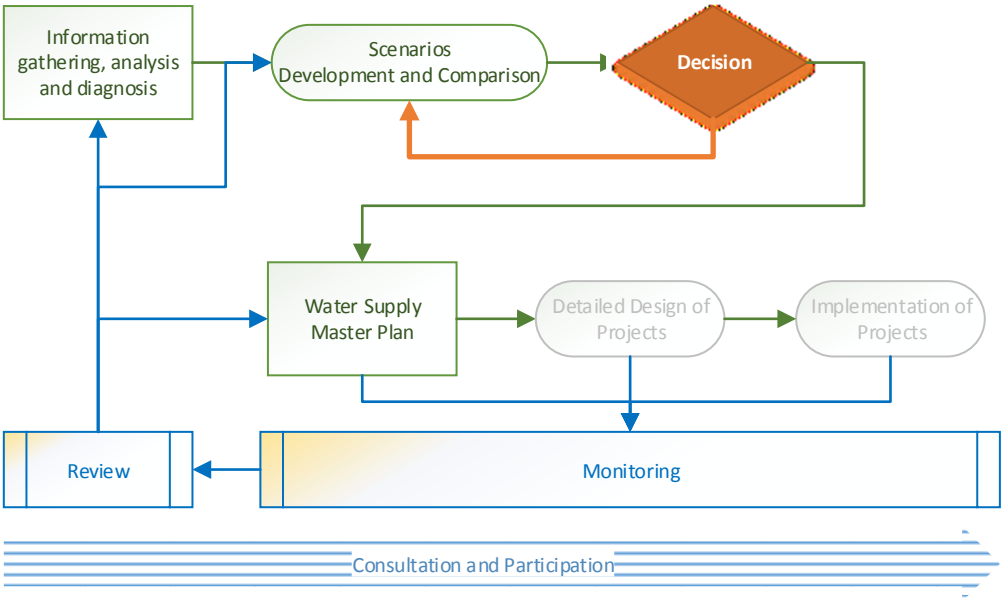


Figure 3: Water supply master planning process

2.4.3.6 GVWC with the support of a consultant will prepare a comprehensive analysis and diagnosis of the water supply in Greater Freetown Area and its linkages with other relevant sectors, e.g. sanitation including solid waste, energy, (urban) agriculture, industry and commerce, country and land use planning, and other infrastructure planning (e.g. roads). This analysis and diagnosis provide comprehensive input for the development of long-term water supply scenarios.

2.4.3.7 Major stakeholders in areas relevant for the development of the Master Plans are summarised in Figure 4.

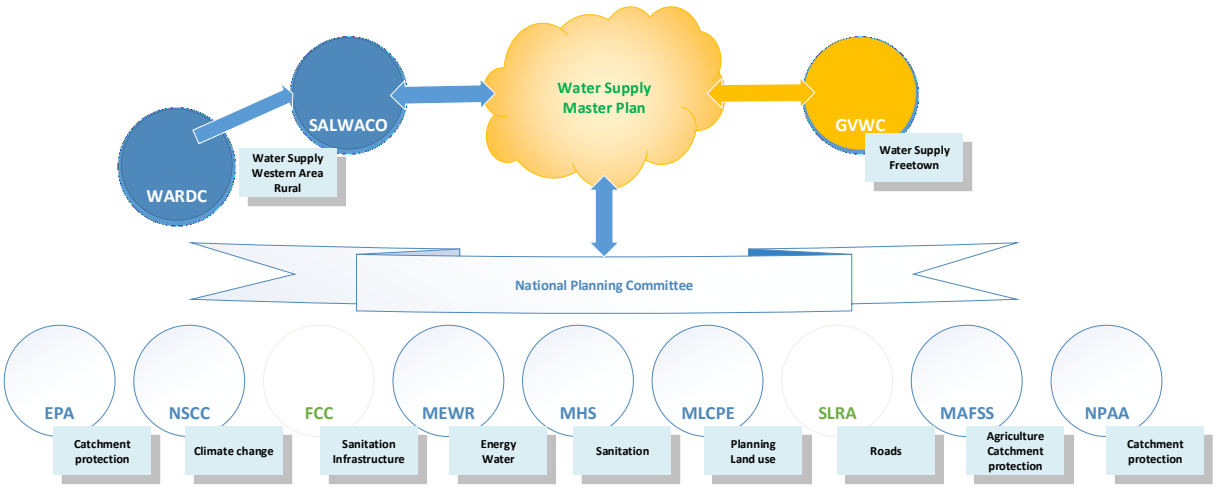


Figure 4: Stakeholders in the development of the Water Master Plan

2.4.3.8 This part of the planning process will compare different water supply scenarios for a 2050 planning horizon in a comprehensive manner. Scenarios will be based on valid water supply and other policies and strategies.

2.4.3.9 Results shall be presented in maps based on and integrated in existing GIS/MIS systems. Close collaboration with ongoing MCC activities regarding GIS and GVWC capacity building will be required.

2.4.3.10 This part of the planning process will compare different water supply scenarios for a 2050 planning horizon in a comprehensive manner. Scenarios will be based on valid water supply and other policies and strategies.

2.4.3.11 GVWC with the support of a consultant will carry out a multi-criteria assessment of the scenarios. The final selection of evaluation criteria shall be agreed with all relevant stakeholders. Financial, economic, environmental, social or climate change related criteria will be included.

2.4.3.12 Based on the outcome of the scenario development and comparison step, an informed decision for one Master-Scenario will be taken by the Steering Committee, which will then be developed into a Master Plan. This decision making process will be facilitated by GVWC and the consultant. The Master Scenario may be a mix of previous scenarios, and therefore it may have to be re-assessed based on the same approach as defined for other scenarios above.

2.4.3.13 Based on the "Master Scenario", developed and agreed upon, an Integrated Water Supply Master Plan will be prepared for a planning horizon up to 2030.

2.4.3.14 Recognising the strong dependencies between water supply and sanitation, the master plan will focus on the development of projects, which utilise synergies between water supply and sanitation as well as other concerned sectors.

2.4.3.15 This Master Plan may be based on a number of conditions and assumptions, which have to be realised in order to guarantee its successful implementation. Therefore a number of accompanying measures, ranging from development of additionally required capacities of relevant stakeholders (e.g. GVWC, SALWACO, FCC), to awareness creation, respectively behaviour change activities (e.g. policy awareness, demand side measures, reuse) may be required and shall be planned for. This plan of "soft" activities shall clearly show the perceived deficit, target group, activities, costs and timing within the master plan horizon.

2.4.3.16 Additionally an economic analysis of the entire water supply system for Greater Freetown Area shall be prepared including newly planned facilities within the Master Plan time horizon. The consultant will refine the economic analysis undertaken during scenario development.

2.4.3.17 The master plan will have to consider ongoing or soon to be started priority activities and investments by other actors (MCC, DFID, etc.), as well as priority investments defined by the project itself (see 2.4.5 below).

2.4.4 Master Plan - medium term investments 2030

2.4.4.1 Required investments in hardware and software activities as defined by the endorsed 2030 master plan shall be ranked in a next step. The ranking shall be justified by a

problem analysis, based on the state of existing infrastructure, environmental conditions, water resources quantity, quality, qualitative and quantitative risks, etc.

2.4.4.2 Based on the needs of the Master Plan, donors' interest, PPP potential, and Government capabilities a financing strategy shall be developed that summarises targets and actions to be taken to achieve the targets. The financing strategy shall focus on investments (including accompanying measures) but also make proposals on financing of O&M cost.

2.4.4.3 For said investment packages, preliminary design documents will be prepared. The preliminary design is meant to bridge the gap between the design concept (Master Scenario) and the detailed design. In this task, the overall system configuration will be defined, and schematics, diagrams, and layouts of the project prepared to provide early project configuration.

2.4.4.4 For these investments, the project will prepare TOR's for detailed designs and tender documents for immediate procurement of consultants for detailed designs.

2.4.5 Preparation of Priority Investment Projects

2.4.5.1 Based on a preliminary assessment of the current status of the existing water supply system, priority investments will be defined. This activity aims at mitigating the current crisis of the water supply system as quickly as possible. Clearly at this point in time a comprehensive base for decision making is not yet available and therefore priority investments will have to take this uncertainty into account.

2.4.5.2 Furthermore, other ongoing or soon to be started activities will cover priority investments. These developments will have to be considered as well.

2.4.5.3 A donor round table will decide on priority investments (incl. donor targeted packaging) based on proposals for priority investments and need for funding (in addition to the interventions covered by DfID, MCC, and D2B).

2.4.5.4 For these priority investments, GVWC with the support of a consultant will prepare preliminary designs, TOR's for detailed designs and tender documents for immediate procurement of a consultant.

2.4.6 Project Management

2.4.6.1 This project component comprises project management and consultation activities and aims at an effective and efficient implementation of the project and the achievement of the project outputs with the planned resources.

2.4.6.2 A Project Technical Committee (PTC) will be established bringing together the most relevant institutions concerned by the outputs and outcomes. This committee will be chaired by FCC, with GVWC acting as Secretariat. Representatives from SALWACO, Western Area Rural district council and National Protected Areas Authority, will be the other members. The PTC shall report to the Mayor, FCC and the General Manager, GVWC, who will in turn be responsible to the respective Council/Board and the Project Steering Committee.

2.4.6.3 The National Planning Committee, which is a statutory committee of the Ministry of Lands and Country Planning, will act as Project Steering Committee. The committee shall coopt all relevant stakeholders for the purpose of providing policy oversight during the preparation of the study, in particular including ensuring the effective enforcement of regulations concerning the protection of the natural environment, especially water resources and protected areas. The project will facilitate the effective functioning of the National Planning Committee. It is expected that this will form the nucleus of the envisaged coordination mechanism for effective delivery of integrated water supply and sanitation services to Greater Freetown.

2.4.6.4 The PIU will comprise GVWC staff who will implement the project with the support of a consultant.

2.5 Risks and Mitigation Measures

Table 1 below presents the main risks and mitigation measures.

Table 1: Main risks and mitigation measures

	Risk	Mitigation
outcome level	Lack of evidence of progress in governance and accountability in general and corruption perception indicators in particular hence diminishing donor appetite for the sector.	Consolidating and strengthening existing sector level coordination and accountability mechanisms among donors and national stakeholders.
	Donor competition for prominence in the sector (or donor preferences militating against strengthened and more effective support to the sector).	Ensure donor coordination and national stakeholder coordination meetings take place or a regular basis.
	Low interest in coordination, inter-agency competition hinders coordination.	Awareness creation and information, demonstration of benefits of integrated planning.
output level	Availability of data to enable effective analysis of the situation.	Hydraulic modelling by MCC (to be complemented and refined).
	No agreement on Master Scenario / priority projects.	Early involvement of all relevant stakeholders.
	Insufficient financial means for implementation.	Early donor involvement; Targeted packaging; Cost effective alternatives.
	Insufficient capacity to implement.	Capacity assessment of stakeholders, and development of required capacity building.

2.6 Costs and Financing

The project cost amounts to Euro 2,972,570 of which € 1,985,500 (67%) will be funded by the African Water Facility, D2B will contribute € 700,000 (24%) and Guma Valley Water

Company will contribute € 287,070 (10%). Annex 7.1 provides a detailed cost estimate. Table 2 shows the cost estimate by categories, Table 3 by component.

Table 2: Project Cost Estimate by Categories and Funding Source

Item	Category	Amount and Sources			Total
		AWF	D2B	GoSL, GVWC	
A	Goods	21 000,00 €	- €	- €	21 000,00 €
B	Services	1 769 000,00 €	636 000,00 €	256 650,00 €	2 661 650,00 €
C	Other (OC)	15 000,00 €	- €	4 320,00 €	19 320,00 €
	Total	**1 805 000,00 €**	**636 000,00 €**	**260 970,00 €**	**2 701 970,00 €**
	Contingency (10%, rounded)	180 500,00 €	64 000,00 €	26 100,00 €	270 600,00 €
	Grand Total	**1 985 500,00 €**	**700 000,00 €**	**287 070,00 €**	**2 972 570,00 €**
	Percentage	66,8%	23,5%	9,7%	100%

Table 3: Project Cost Estimate by Component and Funding Source

Item	Component	Amount and Sources			Total
		AWF	D2B	GoSL, GVWC	
1	Coordination IUWRM	58 000,00 €	- €	9 200,00 €	67 200,00 €
2	Master Plan incl. TA	1 689 000,00 €	140 000,00 €	53 575,00 €	1 882 575,00 €
3	Investment Proposals	- €	496 000,00 €	3 300,00 €	499 300,00 €
4	Project Management	58 000,00 €	- €	194 895,00 €	252 895,00 €
	Total	1 805 000,00 €	636 000,00 €	260 970,00 €	2 701 970,00 €
	Contingency (10%, rounded)	180 500,00 €	64 000,00 €	26 100,00 €	270 600,00 €
	Grand Total	1 985 500,00 €	700 000,00 €	287 070,00 €	2 972 570,00 €
	Percentage	66,8%	23,5%	9,7%	100%

3 Project Implementation

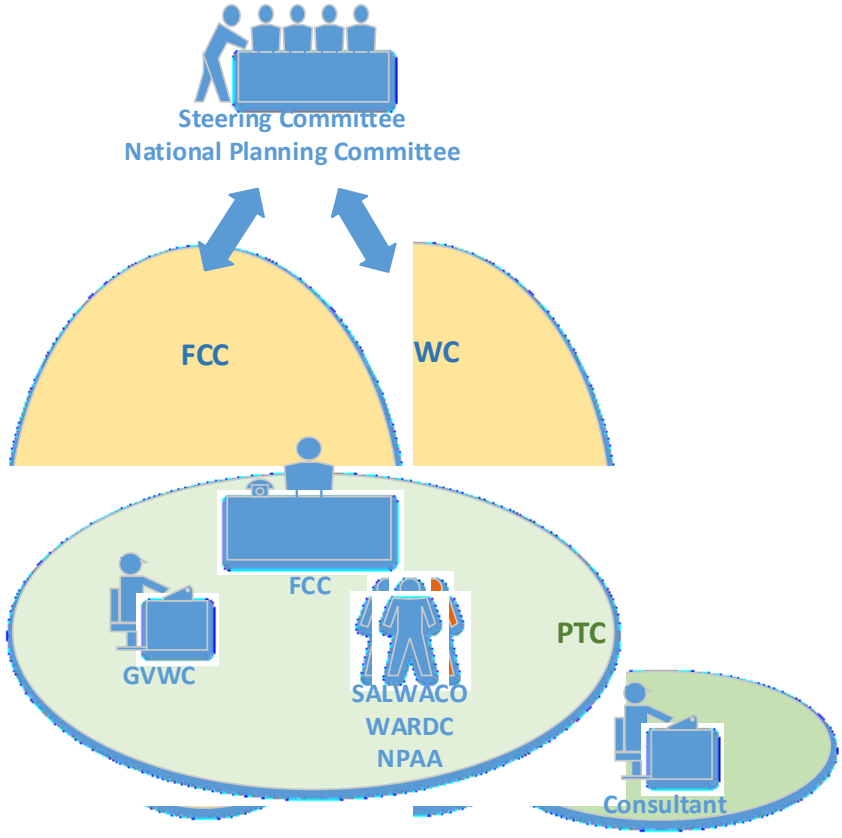
3.1 Recipient and Implementing Agency

The Recipient of the AWF grant will be the Ministry of Finance and Guma Valley Water Company will be the Executing Agency.

3.2 Implementation Arrangements

3.2.1 Project implementation responsibilities will be subsumed within the existing organisational structure of GVWC. The Deputy General Manager –Technical Services and projects will act as Project Coordinator and be directly responsible for project implementation. GVWC will also be receiving support from MCC towards technical assistance that is required for the management of the key projects including the ones financed by MCC, DFID, and AWF/D2B.

3.2.2 GVWC, as Executing Agency, will implement the project with the support of consultants. The consultants will provides the relevant expertise and services to undertake the master planning process and the development of priority/immediate and medium-term investment projects for different time frames.



3.2.2 A Project Technical Committee (PTC), established for purposes of technical oversight/execution of the project, will draw its members from the most relevant institutions concerned by the outputs and outcomes. FCC will chair the PTC, with GVWC acting as Secretariat. Representatives from SALWACO, Western Area Rural district council and National Protected Areas Authority, will be the other members.

3.3 Project Steering Arrangements

3.3.1 The National Planning Committee, which is a statutory committee of the Ministry of Lands, Country Planning and Environment (MLCPE) will act as Project Steering Committee. The committee shall co-opt all relevant stakeholders for providing policy oversight during the preparation of the study, in particular ensuring the effective enforcement of regulations concerning the protection of the natural environment, especially water resources and protected areas. The project will facilitate the effective functioning of the National Planning Committee. It is expected that this will form the nucleus of the envisaged coordination mechanism for effective delivery of integrated water supply and sanitation services to Greater Freetown.

3.3.2 The Project Steering Committee will comprise a maximum of 18 members who will include representatives from the following agencies: Ministry of Lands and Country Planning; Ministry of Works; Environmental Protection Agency; Protected Areas Authority; Ministry of Agriculture, Forestry and Fisheries, Ministry of Local Government and Rural Development; Western Area Rural District Council Chairperson; Ministry of Water Resources, Ministry of Tourism, Electricity and Water Regulatory Authority, Water Resources Management Agency; Guma Valley Water Company and Freetown City Council plus additional 3 members co-opted as and when required.

3.3.3 The Committee shall convene at least once every quarter, to consider the Quarterly Project Progress Reports and policy issues that need to be resolved in order to clear impediments to project implementation. The representatives should therefore be the authorized decision makers in their respective institutions.

3.3.4 Project progress monitoring will be based on a continuous informal information flow between the consultant and GVWC but also on formal regular monthly project meetings, which will be called and organised by GVWC. Deliverables shall be submitted according to the agreed schedule to the PTC for review and approval.

3.4 Financial Management and Auditing

3.4.1 The Guma Valley Water Company (GVWC) will be responsible for FM of the project. GVWC was established by an Ordinance of Parliament in 1961 to be responsible for water supply in the municipality of Freetown. The National Commission for Privatisation Act of 2002 primarily empowers the Commission with oversight role and responsibility for privatisation and reformation of public enterprises (which include GVWC) amongst others. The NCP has no immediate plans to privatise GVWC in the near future although it currently carries out commercialisation reforms in a bid to improve the operations of the company in service delivery.

3.4.2 The Financial Management (FM) assessment concluded the existing FM capacity within the Executing Agency, the GVWC is satisfactory, albeit with some challenges and deficiencies in the accounting and reporting and external audit sub-systems. GVWC has adequate and experience qualified FM staff managing the operations of the company, although they have not directly managed donor financed projects and consequently, are not familiar with the Bank's FM requirements for projects. Although GVWC maintains its books of account using 'Sage Pastel' accounting software, the software is outdated, nor optimised to directly interface with the new EDAMS Revenue and Billing software on a real time basis. Consequently,

accounting for the current years preceding the most recent 2013 audited account is conducted manually on excel with manual reconciliations of both EDAMS and Sage software's. In addition, the Financial and Accounting Policies and Procedures Manual (FAPPM) have not kept pace with changes in practice since it was produced in July 2007. Therefore, Annual audited accounts lag two year in arrears, with the latest being the signed audited account for 2013 financial year.

3.5 Disbursement and Audit

3.5.1 The project primarily consists of consultancy services, and direct payment arrangements will be used for disbursements which will follow the procedures outlined in the Bank's Disbursement Handbook. The Special Account method will be used for the Project Management component exclusively.

3.5.2 Recruitment of project auditors will follow the agreed procedures of the African Water Facility (AWF). An external auditor will be procured and paid for directly by AWF while two audits conducted over the life of the project will be required: one interim (and a final audit at project closure. The audits would include a requirement for an Ex-Post Review of Procurement. Regarding quarterly unaudited Interim Financial Report (IFR), quarterly IFRs will be produced for submission to the Bank within 30 days of the end of every calendar quarter to aid information flow and continuous supervision.

3.6 Procurement Arrangements

3.6.1 All procurement of works, and acquisition of consulting services financed by the Bank will be in accordance with the Bank's "Rules and Procedures for the Procurement of Goods and Works" dated May 2008 (revised July 2012); and "Rules and Procedures for the Use of Consultants dated May 2008 (revised July 2012), as amended from time to time, using the relevant Bank standard bidding and request for proposal documents, and the provisions stipulated in the Financing Agreement. The procurement of a consultancy firm to develop a master plan with an estimated contract value of UA 1,726,193 would be carried out through shortlist using the quality and cost based selection (QCBS) method. The procurement of individual consultants including technical assistance for project management and website development estimated to cost UA 173,203.5 and UA 5,500 respectively shall be carried out using international shortlisting, in accordance with the individual consultancy procedures of the Bank. The procurement of IT equipment and software, office supplies estimated to cost UA 20,900 and UA 2,200 respectively shall be carried out through shopping procedures as these are small value and off the shelf items. The implementing agency will be responsible for all envisaged procurements in the project.

3.6.2 An assessment of GVWC's capacity to undertake procurement activities under the project was carried out and determined to be generally adequate as per the proposed implementation arrangements. The EA is also currently handling several other donor-financed projects, and as such the Project Implementation team is familiar with Bank Rules and Procedures for procurement. GVWC will be supported with technical assistance to manage the additional workload envisaged under this project without posing a challenge to the team over

the project period. The Procurement Plan shall be prepared by the Executing Agency before the Project goes for approval.

3.6.3 Advance Procurement action with regard to the procurement of consultancy services for the undertaking the study was agreed. The Executing Agency presented a request to the Bank which was approved. The Sierra Leone Country Office will proactively support the implementing agency to ensure due adherence to the necessary Bank's rules and procedures.

3.7 Implementation Schedule

3.7.1 The duration of the project is estimated to 24 months from the date of signature of the grant excluding the period for procurement of services which is expected to be undertaken in advance of grant approval. The key milestones are indicated in Table 4.

3.8 Performance management plan

3.8.1 Purpose of the project management is the optimum implementation of project processes with limited resources (time, budget, personnel). Project performance will be monitored based on milestones (see Table 4) as well as the logical framework matrix for results based monitoring.

Table 4: Project main milestones (y ≤ 6 months)

Approval of Advance Contracting for Consultancy services for Freetown WSS Master Plan/ Improvement Studies	T0
Signing of Grant Agreement	T0+y months
Consultancy Services for Freetown WSS Improvement Studies - Contract Signing	T0+4months
WSS Status Assessment Report & Strategic Environmental Assessment Report	T0+y+2 months
Immediate Investment Priorities Report	T0+y+3 months
TOR for Detailed Engineering Design for Priority Investments	T0+y+3 months
Strategic Environmental Assessment Report	T0+y+3 months
Donor Round Table no.1	T0+y+4 months
Consultancy Services for Detailed Engineering Design - Contract Signing	T0+y+6 months
Master Plan Scenarios for Freetown WSS Improvement	T0+y+6 months
Detailed Design & Tender Documents + ESMP for Priority Investments	T0+y+10 months
Investment Appraisal - Priority Investments	T0+y+10 months
TOR for Detailed Engineering Design for Medium Term Investments	T0+y+10 months
Donor Round Table No.2	T0+y+11 months
Procurement of Construction Services for Priority Investments (Recommendation for Award of Contract(s))	T0+y+14 months
Detailed Feasibility Study & Draft Master Plan	T0+y+16 months
Detailed Design & Tender Documents + ESMP for Medium-term Investments	T0+y+20 months
Final Feasibility Study/Master Plan Report	T0+y+24 months

3.9 Monitoring and Reporting Arrangements

3.9.1 GVWC shall be responsible for the day to day supervision of the consultancy services and for liaising with the Consultants to ensure timely production and delivery of the outputs of the project. The Logical Framework matrix shall serve as an overall basis for the result based assessment of the outputs of the project during implementation and after completion.

3.9.2 The Project Coordinator will collaborate with the AWF and D2B Task Managers during project implementation to discuss matters arising and ensure rapid processing of necessary formalities, e.g. issuing of No-Objection, etc. The AWF and D2B will also jointly monitor project implementation, as well as review the progress reports. In addition, the AWF may undertake field supervision missions as the need to do so arises.

3.9.3 The Steering Committee shall ensure that the project remains on track as far as the project outputs are concerned. It shall approve relevant reports and deliverables before proceeding with further project activities.

3.9.4 GVWC shall submit quarterly progress reports to the AWF and D2B that clearly indicate the level of attainment of results and addresses any discrepancies from the set targets. The Implementing Agency shall also prepare and submit a project completion report attesting the completion of the study and showing lessons learnt from the implementation.

3.10 Visibility

3.10.1 The AWF has brought established Communication and Visibility Guidelines to the attention of grant recipients (attached to this document as annex 7.3). The Implementing Agency will apply these AWF Communication and Visibility Guidelines.

4 Effectiveness, efficiency, viability, and sustainability

4.1 Effectiveness and Efficiency

4.1.1 The main output of the project is an enacted water supply master plan. The master plan will improve the effectiveness of interventions in water supply and sanitation by ranking and prioritising needs for both hardware investment and accompanying soft measures. Efficiency will be achieved by a) identification and utilisation of synergies with other sectors and b) by applying appropriate criteria (e.g. increase in coverage per invested resources) in the process of prioritising investments.

4.2 Viability

4.2.1 Project viability is potentially threatened by deficiencies in enforcement of rules, e.g. the issue of building permits in protected forest areas. This will be addressed through the Technical and Steering Committees of the project as well as in the definition and assessment of scenarios.

4.3 Sustainability

4.3.1 Sustainability in water supply and sanitation service provision goes hand in hand with adequate planning and design, appropriate implementation mechanisms and sufficient resources and capacities to operate and maintain water supply and sanitation systems. The proposed master plans development will focus on all these issues and the master plan will not only come up with required hardware interventions but also accompanying measures to ensure sustainability of the investments.

4.3.2 The master plan and investment study process will also examine the potential for PPP and make proposals for private participation that will enhance sustainability.

5 Legal Instrument and Authority

5.1 Legal Instrument

The project will be financed pursuant to the signing of a Protocol of Agreement between The Government of the Republic of Sierra Leone and the African Development Bank (the "Bank") as Trustee for the African Water Facility Special Fund., and signing of the Grant Arrangement between Government of the Republic of Sierra Leone and the Netherlands Enterprise Agency-Develop2Build.

The AWF Operational Procedures (Art. 7.5.3) stipulate that the President of the Bank approves all proposed grants in the amount of between € 501,000 and € 2,000,000. The project presented in this memorandum belongs to this category.

5.1.1 Conditions Associated with the Bank's Intervention

Entry into force of the Protocol of Agreement: The Protocol of Agreement will enter into force on the date of its signature by the Government of the Republic of Sierra Leone and the African Development Bank.

Conditions precedent to first disbursement of the grant: The obligation of the Bank to make the first disbursement of the grant shall be conditional upon the entry into force of the Protocol of Agreement and (i) upon submission of evidence of the opening of a foreign currency denominated Special Account for the Project in a commercial bank acceptable to the Bank for the deposit of the proceeds of the Grant, (ii) constituting a Project Implementation Unit, and (iii) constituting a Project Steering Committee (PSC) to guide project implementation.

The conditions for first disbursement must be fulfilled within 90 from entry into force. Otherwise the grant will be eligible for cancellation.

5.2 Compliance with Bank's Policies

This project complies with all applicable Bank policies and AWF strategy and operational procedures.

6 Conclusions and Recommendations

6.1 Conclusion

6.1.1 The proposed project is consistent with related national strategies in Sierra Leone. The project will allow GWVC, and as well as development partners, to prioritize investments in water supply and sanitation and related IUWM aspects to maximise effect and efficiency.

6.1.2 The proposed project's outputs will allow Government of Sierra Leone to attract funds for sustainable infrastructure investments, which will ultimately help to achieve the project impact. The funding of this project is also consistent with the AWF 2012-2016 strategy whose first priority is the preparation of bankable infrastructure projects as well as with the Bank's 2013-2022 strategy, which promotes green and inclusive growth.

6.1.3 The total project duration is 30 months.

The project cost amounts to Euro 2,972,570 of which € 1,985,500 (66.8%) will be funded by the African Water Facility, D2B will contribute € 700,000 (23.5%) and Guma Valley Water Company will contribute € 287,070 (9.7%).

6.2 Recommendations

6.2.1 Based upon a critical assessment of the relevance, effectiveness, and sustainability of the project, as well as the credibility and capacity of the Implementing Agency, it is recommended that a grant of € 1,985,500 (67%) out of a total cost estimate of € 2,972,570 from the AWF be extended to the Guma Valley Water Company of the Republic of Sierra Leone for the implementation of the project described in this appraisal report.

7 Annexes

7.1 Cost Estimate

Freetown Water Master Plan - DETAILED BUDGET ESTIMATE		2 701 970 €								C1 - C4		
		2 972 570 €	67 200 €			1 231 900 €	644 400 €	484 400 €	274 070 €			
			67 200 €	410 100 €	359 500 €	462 300 €	644 400 €	484 400 €	274 070 €	AWF	GoSL	D2B
Item	**Unit**	**Rate €**	**Coordination M.**	**Master Plan**			**Investment Projects**		**PM**	1 805 000 €	260 970 €	636 000 €
										66,8%	9,7%	23,5%
				4	4	4	1,5	6	31			
				Assessment	Scenarios	MP	short term	nedium term				
Personnel cost												
Consultancy												
Team Leader /Project Design & Management expert	Month	16 000 €	1,5	4	4	4	1	5	2	328 000 €	- €	16 000 €
Land Use Planner/Urban Infrastructure Planning Expert	Month	16 000 €		1	0,5	1	0,5	0,5		48 000 €	- €	8 000 €
Water Supply Expert int	Month	16 000 €		4	2	4	6	3		208 000 €	- €	96 000 €
local	Month	4 000 €		4	2	4	6	5		60 000 €	- €	24 000 €
Sanitation Expert int	Month	16 000 €		2	1	2	3	3		128 000 €	- €	48 000 €
local	Month	4 000 €					3	0		6 000 €	- €	6 000 €
Hydrologist/Water Resources Engineering Expert	Month	16 000 €		1	1	1	5	1		64 000 €	- €	80 000 €
Hydrogeologist	Month	4 000 €		2	1	0,5	2	1		14 000 €	- €	12 000 €
Agronomist	Month	4 000 €		0,5	0,5	0,5				6 000 €	- €	- €
Economist	Month	6 000 €		0,5	0,5	1	0,5	0,5		15 000 €	- €	3 000 €
Utility Management/PPP Expert	Month	20 000 €		0,5	0,5	1	0,25	0,25		45 000 €	- €	5 000 €
Financial analyst	Month	6 000 €		0	1	3	2	2		30 000 €	- €	18 000 €
Gender/Community Development Expert	Month	10 000 €		2	1	1	1	1		50 000 €	- €	10 000 €
IUWM expert	Month	16 000 €	1,5	0,5	1		0,5	0,5		56 000 €	- €	8 000 €
Environmentalist	Month	14 000 €		1	2	3	4	2		- €	- €	168 000 €
International technician / designer	Month	14 000 €					4	2		42 000 €	- €	42 000 €
GIS Expert	Month	14 000 €		2	2	2	5	0,5		105 000 €	- €	56 000 €
Regional technician / designer	Month	6 000 €					6	3		18 000 €	- €	36 000 €
				18	15	19	30,25	18,75	2			
PTC												
Technical Assistance	Month	10 000 €		1	2	3	3	3		120 000 €	- €	- €
Project Co-ordinator	Month	1 800 €	2				1	3	25,5	- €	56 700 €	- €
Water Engineer	Month	1 500 €	2	4	4	4	1	6		- €	31 500 €	- €
Secretary	Month	400 €	2						31	- €	13 200 €	- €
Assistant Accountant	Month	900 €	2						31	- €	29 700 €	- €

Other costs												
International travels	Unit	2 000 €		10	5	5		10		60 000 €	- €	- €
International travels TA	Unit	2 000 €			1	1	1	1		8 000 €	- €	- €
Car rental - consultant (incl. fuel)	Day	100 €		240	240	240		360		108 000 €	- €	- €
Per Diem - consultant[1]	Day	130 €		270	230	290	450	280		197 600 €	- €	- €
Per Diem - TA	Day	130 €			20	20	20	20		10 400 €	- €	- €
Per Diem - PTC	Day	30 €								- €	- €	- €
Office rent (incl. running cost) - consultant	Month	3 500 €		4	4	4				42 000 €	- €	- €
Office rent - PTC	Month	1 500 €							31	- €	46 500 €	- €
Office supplies - PTC	Month	250 €							31	- €	7 750 €	- €
Electricity - Telecommunication - Internet (PTC Office)	Month	1 500 €							31	- €	46 500 €	- €
Vehicle running cost - PTC	Month	800 €							31	- €	24 800 €	- €
Other project cost										- €	- €	- €
Web-site	Lumpsum	5 000 €							1	5 000 €	- €	- €
Steering Committee, 18 members, max 8 meetings	Unit	540 €							8	- €	4 320 €	- €
Workshops awareness creation IUWM	Unit	5 000 €	2							10 000 €	- €	- €
Equipment - PTC										- €	- €	- €
Office furniture	Lumpsum	2 000 €							1	2 000 €	- €	- €
Personal computer	Unit	1 000 €							2	2 000 €	- €	- €
Plotter A0	Unit	5 000 €							1	5 000 €	- €	- €
WaterCad or similar (MCC?)	Unit	5 000 €							2	10 000 €	- €	- €
GIS licence	Unit	1 000 €							2	2 000 €	- €	- €
Contingencies										- €	- €	- €
10%, rounded	Lumpsum	10%							1	180 500 €	26 100 €	64 000 €

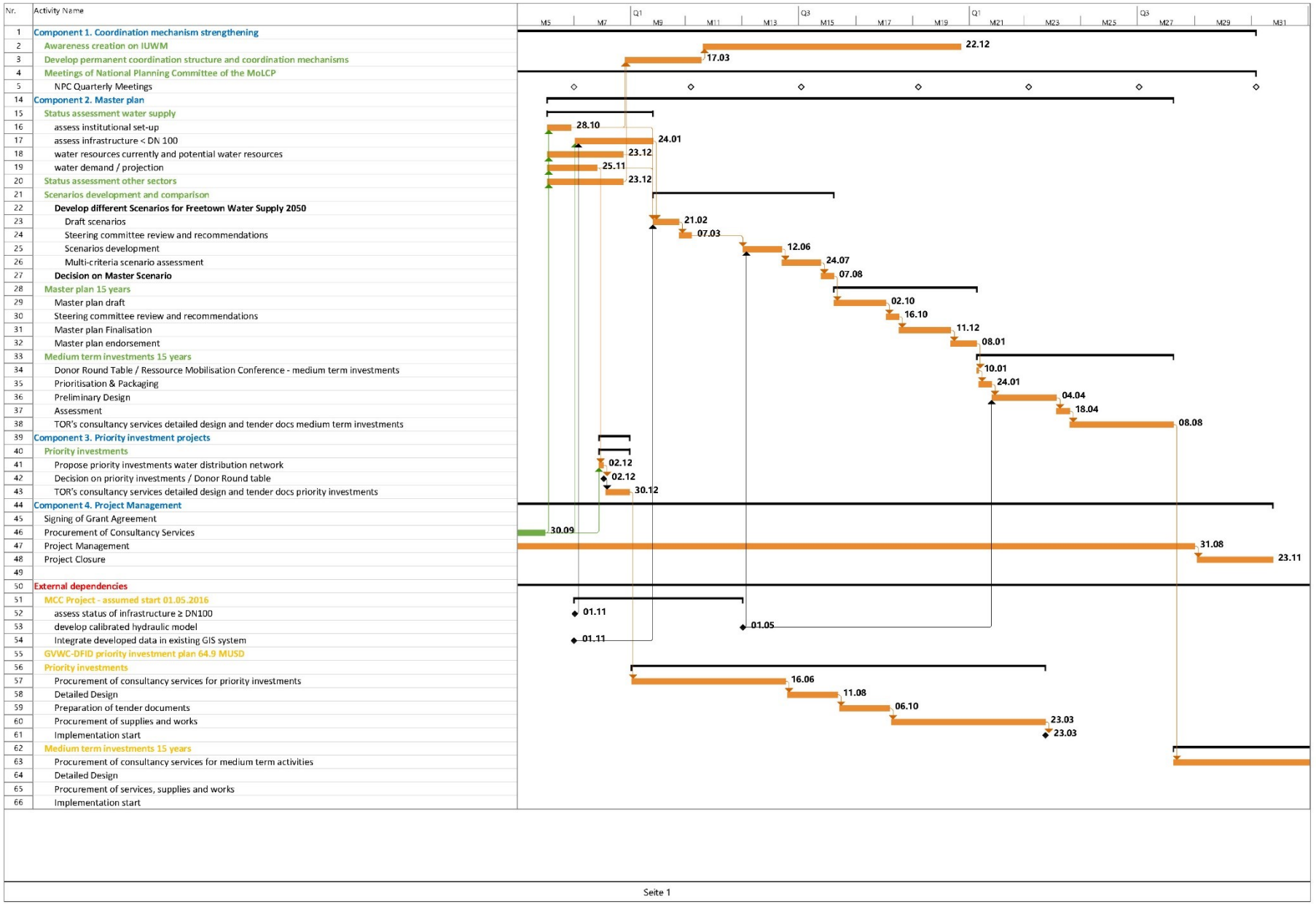
[1]...average international / local

7.2 Map

Source: http://www.ezilon.com/maps/africa/sierra-leone-physical-maps.html

Google Earth & catchments from GIS Min. of Lands

7.3 Time Schedule


Nr.
Activity Name
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M7
Q1
M9
M11
M13
Q3
M15
M17
M19
Q1
M21
M23
M25
Q3
M27
M29
M31
1 Component 1. Coordination mechanism strengthening
2 Awareness creation on IUWM
3 Develop permanent coordination structure and coordination mechanisms
4 Meetings of National Planning Committee of the MoLCP
5 NPC Quarterly Meetings
14 Component 2. Master plan
15 Status assessment water supply
16 assess institutional set-up
17 assess infrastructure < DN 100
18 water resources currently and potential water resources
19 water demand / projection
20 Status assessment other sectors
21 Scenarios development and comparison
22 Develop different Scenarios for Freetown Water Supply 2050
23 Draft scenarios
24 Steering committee review and recommendations
25 Scenarios development
26 Multi-criteria scenario assessment
27 Decision on Master Scenario
28 Master plan 15 years
29 Master plan draft
30 Steering committee review and recommendations
31 Master plan Finalisation
32 Master plan endorsement
33 Medium term investments 15 years
34 Donor Round Table / Ressource Mobilisation Conference - medium term investments
35 Prioritisation & Packaging
36 Preliminary Design
37 Assessment
38 TOR's consultancy services detailed design and tender docs medium term investments
39 Component 3. Priority investment projects
40 Priority investments
41 Propose priority investments water distribution network
42 Decision on priority investments / Donor Round table
43 TOR's consultancy services detailed design and tender docs priority investments
44 Component 4. Project Management
45 Signing of Grant Agreement
46 Procurement of Consultancy Services
47 Project Management
48 Project Closure
49
50 External dependencies
51 MCC Project - assumed start 01.05.2016
52 assess status of infrastructure ≥ DN100
53 develop calibrated hydraulic model
54 Integrate developed data in existing GIS system
55 GVWC-DFID priority investment plan 64.9 MUSD
56 Priority investments
57 Procurement of consultancy services for priority investments
58 Detailed Design
59 Preparation of tender documents
60 Procurement of supplies and works
61 Implementation start
62 Medium term investments 15 years
63 Procurement of consultancy services for medium term activities
64 Detailed Design
65 Procurement of services, supplies and works
66 Implementation start
22.12
17.03
28.10
24.01
23.12
25.11
23.12
21.02
07.03
12.06
24.07
07.08
02.10
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23.03
Seite 1

7.4 Visibility Guidelines

AFRICAN WATER FACILITY

COMMUNICATION AND VISIBILITY GUIDELINES

Adopted by the Governing Council 27 November 2013

Communication and brand visibility greatly matter to the AWF. The AWF views communication as a strategic function firmly tied to its strategies and business objectives. Steady communication with AWF stakeholders helps build credibility and secure their trust and esteem, which in turn, helps AWF build and protect its reputation. Communications is also about disclosure. The AWF is a multi-donor fund, and is accountable to a Governing Council that expects the AWF to hold itself to the highest level of accountability and transparency. The AWF is committed to making every effort to disclose, share and report information useful and relevant to its stakeholders and the greater public. This entails effectively communicating its achievements, progress, and results by using all means available, in a timely manner. All these elements are important for business and essential to attract and retain donors, and for AWF to maintaining its social license to operate.

Brand awareness is about making sure the public knows AWF exists and can tell the AWF apart from other water funds or organisations. The brand is a visual, memorable trigger, or a logo, that embodies the AWF and captures its core identity. Brand awareness is achieved over time, through activities meant to increase brand visibility, by repeated use and exposure of the logo at strategic places and times. The AWF logo is used as a seal or a signature used to signal AWF financial support or special collaboration.

The AWF has established Communication and Visibility Guidelines to the attention of partners, AfDB regional offices and grant recipients to help AWF more effectively achieve its brand and communications objectives, as laid out in the AWF Long Term Communications Strategy 2006 approved by the AWF Governing Council in 2006.

1 GENERAL REQUIREMENTS

1.1 At an early stage, when preparing communication activities related to an AWF supported event of project, contact the Communication Officer at AWF Secretariat, copying the AWF Project Manager.

1.2 At a minimum, and wherever possible, the AWF logo should be applied to outreach materials that pertain to AWF supported projects or events. The proper use of the logo should be discussed with the AWF Communication Officer.

1.3 The AWF should be verbally mentioned as donor of the project it is funding at public speaking events where the project is discussed, and also be mentioned as donor in any Power Point presentations relevant to the project funded by the AWF, using the name and the logo of the AWF appropriately.

1.4 The logo is to be obtained upon request from the AWF Communication Officer.

1.5 Documents and publications related to an AWF supported project or sponsored publication should contain the AWF logo, as well as this phrase on the cover page: “This project/program/study is funded by the African Water Facility”.

1.6 Implementing and executing agencies should always have a link to the AWF website on the page of their website relevant to an AWF-funded project/activity. The website is: www.africanwaterfacility.org

1.7 The AWF asks that grant recipients report back to the AWF Secretariat, any special mention, award nominations or recognition that the project may have received.

2 VALIDATION PROCESS

2.1 The AWF management is responsible for the final clearance of AWF communications products/outputs.

3 PRESS RELEASES & MEDIA ADVISORIES

3.1 The AWF will issue an AWF-branded press release every time a project is approved and/or signed, and when completed (handover).

3.2 AWF press releases must always include a quote from the Coordinator of the AWF, which must be cleared by the Coordinator.

3.3 The AWF encourages and appreciates initiatives to issue joint press releases with its grant recipients. A standard joint press release can be issued at any time agreed with the AWF (between launch and completion).

3.4 When the grant recipient wishes to produce a press release, liaising with the AWF Communication Officer is required, as well as receiving a quote from the AWF Coordinator, as appropriate, and getting approval and clearance.

3.5 The AWF should be included in the title and/or first paragraph of the press release, as appropriate.

3.6 The press release should incorporate the AWF logo, mention that funding was provided by the AWF, and mention the amount of the AWF funding.

3.7 If a press conference is planned, the press release should include the name of an AWF senior representative who will be present at the press conference, when relevant.

3.8 All press releases must bear the name and contact information of the AWF Communication Officer, and if possible that of the communication/media representative from the grant recipient.

3.9 The AWF boilerplate text (“About the AWF”) must be added to the text, including the AWF web site address. Please contact the AWF Communication Officer for the latest version.

3.10 The AWF has final validation of all its press releases, following a review process involving reviewers.

3.11 The rules above also apply to media advisories.

4 PRESS CONFERENCES

4.1 Press conferences to launch projects funded by the AWF should be organized in cooperation with the AWF, as much as possible.

4.2 The invitations should bear an AWF logo.

4.3 The AWF logo of a visible size should appear on any banner or poster to be displayed at the site of the conference.

4.4 Press kits need to include a press release with the AWF logo.

4.5 Whenever possible, an AWF banner should be on hand and set up to serve as a backdrop for TV and photo purposes.

5 PRESS VISITS

5.1 When appropriate, journalists should be invited to visit the project funded by AWF, accompanied by representatives of the AWF or the AWF Focal Point in the respective authority / government of the grant recipient.

6 VISITS BY GOVERNMENT OFFICIALS, AWF DONORS

6.1 Visits to projects by government officials and AWF donors are encouraged. Those should be prepared in coordination with the AWF and the AWF Focal Points of the host government. This can include meetings with local beneficiaries.

6.2 These visits may also include government officials and AWF donors' participation to round tables and other events, as relevant.

7 LEAFLETS, BROCHURES AND NEWSLETTERS

7.1 All leaflets and brochures relevant to the project/program financed by AWF should incorporate the basic elements of the AWF visual identity, i.e. the AWF logo -with or without tagline.

7.2 Leaflets and brochures produced by a grant recipient must also incorporate a definition of the AWF (boilerplate text).

7.3 The cover page of all documents pertaining to the project financed by the AWF must clearly identify the activity as being part of an AWF-funded activity.

7.4 Copies, including electronic copies of the publications, should be made available to the AWF.

8 ELECTRONIC COMMUNICATION

8.1 Electronic communication disseminating information on AWF-funded projects including websites, newsletter, and social media platforms, should link to the AWF website.

9 SIGNAGE

9.1 The grant recipient should produce display panels, posters or banners to promote their AWF-funded or AWF-related activities at exhibitions and other events, placed in strategic locations for all to see.

10 VEHICLES, SUPPLIES AND EQUIPMENT

10.1 AWF generally requests that vehicles, supplies and equipment funded by AWF be clearly identified, and visibly carry the AWF logo and the phrase "Provided with the support of the African Water Facility" in English, French or Portuguese, as relevant.

10.2 This requirement is subject to negotiation between AWF and the grant recipient as some supplies and equipment may be exempt.

10.3 The grant recipient must provide evidence of compliance with this rule (digital photos sent by email are recommended.)

11 PHOTOGRAPHS AND AUDIO-VISUAL PRODUCTIONS

11.1 Professional high resolutions (300 Dpi) digital photographs of the project funded by AWF should be supplied to the AWF throughout the different phases of the project, to document the progress of actions and events related to these, and to be used in print and online publications.

11.2 All photos should be submitted with full caption and credit information.

11.3 The AWF will be entitled to use or reproduce photos submitted to it without payment of royalties.

11.4 Whenever relevant, audiovisual materials should acknowledge AWF support, by featuring the AWF logo at the beginning and/or end of the movie/documentary.

11.5 Copies of the movie(s) / documentary (ies) should be supplied to the AWF.

12 COMMEMORATIVE PLAQUES OR SIGNAGE

12.1 Whenever relevant, the grant recipient should place a permanent plaque, or some other type of large, commemorative signage on the most visible part of the building, infrastructure or nearby the project site, which received funding by AWF, beside the name of the implementing agency and/or name of the project, for visitors to see.

12.2 When appropriate, the plaque or signage could contain the following sentence: “This [name of the infrastructure] was funded by the African Water Facility” alongside the AWF logo.

13 PROMOTIONAL ITEMS

13.1 Before taking any decision on the production of such items, the Communication Officer at the AWF should be consulted.

13.2 Promotional items bearing the AWF logo can be distributed to support communications activities related to the project funded by AWF. This may include T-shirts, caps, pens, notebooks, USB keys etc.

7.5 Draft Terms of Reference

African Water Facility
Facilité africaine de l'eau
Mobilising Resources for Water in Africa
Mobiliser des ressources pour l'eau en Afrique

Greater Freetown Water Supply and Sanitation Master Plan and Investment Studies

Consultancy Services
Draft Terms of Reference

July 2017

ver. 170740

African Water Facility

African Development Bank

Immeuble du Centre de commerce International d'Abidjan CCIA
Avenue Jean-Paul II
Abidjan
01 BP 1387

Table of Contents

List of Acronyms

AfDB..... African Development Bank
AWF ..... African Water Facility
DFID ..... United Kingdom Department for International Development
EPA ..... Environmental Protection Agency
FCC ..... Freetown City Council
GIS..... Geographic Information System
GoSL ..... Government of Sierra Leone
GVWC..... Guma Valley Water Corporation
IUWRM..... Integrated Urban Water Management
MAFFS ..... Ministry of Agriculture, Forestry and Food Security
MCC ..... Millennium Challenge Cooperation
MWR ..... Ministry of Water Resources
MHS ..... Ministry of Health and Sanitation
MLCPE ..... Ministry of Lands, Country Planning and Environment
NCCC..... National Climate Change Committee
NPAA..... National Protected Areas Authority
NRW..... Non-revenue water
NSCC..... National Secretariat for Climate Change
O&M..... Operation and maintenance
PTC ..... Project Technical Committee
SALWACO ..... Sierra Leone Water Company
SDG..... Sustainable Development Goal
SLRA ..... Sierra Leone Roads Authority
WAPFoR..... Western Area Peninsula Forest Reserve
WARDC..... Western Area Rural District Council

1 Background

1.1 Introduction

In 2012 Sierra Leone experienced a rather severe outbreak of cholera, affecting over 5,000 people with 63 deaths in the Western Area from January to August 2012. The outbreak brought into sharp focus the magnitude of the task at hand of making safe clean water accessible to the people, and the consequences to society and the nation in general when the task of providing access to safe clean water is not properly and promptly addressed. Women and children bear the overwhelming burden of collecting water in water-starved communities in the Western Area, often exposing themselves to great risks—rapes, teenage pregnancies are not uncommon—in doing so. Although 87.8% of the people in the Western Area have been assessed as having access to safe clean water, only 37.1% have access to pipe-borne water on premises; 53% of the people are without[8]. For this group of people, it means spending hours waiting in line to get water at street taps or from cut pipes in gutters, plus the associated high physical efforts required, or financial costs involved, in transporting the to their homes. Over the past decades, the population of Freetown has grown rapidly to about 2 million, mainly as a result of rural-urban migration that was facilitated by the 10-year civil war. This development is assumed to continue, with a predicted annual urban population growth rate of 2,7% until 2030[9]. The drastic increase in the number of people living in Freetown and the Western Area was not matched by a similar increase in capital investments in the water supply and sanitation infrastructure. Subsequently, the gap between demand for water and available supply widened. In Freetown, the average daily output of Guma Valley Water Company (GVWC) is app. 70,000m³ per day as against a daily estimated demand of 130,000m³ per day. Water is rationed to many areas in the City with almost no customers getting 24-hour supply. In the peri-urban areas and the densely populated poor urban areas customers receive supplies once a week or none at all.[10]

Recognizing this problem, GVWC requested financial assistance from the AWF to undertake detailed Technical Assessment Studies and develop a water supply masterplan including investment programs and the necessary financial inputs that will be required to provide an adequate and sustainable water supply and sanitation system for the Western Area for the next 15 years, giving current projections in population and economic growth.

The Sierra Leone Vision 2025 and the Poverty Reduction Strategy Paper (PRSP) aim at achieving a high quality livelihood for the people of Sierra Leone, attaining good governance through the rule of law and developing a strong and competitive economy. The PRSP objectives for the water and sanitation sector are, among others, to provide safe drinking water and sanitation facilities for deprived communities in rural and urban area, rehabilitate

[8] Sierra Leone Multiple Indicator Cluster Survey; UNICEF, 2010
[9] State of The World's Children 2015 Country Statistical tables; UNICEF, 2013
[10] The National Water and Sanitation Policy, Ministry of Energy and Water Resources, 2010

and reconstruct existing water facilities and provide adequate liquid and solid waste disposal facilities in urban areas. The objectives of the Water and Sanitation Policy are among others:

- to address cross-sectoral interests in water resources through integrated and participatory approaches in the planning, development and management of the water resources, and
- to improve the provision of safe water supplies and sanitation facilities in urban and rural areas through a coordinated approach, with the long term objective of achieving full coverage of piped water supply in the country.

One of the specific objectives of the Water and Sanitation Policy is to develop sustainable integrated plans for water resources development.

GVWC was established by The Guma Valley Water Act (1961) as a company owned by the Government and Freetown City Council that provides water supply services to the city of Freetown. The Ministry of Water Resources (MWR) is the overall authority and lead government institution on all water and water-related issues. It is responsible for the formulation of water policies, and their implementation, monitoring and evaluation, including drinking water for both urban and rural populations. It is also responsible for sector coordination, cross-sectoral planning, and sourcing funds for water projects. The National Planning Committee, which is a statutory committee of the Ministry of Lands, Country Planning and Environment (MLCPE) will act as the project steering committee.

The Energy and Water Regulatory Commission is responsible for the economic regulation of water and related sanitation delivery. Freetown City Council (FCC), established by the Local Government Act 2004, holds among its numerous devolved functions the responsibility for local level planning, the preparation of strategic local plans and land use plans. The Ministry of Agriculture, Forestry and Food Security (MAFFS) is the main institution responsible for regulating and promoting the development of the agricultural sector. It is mandated to encourage management planning in all forests, emphasizing watershed protection. The Land and Water Development Department has a mandate to create an enabling environment for sustainable development and utilization of land and water resources.

Responsibilities for sanitation are dispersed and not well defined. The current institutional framework creates confusion over whether sanitation responsibility should fall under the Ministry of Health and Sanitation (MHS), Environmental Protection Agency (EPA), the Ministry responsible for Local Government, or MWR (National Policy, paragraph 1.7.2). The Water Supply Division in MWR is responsible for maintenance of the sewerage system in Freetown, while the responsibility for liquid waste management in Freetown (pit latrines and septic tanks) lies with FCC.

1.2 Problem Definition

National targets for water supply and sanitation are 74 percent and 66 percent, respectively, as stated in the National Water and Sanitation Policy. While in terms of coverage the target

has been achieved[11], the actual situation with regard to system performance is different. The current status of most functional infrastructure in Freetown is to be characterized as aged and of insufficient capacity to cover current demand. Guma valley dam and network have been designed for approximately 300,000 people, serving currently approx. 1 million[12], a figure which is expected to rise up to 2 million in the foreseeable future. The current main water source (Guma valley dam) has a reliable yield of 80 000m³/d, the non-revenue water is assumed to be in the range of 45%[13]. The projected demand for 2018 is app. 90,000m³/d[14]. Consequently, the supply is currently zoned and not permanent for the entire supply area. The majority of the distribution network dates mostly from 1961, with only one pressure zone for the entire network. While 300 to 400 leakages per month are being repaired, still many leaks are obvious throughout system. Furthermore, bundles of small diameter service pipes/connections often extend for hundreds of meters due to the limitation of the distribution pipe network.

With regard to water resources, the current and potential future catchments are located in the Western Area Protected Forest Reserve. This area could provide sufficient resources for the water supply of the entire peninsula (according to the findings of the "Conservation of the Western Area Peninsula Forest Reserve" (WAPFoR) watershed project) but catchments are threatened by erosion/degradation, inadequate land use management, including the issuing of building permits for publicly owned land, including GVWC assets. Government has also prioritised the alternative of the largest river in Sierra Leone (Rokel River) as a future source of water for the capital city.

In realisation of the poor state of affairs, Guma Valley Water Company in 2012 embarked on a series of transformation programmes spanning a period of 13 months. During this period, revenue nearly tripled. There were marked reduction in the volume of water lost because of leaks, from 61% to about 45%. Service provision has improved generally, with waiting times for new connections and resolution of customer complaints reduced to days, down from months previously.

However, there is a natural limit to what internally driven reforms can achieve in terms of service improvements without a big capital injection. The results of the transformation programmes demonstrate that the Management and Staff of GVWC are now motivated and ready to leverage any external assistance.

The beneficiaries of this project will be the population of Greater Freetown Area, who either do not have access to clean water, or have access that is intermittent and unreliable.

The stakeholders include:

- the Government of Sierra Leone,

[11] WHO/UNICEF JMP, 2015
[12] 986,000; census 2004
[13] STRATEGIC WATER SUPPLY AND SANITATION FRAMEWORK, Inception Report 2007
[14] STRATEGIC WATER SUPPLY AND SANITATION FRAMEWORK, Freetown hydraulic model 2018

- *Guma Valley Water Company, the utility providing water in Freetown and the body running this project,*
- Freetown City Council,
- Ministry of Energy and Water Resources,
- Ministry of Health and Sanitation,
- the Energy and Water Regulatory Commission,
- the National Water Resources Management Agency (pending approval of Bill),
- the Sierra Leone Water Company (for water supply outside of Freetown),
- Western Area Rural District Council, who is responsible for delivery of services in the rural areas of the peninsula (Greater Freetown),
- Ministry of Lands, Country Planning and Environment with its National Planning Committee, responsible for land use management / physical planning,
- the National Protected Areas Agency, recently established to take over the mandate for protection of gazetted natural resources assets (forests and national parks),
- Ministry of Internal Affairs, Local Government and Rural Development,
- the Environmental Protection Agency,
- the Sierra Leone Roads Authority,
- Ministry of Agriculture, Forestry and Food Security,
- National Climate Change Committee (NCCC) and National Secretariat for Climate Change (NSCC),
- Ministry of Works (building permits),
- the National Commission for Privatization, with oversight responsibility and reform of public enterprises (including GVWC),
- Development Partners and the donor community, and
- the inhabitants of Freetown.

2 Project overview

2.1 Outcomes and impacts

Purpose of this project is the preparation of effective and efficient short and medium term investments into the water supply and to a limited extent sanitation system of Greater Freetown.

The project's immediate outcomes will be twofold: 1) activities in and related to water resources management in Freetown are being coordinated among relevant stakeholders and 2) Investments for Greater Freetown (including the proposed new airport and satellite city) Water Supply and Sanitation Improvement and Expansion can be mobilised.

These outcomes will contribute to sustainable human development through reduced water borne disease incidence and infant mortality.

2.2 Output

The project will provide three main outputs:

- A coordination - mechanism for IUWRM is in place and operational,
- Freetown Integrated Water Supply Master plan is enacted, and medium term investment projects are prepared, and
- Prioritised investment projects are prepared.

2.3 Activities

Time wise the project can be separated in two phases as shown in Figure 1 below. Phase 1 focuses on creating an enabling environment for a future IUWRM approach, the development of a Master Plan for a 15-year period and the definition of priority investments including the preparation of TOR for their design and procurement. During Phase 2, the project will further strengthen efforts of coordination for an IUWRM approach and prepare investments projects based on the Master Plan.

Horizontally, project activities are grouped in four components, which are directly related to the project's outputs:

(i) Coordination for IUWRM
(ii) Master plan development and medium term investment projects
(iii) Priority investments
(iv) Project management

These ToR correspond to the services requested for components 1 to 3.

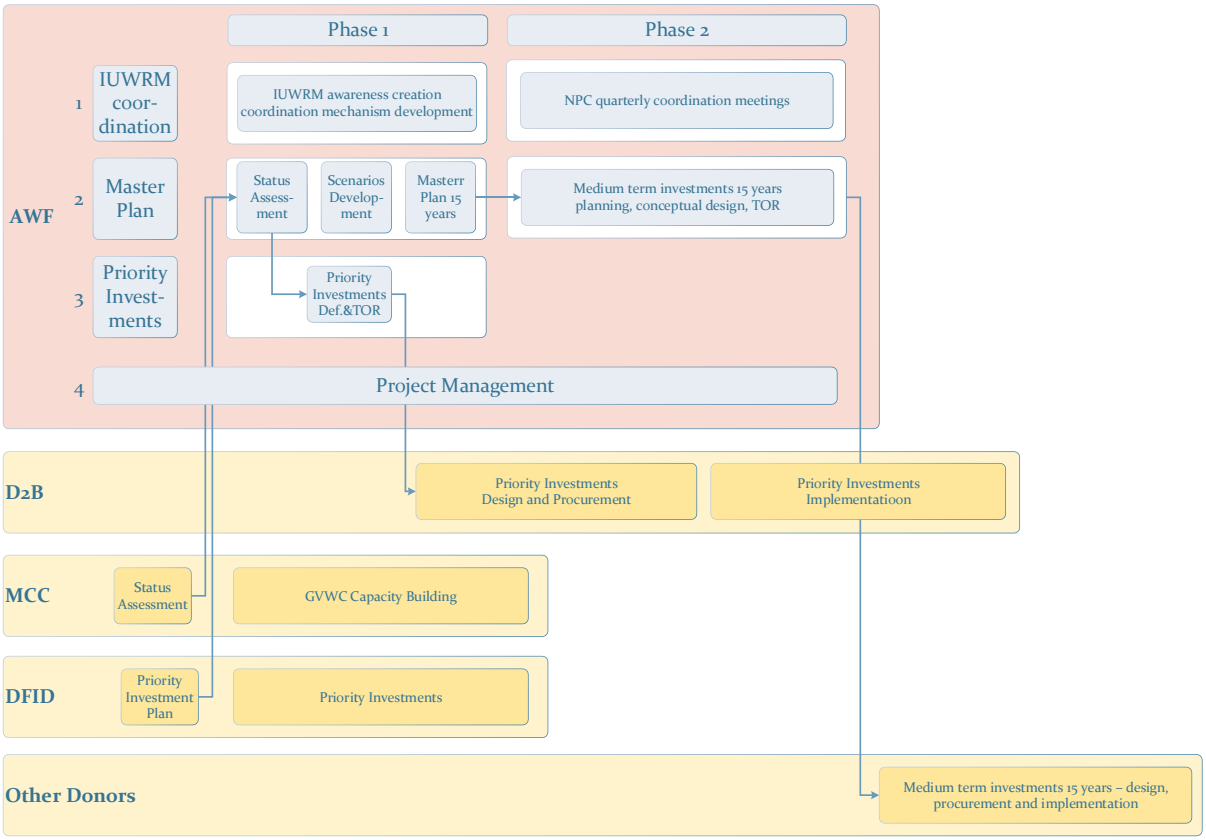


Figure 5: Project Structure (red background) and External Relations

Figure 1 furthermore shows how the proposed project is embedded within other actor's activities in the sector (yellow background).

A number of project activities will be closely linked with activities of other actors, the most important being:

- MCC, who are planning to implement a project which will carry out a capacity assessment and provide capacity building for GVWC, assess the status of water treatment and water supply infrastructure ≥ DN100, develop a calibrated hydraulic model of the assessed water distribution network and integrate developed data in existing GIS system;
- DFID is planning to support priority investments aiming at short term mitigation of the most pressing issues of the existing water supply system.
- D2B may support GVWC with priority investments as defined in the project's phase 1.

Some of these activities are overlapping with, respectively conditional for activities in this project and therefore adequate coordination is mandatory.

3 Scope of Services

3.1 Component 1 - Coordination for IUWRM

While the water and sanitation policy asks for an integrated water resources management approach to ensure that water does not become a constraint to national development,

mechanisms for coordination are not yet defined and operational. This project of developing a water master plan for Freetown is seen as an opportunity to initiate and support coordination for an integrated management of water resources in Greater Freetown Area. One of the objectives of the Water and Sanitation Policy is to "address cross-sectoral interests in water resources through integrated and participatory approaches in the planning, development and management of the water resources".

3.1.1 Awareness creation on IUWRM approach

Commonly main reasons for isolated planning approaches without consideration of other relevant players' activities are insufficient knowledge and/or a wrong understanding of the IUWRM approach. For this reason, it is foreseen to include awareness creation activities in the form of two workshops on IUWRM in the early phase of the project. The target group for this awareness creation will be the project's stakeholders as defined in section 1.2.

The first workshop with a duration of 3 days shall discuss the principles of integrated planning, highlight benefits of utilising synergies and show successful, comparable examples. Following the first workshop the consultant shall evaluate its impact and propose a suitable programme for a second workshop. The consultant shall include cost for suitable presenters if necessary.

3.1.2 Design of coordination structure and mechanism

At the same time, the consultant will look into currently existing coordination structures and mechanisms, e.g. the National Planning Committee, which could potentially be utilised to institutionalise an effective coordination mechanism for IUWRM. Based on this assessment the consultant will propose the most suitable coordination structure and mechanism for IUWRM. Furthermore, the consultant will support the relevant institution(s) to achieve the respective project output as defined earlier, which is an operational mechanism for IUWRM.

3.1.3 Regular institutionalised coordination

During the lifetime of the project, the consultant will make sure that regular institutionalised coordination happens, both in the form of regular formal coordination meetings as well as informal exchange on a working level. Furthermore, the consultant shall support the establishment of necessary framework conditions (e.g. in terms of budget, human resources) to guarantee, that coordination among relevant stakeholders in IUWRM can continue beyond the project's lifetime.

3.2 Component 2 - Master Plan Development

3.2.1 General

The consultant will prepare a water master plan for Freetown. Sanitation, defined as management of sewage and faecal sludge, solid waste and storm water, will be included as far as realistically possible and as far as mutual dependencies will allow. The water master plan will by necessity not be limited to drinking water supply only but will consider other current and potential future users in the supply area, e.g. industry and commerce, institutions, urban

agriculture, etc. The boundaries for the master plan will be Greater Freetown Area as shown in Figure 2 below. This covers the currently served and unserved areas as well as future planned settlement areas. The fact that the boundaries go well beyond the service area of GVWC necessitates the incorporation of SALWACO as an important stakeholder in the entire planning process.

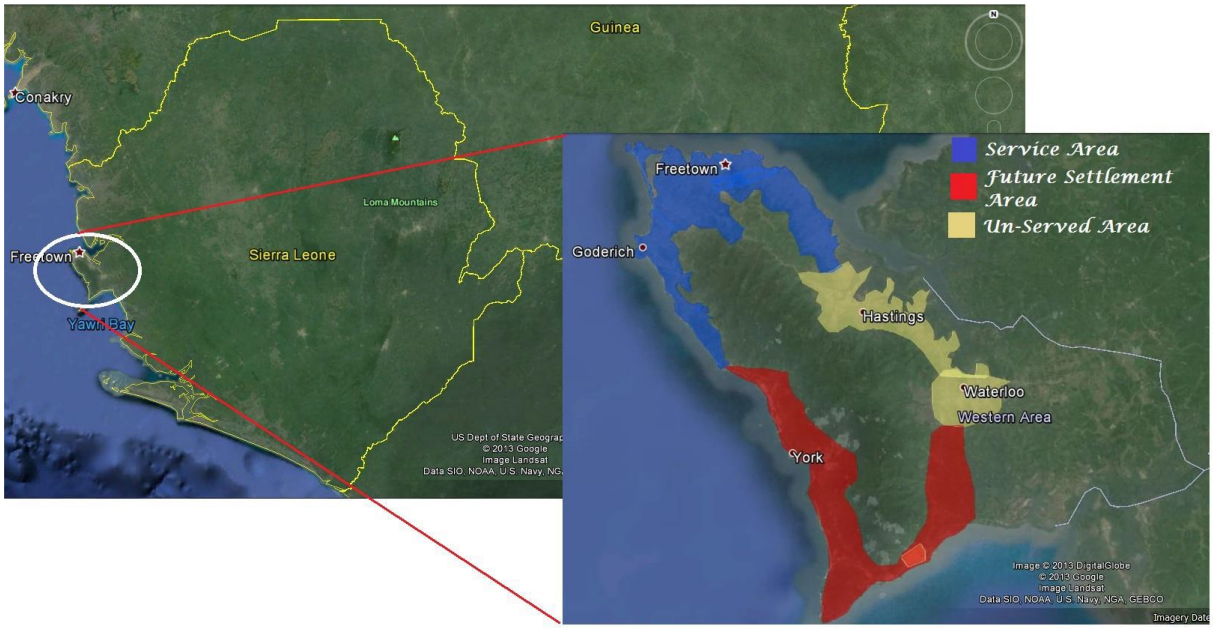


Figure 6: Master plan boundaries

The master plan will use a systemic approach, a system being defined as a set of technologies and/or processes working together, forming service chains or combinations thereof. The consultant will in this sense focus on water supply systems and ensure optimization of the linkages with other sectors through an integrated approach. Furthermore, the consultant will apply participatory methods to ensure ownership and support for the proposed integrated solutions. The development of the water supply master plan will follow a typical linear planning process, from information gathering and analysing, to setting goals and priorities, the development and evaluation of scenarios for the 2050 horizon and ultimately a medium term master plan with a timeline up to 2030. However, a number of iterative steps may be required to be able to agree on one final master scenario, which will be the base for the development of the master plans. In addition, the master plan will take into account that environmental, technical, economic and social conditions might significantly differ in the coming years from the current forecasts. Consequently, the plan must be sufficiently flexible and easily adjustable by GVWC after the end of the project. Thus, the master plan development will emphasise the process orientation of the plan and the logical need for an institutionalised review as shown in Figure 3 below.

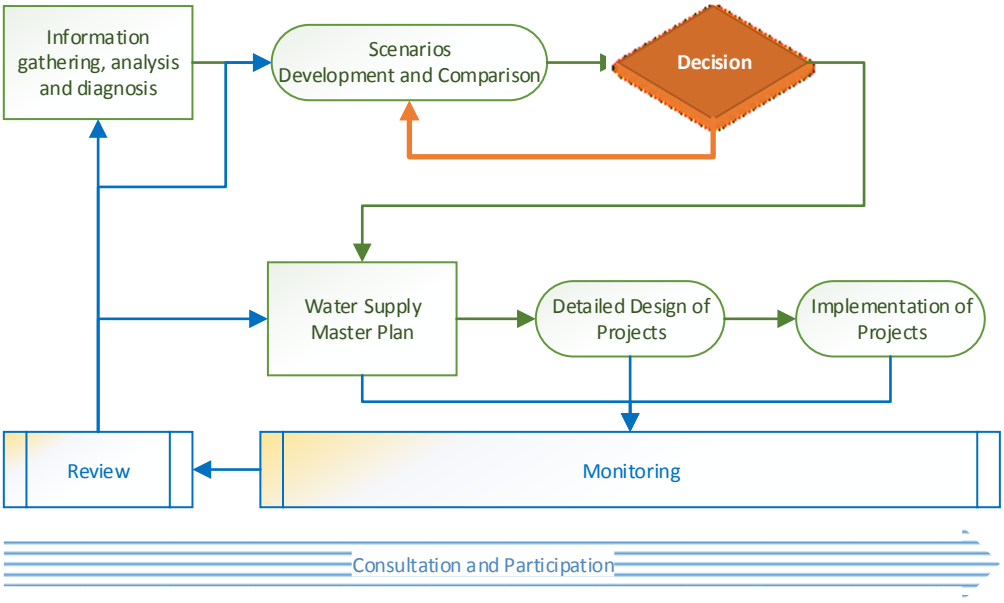


Figure 7: Water supply master planning process

3.2.2 Status assessement

The consultant will prepare a comprehensive analysis and diagnosis of the water supply in Greater Freetown Area and its linkages with other relevant sectors, e.g. sanitation including solid waste, energy, (urban) agriculture, industry and commerce, country and land use planning, and other infrastructure planning (e.g. roads).

Existing information, which may be useful in preparing a comprehensive analysis are, among others:

- Design Report "Strategic Water Supply and Sanitation Framework" (Atkins, 2009), incl.
- hydraulic network models,
- Feasibility Study Report for Rokel Water Supply Project (CGCOC Group Co., Ltd., 2013),
- Freetown Structure Plan 2013–2028 (Project Institutional Support to Freetown City Council and to the Urban Planning Authorities, 2014),
- Existing Ministry of Lands, GVWC GIS data.

This analysis will also rely on information generated by other actors in close timely proximity:

- MCC is planning to implement a project which will carry out a capacity assessment and provide capacity building for GVWC, assess the status of water treatment and water supply infrastructure ≥ DN100, develop a calibrated hydraulic model of the assessed water distribution network and integrate developed data in existing GIS system;
- DFID is planning to support priority investments aiming at short-term mitigation of the most pressing issues of the existing water supply system.

The result will be a clear and detailed picture of the current situation, including the identification of strengths and weaknesses, opportunities and risks of the water supply in Freetown Greater Area, for each of the themes listed below.

This first phase of the master planning process provides comprehensive input for the development of long-term water supply scenarios in the next phase. In a first step a technical and socio-economic survey shall be carried out aimed at assessing the state of existing water supply facilities and infrastructure, including existing and potential future sources, their social, environmental, economic and financial impacts. For current and potential future sources of water the survey will include an assessment of risks to water quality and quantity by other sectors[15] as well as external factors (climate change).

For the sake of an integrated approach, this analysis and diagnosis of the basic framework shall not only cover the existing water supply systems and infrastructure, but also other relevant aspects like:

- current and potential future water sources and catchment areas (including alternative sources)
- water quality requirements for different users and from different sources
- water supply systems
- climate, climate change
- public health
- re-use of water
- energy / electricity
- storm water drainage
- land use and urban planning
- legal and regulatory framework
- (urban) agriculture
- commerce and industry
- environment
- hydrogeology / geology / soil
- institutional framework
- tariffs and tariff structure

Major stakeholders in areas relevant for the development of the Master Plans are summarised in Figure 8.

Results of this phase shall be presented in maps based on and integrated in existing GIS/MIS systems. Close collaboration with ongoing MCC activities regarding GIS and GVWC capacity building will be required.

[15] e.g.: P.G. Munro (2009): Deforestation: constructing problems and solutions on Sierra Leone's Freetown Peninsula, Journal of Political Ecology, Vol. 16
F.A. Akiwumi (1997): Conjunctive water use in an African river basin: a case study in poor planning, *Sustainability of Water Resources under Increasing Uncertainty* (Proceedings of the Rabat Symposium, IAHS Pub. No. 240, 1997.

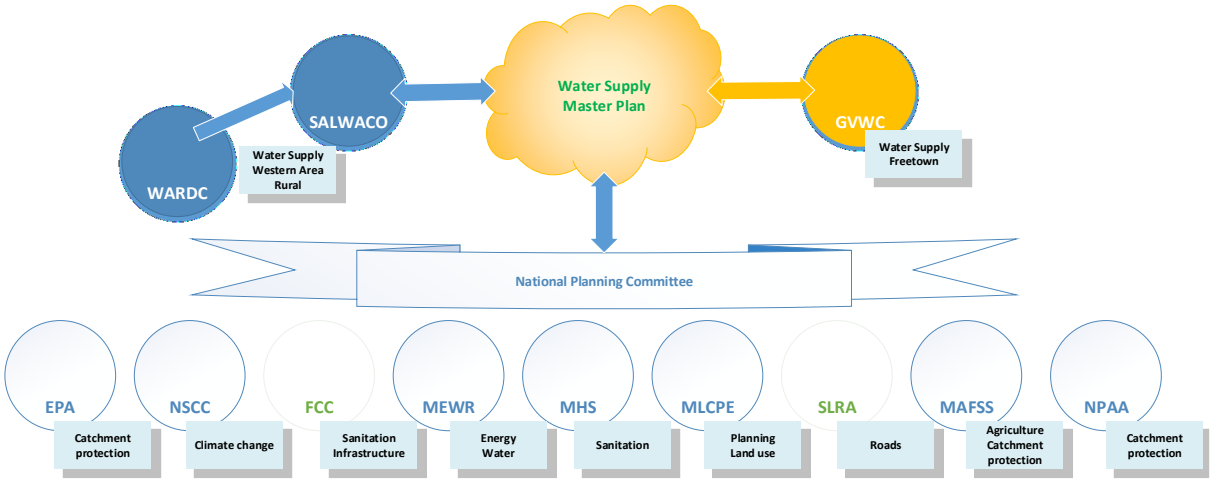


Figure 8: Stakeholders in the development of the Water Master Plan

3.2.3 Multi-criteria assessment of Scenarios

In this part of the planning phase the consultant will compare different water supply scenarios for a 2050 planning horizon in a comprehensive manner. Scenarios will be based on valid water supply and other policies and strategies. In a first step the range of applicable, possible options needs to be defined. The term "possible options" refers to different possible (alternative) water sources as well as different technical options and approaches (e.g. dual systems, etc.). By nature of an integrated approach technology options utilising synergies between different sectors will have to be included. In the following, different scenarios will be developed. A scenario is defined as a desired ultimate state of a water supply system (from source to consumer and including services) for a given area, in this case Greater Freetown Area. Scenarios will range from traditional approaches to highly innovative approaches and technology options, considering different degrees of centralisation/decentralisation, utilisation of alternative sources, demand side measures, etc. Alternatives, in particular non conventional alternatives, shall not be excluded a priori but only following a thorough assessment as described below. In addition, scenario development should in principal not be hindered by the current regulatory framework and current practices. Scenarios may utilise options, which the current regulatory framework has not considered and for which it may therefore be inhibiting. In addition, proposed technology options' performance may deviate from currently valid standards. In these cases, the scenario will highlight and justify required measures to create a supportive environment for these technologies (e.g. amendment of laws and/or standards). Scenarios will consider political requirements as presented in strategic documents and planned developments in other sectors, e.g. agriculture, land use, sanitation, industry, etc., as well as their impact on these sectors.

A scenario description shall include:

- a description of
  - the proposed sources for water including alternative sources if and were applicable, source quality, quantity and planned utilisation,

  - the proposed technical solutions foreseen for all different locations in the targeted area (from source to consumer),
  - the estimated energy requirements,
  - estimated infrastructure dimensions (e.g. reservoir dimensions, network lengths),
  - estimated cost of investment, broken down by units, and
  - estimated cost of operation and maintenance (by units);
- plans/maps indicating essential units (based on approved resp. proposed land use plans);
- a justification of proposed options foreseen for all different locations in the targeted area;
- an estimate of the number, type and specific demand (quality- and quantity-wise) of users served by the different systems proposed;
- hydraulic model(s) of the proposed systems (based on the model of the existing system developed by the MCC project "Guma Valley Water Company institutional strengthening activity", expanded by smaller size network sections, which are not covered by the MCC project);
- a description of the implications of proposed systems and technologies on existing standards and regulations;
- an assessment of the scenario impacts on other sector's planning and, if available, planning documents;
- soft measures, as awareness creation campaigns, behaviour change activities (social marketing), capacity building, required to achieve the scenario shall be defined, described and costed.

The consultant, jointly with GVWC, will carry out a multi-criteria assessment of the scenarios. The final selection of evaluation criteria shall be made in agreement with all relevant stakeholders. Financial, economic, environmental, social or climate change related criteria may be included. The result of this step of performance evaluation will be a comparison of different scenarios in the form of a matrix, showing every scenario's performance in relation to agreed evaluation criteria. To simplify this comparison where possible and agreeable a conversion of a criterion into cost may be taken into consideration.

Based on the outcome of the scenario development and comparison step, an informed decision for one Master-Scenario will be taken by the Steering Committee, which will then be developed into a Master Plan. This decision making process will be facilitated by GVWC and the consultant. The Master Scenario may be a mix of previous scenarios, and therefore it may have to be re-assessed based on the same approach as defined for other scenarios above.

Due to the nature of the integrated approach, the Water Supply Master Plan will have an influence on, and be influenced by plans in other sectors and this will have to be taken into account accordingly. To enhance the flexibility of the planning approach as well as its

effectiveness the Consultant will assess the existing institutionalised monitoring system, propose adaptations and establish continuous and institutionalised feedback into a regular review process. It has to be noted, as mentioned earlier, that this process may require iteration depending on the acceptance of the developed scenarios.

3.2.4 Master Plan preparation

Based on the "Master Scenario", developed and agreed upon in phase 2, an Integrated Water Supply Master Plan will be prepared for a planning horizon up to 2030. Recognising the strong dependencies between water supply and sanitation, the master plan will focus on the development of projects, which utilise synergies between water supply and sanitation as well as other concerned sectors. This Master Plan may be based on a number of conditions and assumptions, which have to be realised in order to guarantee its successful implementation. Therefore a number of accompanying measures, ranging from development of additionally required capacities of relevant stakeholders (e.g. GVWC, SALWACO, FCC), to awareness creation, respectively behaviour change activities (e.g. policy awareness, demand side measures, reuse) may be required and shall be planned for. This plan of "soft" activities shall clearly show the perceived deficit, target group, activities, costs and timing within the master plan horizon. Additionally an economic analysis of the entire water supply system for Greater Freetown Area shall be prepared including newly planned facilities within the Master Plan time horizon. The consultant will refine the economic analysis undertaken in phase 2. The master plan will have to consider ongoing or soon to be started priority activities and investments by other actors (MCC, DFID, compare sections 2.3, 3.2.2 and 3.2.3), as well as priority investments defined by the project itself (see component 3 below).

3.2.5 Planning and conceptual design of medium term investments 2030

Required investments in hardware and software activities as defined by the endorsed 2030 master plan shall be ranked in a next step. The ranking shall be justified by a problem analysis, based on the state of existing infrastructure, environmental conditions, water resources quantity, quality, qualitative and quantitative risks, etc. Ranking and also packaging of investments shall also consider a resource mobilisation conference which will be organised by the consultant after the endorsement of the master plan. Purpose of this process is to be able to prepare tailor made project packages for different potential financers in a next step. Based on the needs of the Master Plan, donors' interest, PPP potential, and Government capabilities, a financing strategy shall be developed that summarises targets and actions to be taken to achieve the targets. The financing strategy shall focus on investments (including accompanying measures) but also make proposals on financing of O&M cost.

For said investment packages, the consultant will prepare preliminary design documents. The preliminary design is meant to bridge the gap between the design concept (Master Scenario) and the detailed design phase. In this task, the overall system configuration will be defined, and schematics, diagrams, and layouts of the project prepared to provide early project configuration.

The preliminary design will comprise at least:

- a summary of baseline data, inclusive of additionally collected baseline data where required,
  - topographical survey,
  - soil and geotechnical survey,
  - specific cost information (investment, O&M);
- a description of design assumptions, design parameters;
- a hydraulic model of the current and (if required stepwise) improved system(s) up to the planning horizon;
- development of a graphical solution of the concept, considering technical, environmental, social, economic, functional, energy and reuse specific requirements and including the integration of all relevant sectors and stakeholders;
- integration of existing designs;
- description of planned facilities and infrastructure;
- graphical presentation of the entire draft design
  (site plans 1:5000, facilities 1:500-100);
- cost estimates for both investment and operation and maintenance,
  broken down by units (to be defined jointly with the client).

While the preliminary design will be broken down into investment packages, every package will be fully integrated in the overall Master Plan. The consultant shall also undertake a financial analysis for GVWC as far as not covered by other activities. An environmental impact assessment will be prepared following the requirements of the Environment Protection Agency Act, 2008. In addition the proposed Master Plan interventions shall undergo an ESIA following AfDB's Environmental and Social Assessment Procedures (ESAP).

3.2.6 TOR for detailed design and tender document preparation for medium term investments

The consultant will then prepare Terms of Reference for the detailed design and tender document preparation for the medium term investments defined above.

The TOR shall clearly specify at least:

- Project objectives
  - State of available documentation
  - Project extent
  - Institutional set-up and parties involved
- Scope of services
  - Required investigations and surveys
  - Detailed design standards
  - Drawings standards
  - Preparation of tender documents – standards
  - Environmental assessment of project impacts
- Time schedule and reporting

- Assistance to GVWC in tendering and contracting

GVWC will approve the TOR before procurement. Based on approved TOR the consultant will prepare procurement documents which fulfil both GVWC as well as the relevant financers requirements.

3.3 Component 3 - Priority Investments

Based on a preliminary assessment of the current status of the existing water supply system, the consultant will define priority investments. This activity aims at mitigating the current crisis of the water supply system as quickly as possible. Clearly at this point in time a comprehensive base for decision making is not yet available and therefore priority investments will have to take this uncertainty into account. Furthermore, other ongoing or soon to be started activities will also cover priority investments. These developments will have to be considered as well.

Following proposals for priority investments, which are not yet funded by other activities but considered sensible, necessary and urgent, a donor round table will be organised by the consultant jointly with GVWC to decide on priority investments (incl. donor targeted packaging).

For these priority investments, the consultant will then prepare Terms of Reference for the detailed design and tender document preparation for immediate procurement of a consultant.

The TOR shall clearly specify at least:

- Project objectives
  - State of available documentation
  - Project extent
  - Institutional set-up and parties involved
- Scope of services
  - Required investigations and surveys
  - Detailed design standards
  - Drawings standards
  - Preparation of tender documents – standards
  - Environmental assessment of project impacts
- Time schedule and reporting
- Assistance to GVWC in tendering and contracting

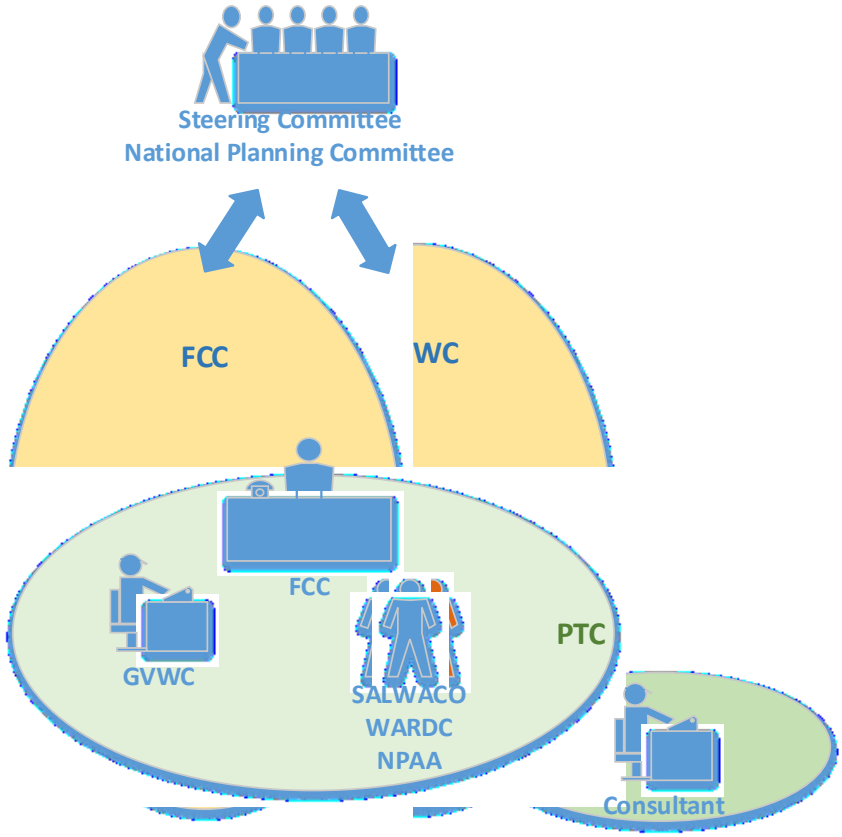
GVWC will approve the TOR before procurement. Based on approved TOR the consultant will prepare procurement documents, which fulfil both GVWC as well as the relevant financer's requirements.

4 Assignment implementation and overseeing arrangements

4.1 Implementation Arrangements

4.1.1 Structure

The project will be implemented by GVWC with the support of a consultant. The consultant will report directly to GVWC, who, as Executing Agency, will implement the project. The consultant will support GVWC in the master planning process and the development of investment projects for different time frames.



4.1.2 Facilities, Equipment and Data Provided by the Consultant

The consultant shall provide his own facilities, tools, consumables, etc. to enable him to carry out all required activities in a timely, effective and efficient manner.

4.1.3 Inputs Provided by the Client

The client will (within his capacities) facilitate

- access to existing information, documentation
- meetings with relevant stakeholders
- consultative meetings and workshops (logistics to be covered by the client)

4.2 Project Steering and Monitoring Arrangements

4.2.1 Project Technical Committee

A Project Technical Committee (PTC) will draw its members from the most relevant institutions concerned by the outputs and outcomes. FCC, with GVWC acting as Secretariat, will chair it.

Representatives from SALWACO, Western Area Rural district council and National Protected Areas Authority, will be the other members.

4.2.2 Steering Committee

The National Planning Committee, which is a statutory committee of the Ministry of Lands and Country Planning, will act as Project Steering Committee.

The committee shall co-opt all relevant stakeholders for providing policy oversight during the preparation of the study, in particular ensuring the effective enforcement of regulations concerning the protection of the natural environment, especially water resources and protected areas. The project will facilitate the effective functioning of the National Planning Committee. It is expected that this will form the nucleus of the envisaged coordination mechanism for effective delivery of integrated water supply and sanitation services to Greater Freetown.

The Project Steering Committee will comprise a maximum of 18 members who will include representatives from the following agencies: Ministry of Lands and Country Planning; Ministry of Works; Environmental Protection Agency; Protected Areas Authority; Ministry of Agriculture, Forestry and Fisheries, Ministry of Local Government and Rural Development; Western Area Rural District Council Chairperson; Ministry of Water Resources, Ministry of Tourism, Electricity and Water Regulatory Authority, Water Resources Management Agency; Guma Valley Water Company and Freetown City Council plus additional 3 members co-opted as and when required.

The Committee shall convene at least once every quarter, to consider quarterly project progress reports and policy issues that need to be resolved in order to clear impediments to project implementation. The representatives should therefore be the authorized decision makers in their respective institutions.

4.2.3 Project monitoring process

Project progress monitoring will be based on a continuous informal information flow between the consultant and GVWC but also on formal regular monthly project meetings, which will be called and organised by GVWC. Deliverables shall be submitted according to the agreed schedule to the PTC for review and approval.

5 Deliverables

5.1 General project reporting

Quarterly progress reports will be submitted to GVWC to inform on the projects implementation process with regard to time, milestones and deliverables.

At the end of the project a project completion report will be prepared summarising the project's implementation process and all deliverables as required below.

Every report shall be submitted as a draft for review and comments (soft copy and three hardcopies). In case of comments, the report shall be revised accordingly and a final version submitted within 2 weeks of receiving comments first in soft copy, and after approval, in five hard copies.

5.2 Master Plan

5.2.1 Status assessment

4 months after commencement date the consultant shall submit a report on the assessment of the status of water supply and other relevant sectors.

5.2.2 Proposed Scenarios

5 months after commencement date a report with a comprehensive description of scenarios proposed for evaluation and comparison shall be submitted for approval before proceeding with further work on the scenario development.

5.2.3 Final scenario evaluation and comparison

10 months after commencement date a report on comprehensive evaluation and comparison of scenarios shall be submitted for approval.

5.2.4 Master Plan

12 months after the commencement of the project the draft Master Plan shall be presented, including at least:

- Master-Scenario's prioritised activities for the 15 year period including justification
- Master plan description (text and plan)
- Preliminary design (schemes, drawings, calculations)
- Cost calculation (investment, operation and maintenance)
- Economic analyses (cost of service, cash flow forecast, etc.)
- Tariff systems' options
- Accompanying measures (type, scope, timing, cost)

Based on comments received from the client final 10-year plans shall be submitted 14 months after commencement of the project.

5.2.5 Planning and conceptual design of medium term investments 2030

The endorsed master plan will be presented in a resource mobilisation conference for prioritisation and packaging of investments.

The consultant will submit conceptual designs and preliminary design documents for medium term investments within 3 months following this resource mobilisation conference with the minimum content specified in 3.2.5.

5.2.6 TOR for detailed design and tender document preparation for medium term investments

6 months after the resource mobilisation conference the consultant shall submit TOR's for consultancy services for the detailed design and tender documents for medium term investments.

5.3 Investment Projects

5.3.1 TOR priority investments

Within 2 months after commencement date, the consultant shall submit a proposal on priority investments in the water distribution network, in time for a donor round-table, which will be the forum to decide priority investments. One month after the decision on priority investments, the consultant will submit TOR's for consultancy services for detailed design and tender documents for priority investments.

5.4 Schedule of Deliverables

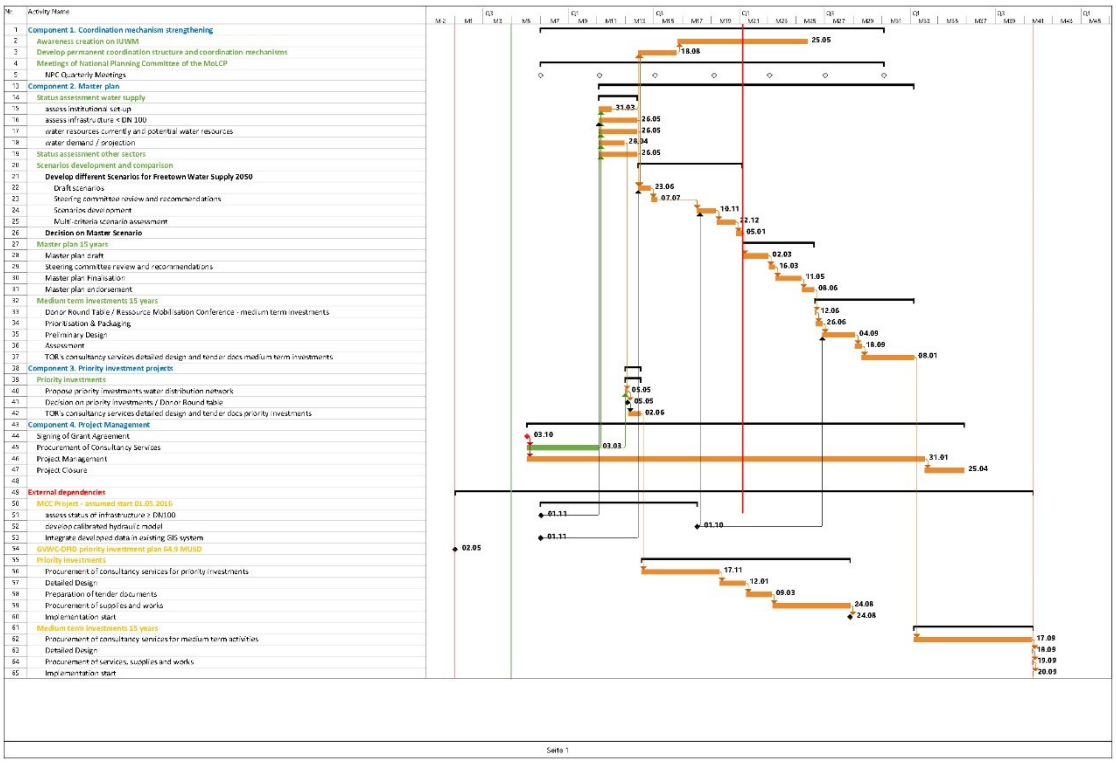
Table 5: Schedule of Deliverables

Master Plan	
Status Assessment Report	Commencement + 3 months
Proposed Scenarios Report	Commencement + 4 months
Final Scenario Report	Commencement + 11 months
Master Plan draft	Commencement + 12 months
Master Plan	Commencement + 15 months
Preliminary design documents for medium term investments	Commencement + 19 months
TOR medium term investments	Commencement + 23 months
Investment Projects	
Proposal on priority investments	Commencement + 2 months
TOR priority investments	Commencement + 3 months

6 Duration

The project shall be implemented within a period of 23 months as shown in Table 6.

Table 6: Indicative Timetable



Nr.	Activity Name
1	**Component 1. Coordination mechanism strengthening**
2	Awareness creation on IUWM
3	Develop permanent coordination structure and coordination mechanisms
4	Meetings of National Planning Committee of the MoLCP
5	NPC Quarterly Meetings
13	**Component 2. Master plan**
14	Status assessment water supply
15	assess institutional set up
16	assess infrastructure < DN 100
17	water resources currently and potential water resources
18	water demand / projection
19	Status assessment other sectors
20	Scenarios development and comparison
21	**Develop different Scenarios for Freetown Water Supply 2050**
22	Draft scenarios
23	Steering committee review and recommendations
24	Scenarios development
25	Multi-criteria scenario assessment
26	**Decision on Master Scenario**
27	Master plan 15 years
28	Master plan draft
29	Steering committee review and recommendations
30	Master plan finalisation
31	Master plan endorsement
32	Medium term investments 15 years
33	Don or Round Table / Ressource Mobilisation Conference - medium term investments
34	Prioritisation & Packaging
35	Preliminary Design
36	Assessment
37	TOR's consultancy services detailed design and tender docs medium term investments
38	**Component 3. Priority investment projects**
39	Priority investments
40	Propose priority investments water distribution network
41	Decision on priority investments / Donor Round table
42	TOR's consultancy services detailed design and tender docs priority investments
43	**Component 4. Project Management**
44	Signing of Grant Agreement
45	Procurement of Consultancy Services
46	Project Management
47	Project Closure
48	
49	**External dependencies**
50	MCC Project - assumed start 01.01.2016
51	assess status of infrastructure > DN100
52	develop calibrated hydraulic model
53	integrate developed data in existing GIS system
54	GVWC/DFID priority investment plan 64.9 MUSD
55	Priority investments
56	Procurement of consultancy services for priority investments
57	Detailed Design
58	Preparation of tender documents
59	Procurement of supplies and works
60	Implementation start
61	Medium term investments 15 years
62	Procurement of consultancy services for medium term activities
63	Detailed Design
64	Procurement of services, supplies and works
65	Implementation start

7 Required Expertise

7.1 Team of Experts

The services will be provided by a team of suitably qualified experts, an appropriate mix of local, regional and international experts will be required. The total estimated man months input is 95 for components 1 to 3.

7.2 Qualifications and Responsibilities of Team Members

7.2.1 Team Leader

Experience:	Minimum of 15 years of working experience in infrastructure planning in developing countries, minimum of 5 years as project manager of projects of comparable size and complexity, prior working experience in Sierra Leone would be an asset. Experience with integrated water resources planning approaches required.
Education:	At least MSc degree or equivalent in civil engineering, or comparable
Proven working experience in the following fields:	Project Management Training and capacity building Monitoring and evaluation

7.2.2 Water Supply Expert

Experience:	Minimum of 10 years of working experience in water supply planning and projects in developing countries.
Education:	At least MSc degree or equivalent in civil engineering or comparable
Proven working experience in the following fields:	master plan development water supply in general hydraulic modelling reuse (industry, household, etc.), dual systems demand management

7.2.3 Sanitation Expert

Experience:	Minimum of 10 years of working experience in sanitation planning and projects in developing countries.
Education:	At least MSc degree or equivalent in civil engineering, sanitary engineering or comparable
Proven working experience in the following fields:	conventional and alternative sanitation technologies and systems (water borne, non water borne faecal sludge management, stormwater management, solid waste management) reuse of water and bio solids

7.2.4 Hydrogeologist

Experience:	Minimum of 10 years of working experience in developing countries
Education:	MSc degree or equivalent in related field (geology, hydrogeology, etc.)
Proven working in:	groundwater, catchment protection

7.2.5 Agronomist reuse

Experience:	Minimum of 10 years of working experience in agricultural reuse of wastewater and bio solids.
Education:	At least MSc degree or equivalent in agriculture
Proven working experience in the following fields:	urban agriculture irrigation quality assurance related to reuse

7.2.6 Economist

Experience:	Minimum of 10 years of working experience as an economist with infrastructure and environment projects
Education:	MSc in Economics
Proven working experience in the following fields:	costs and benefits analyses of infrastructure investments environmental economics

7.2.7 Financial expert

Experience:	Minimum of 10 years of working experience as financial specialist (expertise in preparing, auditing, analysing or evaluating financial statements) in particular for utilities.
Education:	BSc in business sciences or equivalent
Proven working experience in the following fields:	Preparing, auditing, analysing or evaluating financial statements financial analyses of utilities tariffs

7.2.8 IUWRM Expert

Experience:	Minimum of 10 years of working experience in developing countries
Education:	MSc degree or equivalent in civil engineering, water resources studies, water resource management, water utilities management, or comparable
Proven working experience in the following fields:	integrated urban water management, awareness creation and capacity building

7.2.9 Environmental Expert

Experience:	Minimum of 10 years of working experience in developing countries
Education:	MSc degree or equivalent in environment or related field (water, biology, etc.)
Proven working experience in the following fields:	EIA of infrastructure projects in the water sector water resources quality, climate change energy, reuse

7.2.10 GIS Expert

Experience:	Minimum of 5 years of working experience
Education:	Bachelor of Science degree in geography, computer science or engineering
Proven working experience in the following fields:	GIS skills with two or more GIS packages Knowledge of cartography GIS data collection, entry, and presentation

8 Annex

8.1 Available information

8.1.1 Strategic Water Supply and Sanitation Framework, various project reports

8.1.2 Feasibility Study Report for Rokel Water Supply Project (CGCOC Group Co., Ltd., 2013)

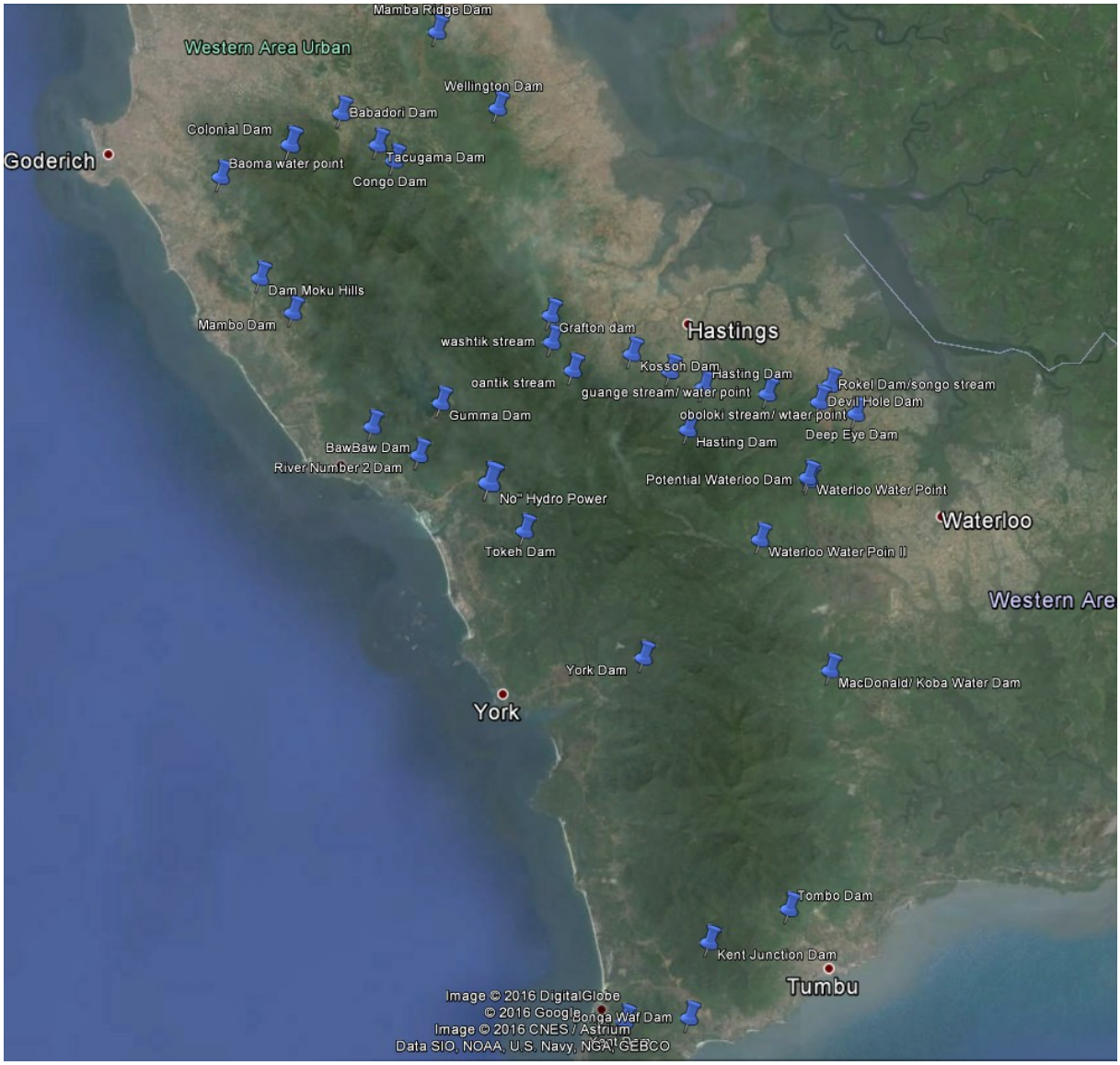
8.1.3 Freetown Structure Plan 2013–2028 (Project Institutional Support to Freetown City Council and to the Urban Planning Authorities, 2014)

8.1.4 Conservation of the Western Area Peninsula Forest Reserve (WAPFoR), various project reports

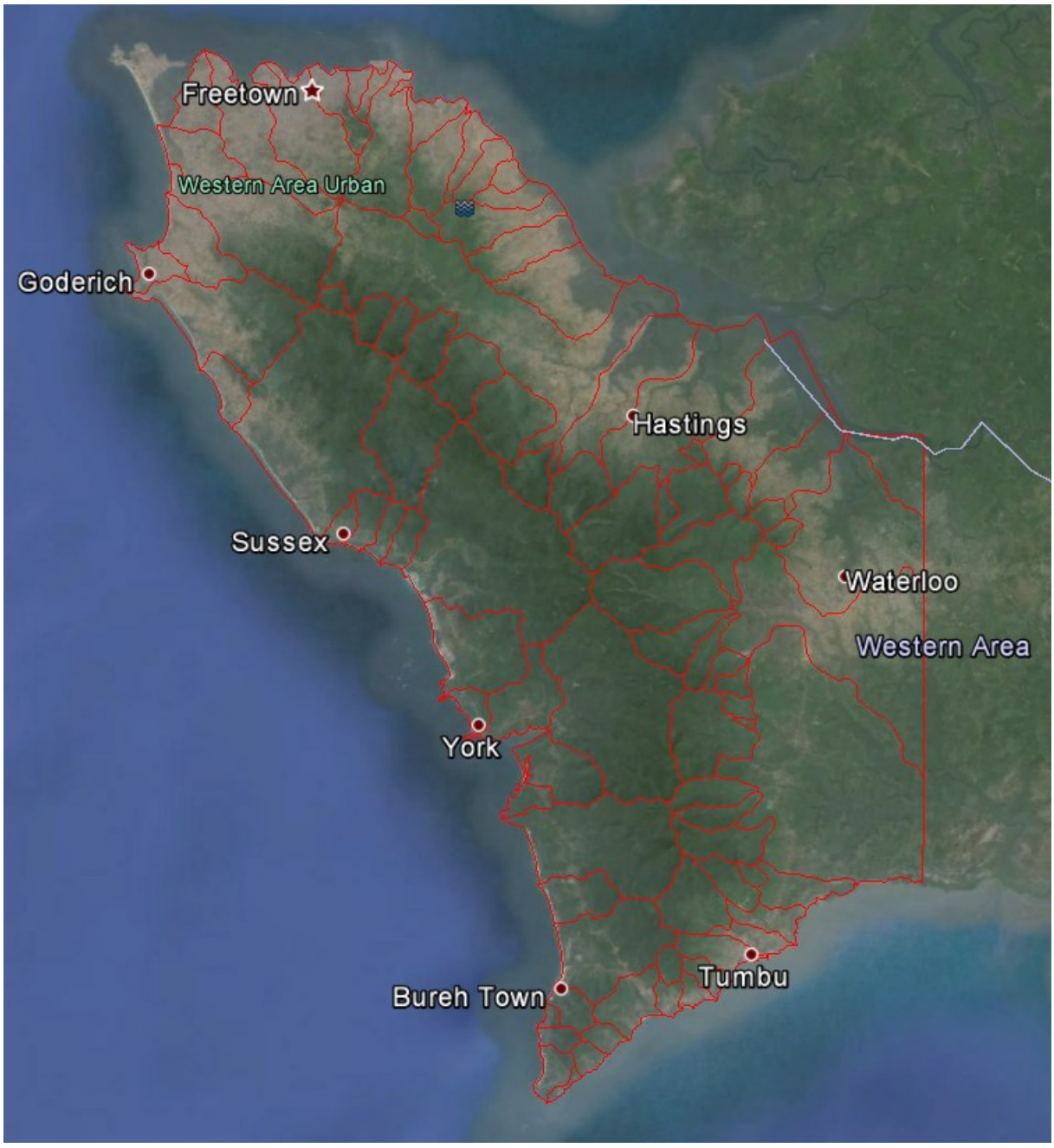
8.1.5 Hydraulic Model – Epanet

8.2 Existing GIS / MIS

8.2.1 Dams and Water Points



8.2.2 Catchment Areas



8.3 Map of Sierra Leone / Greater Freetown

Source: http://www.ezilon.com/maps/africa/sierra-leone-physical-maps.html

Google Earth & catchments from GIS Min. of Lands