

Government of Uganda

Ministry of Water and Environment

Directorate of Water Development

**Environmental and Social
Management Framework
(ESMF) for the OBA in
Water Supply in Uganda's
Small Towns and RGCs**

Environment Management Plan

January 2007

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List of Abbreviations

Abbreviation / Acronym	Meaning
AIDS	Acquired Immuno-Deficiency Syndrome
DWD	Directorate of Water Development
EHS-MP	Environment, Health and Safety Management Plan
EMP	Environmental Management Program
ESMF	Environmental and Social Management Framework
GPOBA	Global Partnership for Output Based Aid
HIV	Human Immuno-Deficiency Virus
IMR	Infant Mortality Rate
LC	Local Council
MOWE	Ministry of Water and Environment
NEMA	National Environment Management Authority
OBA	Output Based Aid
RGC	Rural Growth Centre
RPF	Resettlement Policy Framework
SE	Site Engineer
STD	Sexually Transmitted Disease
WUA	Water User Association
WUG	Water User Groups

Executive Summary

The Government of the Republic of Uganda through the Ministry of Water and Environment (MoWE) has requested The World Bank through the Global Partnership on Output Based Aid (GPOBA) to improve the efficiency of infrastructure service delivery in the water and sanitation sector in small towns and rural growth centres in Uganda. The Project will support the installation of a total of about 2000 new water connections targeting a total of about 45,000 consumers in about six small towns and four rural growth centres (RGCs). The project activities will be located throughout Uganda.

The project is implemented by the Directorate of Water Development (DWD) on behalf of Government of Uganda. OBA gives opportunity to private operators who manage local water boards to participate in decision making at an early stage of the project cycle by sharing the demand projections, system design and construction risks and coming up with systems that are cost effective. The costs passed on to the consumers are expected to come down due to improved operations and management efficiencies.

The project activities will include water source site selection, vegetation clearance and excavations. In the case of groundwater sources, drilling of boreholes will be carried out. Physical water treatment infrastructure like water weirs, clarifiers and sedimentation and chlorination tanks will be constructed. The electricity grid and access roads will be extended to the water treatment works.

The implementation of the project is not expected to lead to adverse environmental impacts and social concerns; these, if any, are expected to be minor, localized and readily managed. The main benefits of the project will be improved rural water supply, sanitation, hygiene and decrease in waterborne diseases incidences. Environmental impacts will include but not limited to the following:

- Construction, and transportation of equipment may cause vegetation destruction and soil erosion, thus, the use of labour-intensive technology, and, activities confined – as possible – to on-site locations should reduce adversity, while vegetative propagation and tree replanting will restore land degradation.
- Construction spoils, and waste residues will be removed, and properly disposed of at selected sites.

- Loss of agricultural land, and/or crops will be minimized as possible, through appropriate engineering design, and location of pipelines and wells / borehole sites, in addition, compensation will be provided as necessary.
- Water source contamination will be reduced by appropriate water treatment and chlorination.
- Encroachment of well sites and water sources will be reduced by fencing, and demarcating well site boundaries.
- The incidences of STDs & HIV/AIDS transmission could be minimized by promoting awareness and education to the contract workers and communities particularly women and youth. The Federation of Ugandan Employers has an excellent HIV/AIDS manual, which should be adapted.

The EMP is the second volume in a series of three reports. The first volume is the Main Environmental and Social Management Framework (ESMF) Report and the third is Resettlement Policy Framework (RPF).

The EMP outlines the appropriate preventive actions and mitigation measures for addressing the potential adverse environmental and social impacts identified by the ESMF for the project activities. For every project activity, potential environmental impacts have been identified and mitigation measures assigned to each. The private water operator will be responsible for most of the mitigation measures since they have combined the duties of both the contractor and operator.

A Monitoring Plan, with monitoring indicators and assigned responsibilities to key stakeholders is given. Each of the above environmental impacts has been converted into an indicator in the Mitigation Plan.

General environmental management conditions to the private water operator are provided. These should become part of the contract agreement for the construction of the civil, electrical and mechanical works. The Conditions are summarised in the Appendix 1 which should be used as an Operational Manual by the private water operator.

1 Introduction

1.1 Introduction to the OBA Project

The Government of Uganda is seeking different ways of improving the efficiency in infrastructure service delivery, including involving the private sector in the service delivery and letting the private sector drive the technical design and implementation on a commercial basis. Output Based Aid (OBA) is one of the possible solutions. OBA is being pioneered in Uganda under a GPOBA funded pilot project. GPOBA¹ (Global Partnership on Output-Based Aid) is a multi-donor trust fund administered by the World Bank.

The objective of the Project is to support an output-based aid component of the private sector management of water supply services in small towns aimed at expanding access to piped water supply. The Project will support the installation of a total of about 2000 new water connections targeting a total of about 45,000 consumers in about 6 small towns and 4 rural growth centres (RGCs). The project activities will be located throughout Uganda, but concentrated in the South and East. The towns have been selected from a short-list of 19 provided by the Directorate for Water Development (DWD) of the Ministry of Water and Environment (MOWE) based on criteria such as demand, willingness to pay, availability of water, local authority interest and capacity, and private sector interest.

The project targets the introduction of the Output Based Aid (OBA) to support private sector management of water supply services in small towns and rural growth centres (RGCs). The immediate goal is to expand access to piped water supply by increasing the number of active connections and extending the distribution networks, and, where necessary, increasing the production and/or storage capacity. In RGCs, the scheme will involve the design, construction, operation and maintenance of new piped water supply systems.

The OBA scheme is to enhance provision of affordable water supply services to new customers and users amongst the poorer segments of society while promoting effective implementation, value for money and private sector participation. The project will consider and design the appropriate contractual arrangements for private sector participation. In the small towns, where the water authorities

¹ Please visit the website of the Global Partnership on Output Based Aid (GPOBA) at <http://www.gpoba.org/>

own the assets and the private operators run the systems through management contracts, the majority of the output-based subsidy will be paid after connections (yard taps and stand-posts) of agreed quality are delivered, although some of the subsidy payment will be withheld until several months of reliable service has been demonstrated. In the RGCs, where there is no existing system and therefore operator, a design-build-operate arrangement will be introduced through competitive procurement, and payments to the operator will be phased, including after delivery of appropriate design of the system, raw water intake, storage, etc. A certain percentage of the subsidy payment to the operators will be withheld until after the connections (of basic agreed minimum standards) have been made.

In the case of the small towns, boreholes with submersible pumps, other sources with hand pumps, and springs currently exist to supply the water supply systems. These systems meet Ugandan environmental standards (some of the original investments were World Bank financed). The existing systems are generally well under capacity, and therefore it is not expected that new sources will be required, except in one small town, Rukungiri. In the four RGCs however, the competitively selected operator will in three cases be constructing systems that involve ground water sources and pumping, and in one case construct a system that relies on gravity flow systems with limited treatment.

Hygiene and sanitation elements are not directly part of the OBA scheme but shall be planned for and executed as part of the sensitisation of the communities by DWD, the Private Operator and the local authorities. The principles of improving hygiene and sanitation are that households that will benefit from the supply of water will be required to:

- Ensure that there is an improved pit latrine² in the household. The pit latrine should have a simple hand washing facility such as a tippy tap, jerry can or pot with water. The latrine should have a pit cover.
- Have a simple solid waste disposal system such as recycling of biodegradable waste through composting and a waste pit.
- Have a kitchen utensils drying rack and
- Have adequate cooking facilities separate from the main house.

Assessment of the above criteria and those specific to the towns and RGCs as agreed by the community (and approved by the World Bank / GPOBA and DWD), will be carried out during the application process before the final beneficiaries are selected.

² An improved pit latrine is defined as one with a wall and sufficient privacy for the users. The walls should preferably be of mud and wattle, sun dried bricks or burnt bricks. A door or wall can provide the privacy required. A roof is preferable, but not essential.

At the tap stands, each tap shall have a drain and soak pit (which can be planted with sucker plants such as bananas or yams). They should also be fenced and be well maintained. The community at the tap should have a register of users.

The EMP is the second volume in a series of three reports. The First volume is the Main Environmental and Social Management Framework (ESMF) Report and the third is Resettlement Policy Framework (RPF). This report should be read along with these other two reports. EMP highlights the mitigation and monitoring plans.

1.2 Types of Project

The OBA Project has a potential of 12 pilot sub-projects although 10 are more likely. The sub projects are divided into two categories – six small towns and four RGC projects, details are given below.

1.2.1 Groups I and II: Projects in Small Towns

Sub-projects in small towns are further sub-divided into two. Group I with no incumbent providers or where the contract is up for re-bidding (expiry of current contract in brackets) and Group II that have contracts running to 2008 for the Private Operators. The small towns in Group I may be procured competitively without violating existing Incumbent Operator contracts and are included in the GPOBA pilot scheme.

Group I

- 1 Kachumbala, Bukedea District (No incumbent provider);
- 2 Wakiso, Wakiso District (Dec. 2006);
- 3 Luwero, Luwero District (Jan. 2007);
- 4 Wobulenzi, Luwero District (Mar. 2007);
- 5 Rukungiri , Rukungiri District (Jun. 2007);
- 6 Kalisizo, Rakai District (Jun. 2007).

Group II

The towns below are suitable for the OBA Pilot but have contracts running to 2008 for the Private Operators. Depending on how the project will role out they main be included in the second phase of the project.

- 1 Busembatia (2008),
- 2 Bugiri (2008).

1.2.2 Group III: Projects in Rural Growth Centres

Greenfield projects in RGCs (which involve construction of new water treatment works, reservoirs and distribution mains) with no incumbent provider:

- 1 Sipi, Kapchorwa District.
- 2 Namutumba, Namutumba District.
- 3 Magale, Manafwa District.
- 4 Masafu, Busia District.

1.3 Planned Location of Projects

The 12 potential sub projects are located as shown on the Fig 1.1 below.



Figure 1.1 Location of the 12 Towns for the OBA Pilot Phase

1.4 Likely Sub-project Activities

1.4.1 Projects in Small Towns

Small towns with no incumbent providers or where the contract is up for re-bidding (expiry of current contract in brackets):

- 1 Kachumbala (No incumbent provider), Bukedea District.
- 2 Wakiso (Dec. 2006), Wakiso District.
- 3 Luwero (Jan. 2007), Luwero District.
- 4 Wobulenzi (Mar. 2007), Luwero District.
- 5 Rukungiri (Jun. 2007), Rukungiri District.
- 6 Kalisizo (Jun. 2007), Rakai District.

The above towns have functional water supply systems and the OBA will finance activities related to expansion of production capacity and extension supply to new areas:

- Excavations and ground clearance at the sources;
- Drilling of boreholes and construction of source structures and controls;
- Clearing of land for treatment plants, reservoir tanks and related structures;
- Clearing of land and trenching for distribution pipelines;
- Fencing of treatment plants, tank areas and pumping stations;
- Extension of power supplies to the pumping stations;
- Security lighting and
- Access roads to the pumping stations, tanks and treatment plants.

Depending on the town, socio-economic activities may be undertaken to sensitise the communities of their roles, responsibilities and for formation of community groups such as WUAs and water user groups (WUGs).

1.4.2 Projects in Rural Growth Centres

Greenfield projects in RGCs with no incumbent provider:

- 1 Sipi, Kapchorwa District.
- 2 Namutumba, Namutumba District.

3 Magale, Manafwa District.

4 Masafu, Busia District.

The above towns do not have reticulated water supply systems (except for Sipi, which is poorly maintained and too small) and will have the full scope of the works:

- Community sensitisation, community training and formation of community groups such as WUAs and WUGs;
- Siting of the sources (ground water or surface water);
- Valuation and acquisition of land, right of way and compensation of the land owners or preparation of land agreements (voluntary donation or sale of land);
- Excavations and ground clearance at the sources;
- Drilling of boreholes and construction of source structures and controls;
- Clearing of land for treatment plants, reservoir tanks and related structures;
- Clearing of land and trenching for distribution pipelines;
- Fencing of treatment plants, tank areas and pumping stations;
- Extension of power supplies to the pumping stations;
- Security lighting and
- Access roads to the pumping stations, tanks and treatment plants.

1.4.3 Projects in Small Towns that may be Included in the Pilot

The towns below are suitable for the OBA Pilot but have contracts running to 2008 for the Private Operators:

1 Busembatia, Iganga District and

2 Bugiri, Bugiri District.

The above towns have functional water supply systems and the OBA will finance activities related to expansion of production capacity and extension supply to new areas:

- Excavations and ground clearance at the sources;
- Drilling of boreholes and construction of source structures and controls;

- Clearing of land for treatment plants, reservoir tanks and related structures;
- Clearing of land and trenching for distribution pipelines;
- Fencing of treatment plants, tank areas and pumping stations;
- Extension of power supplies to the pumping stations;
- Security lighting and
- Access roads to the pumping stations, tanks and treatment plants.

Depending on the town, socio-economic activities may be undertaken to sensitise the communities of their roles, responsibilities and for formation of community groups such as WUAs and WUGs.

2 Summary of Project Impacts

The implementation of the OBA Project will involve clearance of construction sites, civil works for building new /or rehabilitation of water treatment works and water reservoir tanks, excavation for laying new/or extension of water distribution mains and stand pipes and drilling boreholes for groundwater abstraction. These may have potential environmental and social impacts which are discussed below. These impacts are expected to be minor, localised and readily managed, where they occur.

2.1 Environmental Impacts of Project Activities

Potential environmental impacts may occur at the construction, operation and decommission stage of the project.

(i) Construction Impacts

- Vegetation destruction may occur due to site clearance for the construction of water treatment works; water reservoirs; distribution mains and creation of access roads for transportation of drilling rigs, equipment and installation of pipeline and other associated activities. This may temporary and minimal lead to loss of biodiversity.
- Soil erosion may occur at construction sites and areas were construction materials like sand and stones have been extracted.
- Farmland and crops may be lost.
- Improper location of well sites in relation to pit latrines, burial sites, waste dumps and other sources of contaminants may lead into ground water pollution.
- Production of drilling wastes and construction spoils may occur at the project sites.
- Accidents, health and safety of workers may be at risk during construction.
- Incidences of STDs and HIV/AIDS may increase due to presence of construction workforce in the rural communities.

- Noise and dust during the construction may be nuisance to the neighborhood.

(ii) Operation Impacts

- Ground water over-extraction may lead to land instability, tectonic effects and disruption of hydrological balance.
- Excessive water abstraction from rivers may lead to rivers drying up thus causing disruption of ecosystems of downstream aquatic communities.
- Water treatment waste, which may contain aluminum residues (toxic) used in the coagulation and chlorides used in disinfection of water, may be hazardous to the environment.
- Water abundance at the homesteads without corresponding sanitation systems to evacuate it may lead to cross contamination and water logged conditions.

2.2 Social Impacts

The main positive social impact arising from the project will be a possible increase in the socio-economic status of the people living within the selected project areas – arising from improved access to safe water and better hygiene and sanitation. Like for many parts of Uganda, an increase in access to safe water has the attendant benefits of:

- Reducing the incidences of disease associated with the consumption of unsafe water. Uganda is one of the countries with a high Infant Mortality Rate (IMR) of about 86 per 1000. Over 75% of premature deaths result from preventable water borne diseases, like diarrhoea. The successful execution of the proposed sub projects will contribute to improved hygienic practices and sanitation as a key to reduction of IMR.
- As a result of reduced incidences of disease associated with unsafe water, it is anticipated that this will be translated into a reduction of the burden to health services and national expenditure on health.
- Reduction of the time spent on collection of water and thereby allowing women and children more time to engage in other productive activities. The girl child will particularly be liberated from the associated risks of collecting water far away from home and enabling them to attend school.
- It is anticipated that improved water supply will reduce inadequacy in school sanitation, a big concern for girl pupils, one of the major reasons many of them drop out of school early. The outputs of this project will be able to add value to education by enabling the girl child to remain in school longer.

- Creating employment for youth and attracting further settlement and economic activity within the small towns and RGCs.

In spite of the positive impacts, the following effects are likely to impact on the population in varying but insignificant proportions, particularly arising from the project demands on land.

A. Permanent dispossession of land use arising from installations.

The water tanks, boreholes and work works require land for installation where this is applicable. The average amount of land required for each of these is:

- Water tanks require land area – inclusive of a fence – not exceeding approx. 100 m² each.
- Boreholes would require land area – inclusive of a fence – not exceeding 100 m² each. This area also accommodates the pump house. In the event that surface water is to be abstracted, this area only covers the pump house.
- Pipelines, in general, would not take land permanently, unless they are located above ground.

As a general practice, the local authorities and community leaders have an obligation to provide land free of encumbrances as indicated in the RPF, including land for access (a road) to the installations.

Water supply systems are associated with few installations that do not place considerable demand on space and land. Most small towns and RGCs will require about one water tank and not more than three boreholes (and an equivalent number of pumping stations). Considering the average size of land each of these requires occupying, an insignificant proportion of land within a small town or RGC may be required. It is therefore quite unlikely that several households will be affected or that large portions of land will be affected. While this may cause loss of land for other productive activities, these demands cannot cause a significant effect on the need for resettlement or compensation.

B. Restrictions to land use arising from installations

Of all the installations arising from the project, only electrical installations and water pumps have the potential of being dangerous if located close to settlements. Both pump houses and electrical installations will be located far from settlements and communities will be sensitised to desist from settling close to them. However land surrounding these installations can still be utilised for agricultural purposes where it productively suits this purpose.

C. Short run dispossession of land arising from installations

In order to maximise access to water, the project will require the installation of an intricate network of water pipes to reach out to households in the selected project areas. Land has got to be available for this – sometimes passing over agricultural land (and destroying crop and vegetation cover), roads and pathways and across compounds. These distribution lines are normally installed not less than one meter deep. Because it causes displacement of crop cover and

creation of earth piles, this can be a nuisance to land use! However, once handled well this lasts a short time and the impact arising from this is temporary becoming insignificant over time.

D. Effects to occupants of land where there is a natural source of water

Where a surface water source for abstraction is located near private land, the process of abstraction may interfere with the statutory right to use of water. Apart from the water supply installations, the need for protection of the water body may require elaborate measures to prevent contamination to the detriment of the occupant of the adjoining land. Where this is possible, such an occupant should be allowed to benefit from the development as far as it compensates for the loss. Only in points of absolute disagreement should compensation be sought in accordance with the provisions of the RPF and the relevant provisions of the Water Statute and the laws of Uganda.

3 Mitigation Plan

The table below gives the mitigation plan for the minimal compensation / destruction that may be occasioned during implementation of the sub projects. Approximate costs are also given in US \$ at current rates³.

Table 3.1 Potential Impacts and Mitigation Plan

Potential Negative Impact	Mitigation Measure	Institutional Responsibility	Cost/Ug Sh
Vegetation loss due to site clearance, construction of access roads, excavation of water distribution mains	Minimise size of project area, avoid areas with trees, replant trees Avoid destruction of expensive structures	The Private Water Operator (Contractor).	Negligible costs for compensation typically in the range of \$100 – 500 to cover fruit trees, plantations etc. Restoration of roads and pavements may cost from \$200 – 500.
Soil erosion as a result of site clearance, extraction construction materials and access roads.	Soil compaction after excavation, improve drainage, plant grass Avoidance of steep slopes or trenching along contours, not across them.	The Private Water Operator (Contractor).	Minimal costs for the restoration of planted or grassy areas. Borrow pits restoration costs in the range of \$100 – 300 owing to the limited size/depths.
Loss of farmland, property and crops	Appropriate land acquisition using the Resettlement Policy Framework. Avoidance of expensive or settled areas during planning and design	District Land Office	Limited compensation expected for land for treatment plants and pumping stations. Costs in the range of \$100 – 500.

³ The determination of the value of assets, cost of damage to properties and levels of compensation is vested in the Chief Government Valuer, backed by the relevant laws of Uganda. Where there is a dispute, independent valuers may be engaged, and court may also be called in to determine the disputes on land issues. Land tribunals at district and lower levels will determine the most cases in the communities.

Potential Negative Impact	Mitigation Measure	Institutional Responsibility	Cost/Ug Sh
Ground water pollution as result of sources near pit latrines	Site all boreholes away from latrines at least 100m Sensitise the community not to build near the boreholes	Ground water consultant and Driller.	Incremental costs for pipe laying range from \$1000 – 5,000 per km. Cost - benefit to be analysed
Construction site waste and drilling waste	Reuse or recycle. In the case drilling waste spread them on used land.	The Private Water Operator (Contractor) and Driller.	Most of the waste is not poisonous except for the oils and lubricants. Disposal of these is covered in the Drilling Contract. Negligible costs.
Accidents, health and safety of workers at both construction and operational phase	Provision of First Aid kits, warning signage, provision of Personal Protective Clothing. Prompt treatment of injured persons and compensation of deaths and permanent injuries.	The Private Water Operator (Contractor).	Cost of insurance of workers covered under the Workman's Compensation Act, 2000. Insurance costs are added to the Client, usually at 2% of the wages.
Increase of STDs and HIV/AIDs due to the presence of construction workers	Awareness campaigns to the most vulnerable i.e. women and youth. Provision of condoms, counselling services and ARVs (for infected individuals).	District Medical services and the Uganda Federation of Employers.	Most of the services are available free near urban centres. Procurement of treatment services and condoms may cost from \$500 – 1000; support services can be integrated into the contractor's plans.
Noise and dust made by vehicles and construction equipment.	Fit silencers on noise making equipment and sprinkle water to reduce dust	The Private Water Operator (Contractor).	Minimal additional cost to the contractor for silencers. Sprinkling of water is covered in the construction costs.
Groundwater over-extraction and excessive river water abstraction	The designed capacity should not exceed the yield in the case of groundwater and water availability in the case of rivers. Obtain a Water Abstraction Permit from DWD, which has its conditions	The Directorate of Water to issue water permits that allow optimum water abstraction without affecting the environment.	No additional cost if the contractor adheres to the conditions of the Permit. DWD regulates the use and disposal of water and waste water.

Potential Negative Impact	Mitigation Measure	Institutional Responsibility	Cost/Ug Sh
Water treatment waste like aluminium sludge is toxic to the environment.	Water treatment waste should be dried and incinerated. The clinker should be disposed in a land fill.	The Private Water Operator.	Amounts of aluminium sludge are small; however, there are few incinerators available in Uganda.
Cross contamination of water in the distribution mains	Link detection Repair burst pipes and linkages Drain stagnant water near stand pipes.	The Private Water Operator and utility users.	No additional costs except for enforcement of hygiene and cleanliness standards by the community workers (civil servants).
Contamination of reservoir tanks and tanks at the clients' premises.	Regularly clean the tanks and disinfect with chlorine.	The Private Water Operator and utility users.	Cost of disinfection built into the cost of water. No additional costs incurred.
Construction debris after decommissioning	Proper collection, sort debris according to category. Re-use or recycle.	The Private Water Operator (Contractor). Water Authority	No additional costs to the Private Operator. Contractor clears his debris. Solid waste collection will be on a fee basis.

4 Monitoring Plan

The table below gives the Monitoring Plan and the responsible persons for the parameters to be monitored.

Table 4.1 Monitoring Plan

Parameter to be monitored	Unit of Measure	Phase in the Project circle	Responsibility
Vegetation loss	No. of trees cut or sq. meters of grass removed.	Construction	LC1 Secretary for Environment. District Environmental Officer. National Environment Management Authority
Soil erosion	m ³ Length of eroded sections	Construction	LC1 Secretary for Environment. District Environmental Officer. National Environment Management Authority
Loss of farmland, property and crops	Hectare (Ha)	Construction	LC1 District Land Board District Land Tribunals Courts of Law
Ground water pollution.	Faecal coliform counts	Construction and Operation	Contractor (during construction) The Private Water Operator
Construction site waste and drilling waste	m ³ Tons	Construction	District Environmental Officer Drilling Supervisor (Consultant or DWD)

Parameter to be monitored	Unit of Measure	Phase in the Project circle	Responsibility
Accidents, health and safety of workers at both construction and operational phase	Number of accidents or near misses	Construction and Operation	Contractor (during construction) The Private Water Operator
Increase in STDs and HIV/AIDS due to the presence of construction workers	No. of reported of STDs and HIV/AIDS cases.	Construction	Contractor Private Water Operator District Health Services
Noise and dust made by vehicles and construction equipment.	dB(A), kg/m ³	Construction	Contractor LC1 Secretary for Environment. District Environmental Officer. National Environment Management Authority.
Groundwater over extraction and excessive river water abstraction	m ³ /day	Operation	DWD
Water treatment waste like aluminium sludge is toxic to the environmental.	Kg	Operation	The Private Water Operator
Cross contamination of water in the distribution mains	Faecal coliform counts	Operation	The Private Water Operator
Contamination of Reservoirs tanks and tanks at the clients' premises.	Faecal coliform counts	Operation	The Private Water Operator
Construction debris after decommission.	Kg	Decommissioning	NEMA

5 Institutional Arrangements

5.1 Legal Framework for Environmental Protection

The OBA Project will be guided by a number of national and World Bank Safeguard requirements. These include the Constitution of the Republic of Uganda, policies, laws, regulations, action plans and guidelines.

The Constitution of Uganda entitles everybody to a clean environment, clean and safe water. The National Environment Management Policy (1994) promotes sustainable development, while the Environment Act (1995) Cap 153 protects the environment by using environmental tools like Environmental Impact Assessment. Furthermore, the Environmental Impact Assessment Regulations (1998) and the Environmental Impact Assessment Implementation Guidelines for Uganda (1997) give an enabling environment how the environment should be protected.

The OBA Project triggers mainly two World Bank Safeguard Policies i.e. Environmental Assessment BP/OP 4.01 and Involuntary Settlement BP/OP 4.12. The Environmental and Social Management Framework ESMF (in a separate report) and this Environmental Management Plan (EMP) address how the negative environmental impacts that may arise from the OBA Project will be mitigated.

5.2 Responsibility for Environmental Monitoring

Environmental Monitoring in Uganda is the mandate of the National Environment Management Authority. The Environmental Act (1995) Cap 153 makes it the principle agency in Uganda for the management of the environment and shall coordinate, monitor and supervise all activities in the field of the environment. For instance, for the OBA Project to commence, the ESMF and EMP must be approved by NEMA.

DWD as the lead agency will issue water and discharge permits that are consistent with the Water Act (1997) Cap 152. DWD will continue to monitor the water abstraction activities to ensure that excessive water is not removed. The District Environmental Officer will monitor the project activities especially those at the construction phase so that mitigation measures for the identified impacts are implemented.

At the project beneficiary level, there is a Local Council LC1 with a Secretary for Environment. The communities through their local councils using the Secretary for the Environment as focal point, will monitor project activities and report any environmental damage.

5.3 Responsibility and Legal Basis for Implementing Mitigation

The mitigation is the responsibility of the Private Water Operators because they will be both the contractors and at the same time the operators of the project. The legal basis for carrying out mitigations is through self and compulsory environmental audits. Bi-annual environmental audits for water treatment processes are a must for a project like the OBA.

NEMA shall appoint environment auditors where it suspects that safeguards are being violated. The Private Operator is expected to prepare, in conjunction with the contractor, an environment management plan (EMP) for the individual projects during the design phase.

6 Implementation Schedule

The table below shows the implementation schedule for the OBA project over an 18 month period.

Project Activities	Time/Months (Month 1 begins January 2007)																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Signing Funding Agreement	■	■																
Tender Action			■	■	■	■	■	■	■									
Design Phase										■	■	■						
Environment Screening																		
Environmental Initial Impacts										■	■	■						
Environmental Scoping																		
Construction Phase												■	■	■	■	■	■	■
Mitigation Actives													■	■	■	■	■	■
Monitoring Activities													■	■	■	■	■	■

Appendix 1: General Environmental Management Conditions

General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:
 - a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
 - b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
 - c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
 - d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
 - e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

- f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Site Engineer (SE) so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
 - g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
 - h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
 - i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
 - j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
 - k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Worksite/Campsite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8. Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.
11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14. New extraction sites:
 - a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1 km from such areas.
 - b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

- c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
 - d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
 - e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
 - f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.
15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
17. The Contractor shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.
24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25. Remove toxic materials and dispose of them in designated sites. Back-fill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29. Minimize erosion by wind and water both during and after the process of reinstatement.
30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
31. Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.
33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream, and maintains the ecological balance of the river system.
36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

6.1.1 Traffic Management

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

6.1.2 Blasting

42. Blasting activities shall not take place less than 2 km from settlement areas, cultural sites, or wetlands without the permission of the SE.
43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

6.1.3 Disposal of Unusable Elements

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.
46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.
47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

6.1.4 Health and Safety

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.
50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
51. Construction vehicles shall not exceed maximum speed limit of 40 km per hour.

6.1.5 Repair of Private Property

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

6.1.6 Contractor's Environment, Health and Safety Management Plan (EHS-MP)

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:
 - For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
 - For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

55. The Contractor's EHS-MP shall provide at least:

- A description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- A description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- A description of all planned monitoring activities (e.g. Sediment discharges from borrow areas) and the reporting thereof; and
- The internal organizational, management and reporting mechanisms put in place for such.

56. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

6.1.7 EHS Reporting

57. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is given below. It is expected that the Contractor's reports will include information on:

- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

58. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an

incident notification and detailed report are given below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

6.1.8 Training of Contractor's Personnel

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

- EHS in general (working procedures);
- Emergency procedures; and
- Social and cultural aspects (awareness raising on social issues).

Cost of Compliance

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.

Example Format: EHS Report

Contract:	Period of reporting:
EHS management actions/measures:	
<i>Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.</i>	
EHS incidents:	
<i>Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.</i>	
EHS compliance:	
<i>Report on compliance with Contract EHS conditions, including any cases of non-compliance.</i>	
Changes:	
<i>Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.</i>	
Concerns and observations:	
<i>Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.</i>	
Signature (Name, Title Date):	
Contractor Representative	

Example Format: EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer	
Originators Reference No:	Date of Incident:
Time:	
Location of incident:	
Name of Person(s) involved:	
Employing Company:	
Type of Incident:	
Description of Incident:	
<i>Where, when, what, how, who, operation in progress at the time (only factual)</i>	
Immediate Action:	
<i>Immediate remedial action and actions taken to prevent reoccurrence or escalation</i>	
Signature (Name, Title, Date):	
Contractor Representative	

Example Format:

Detailed EHS Incident Report

The Incident Notification should be followed-up by a Detailed EHS Incident Report containing the following information where applicable:

1. Incident Summary

2. Specific Details

- Date
- Time
- Place
- Weather/Visibility
- Road conditions

3. Persons Involved

- Name/s
- Age/s
- Experience
- Date joined Company
- Last Medical Check
- Current Medical Treatment
- Evidence of Drugs/Alcohol
- Last Safety Meeting attended
- Infringements/Incidents record

4. Equipment Involved

5. Description of Incident

6. Findings of Investigation Team Interim/Final

- Investigation Team Members
- Persons Interviewed
- Recommendations & Remedial Actions
- Investigation Methodology

7. Signature (Name, Title, Date):

8. Attachments

- Photographs
- Witness Statements and Incident Notification Report