BUREAU FOR DEMOCRACY, CONFLICT AND HUMANITARIAN ASSISTANCE (DCHA)
ENVIRONMENTAL ASSESSMENT (EA)

Operating Unit and Office: DCHA/ASHA Bureau	
Geographic Location (Region, Country): Africa, Uganda	
Program/Project Title: Empower African Children Academy	**Start/End Date:** FY12-17
Solicitation # or Contract/Award #: AID-ASHA-A-13-00001	
Implementing Partner (if applicable): Empower African Children	
LOP Funding Amount: $ $750,000	**Funding Account (DA, TI, Title II, etc.):**
Prepared By: Harriet Mujuni, David Nelson Nkuutu, Richard Osaliya, Eng. Lam Kajubi, Leo Semanda	**Date Prepared**: June 2016
Action Type (IEE, ESR, ES, PERSUAP): EA	**Implementation Year (if applicable):** N/A
ECD Link for Action Type:	
IEE Amendment? Y	**If "yes", ECD Link and Date of Original:**
Recommended Threshold Determination: ☐ **Categorical Exclusion** ☐ **Deferral** ☐ **Exemption** ☐ **Negative Determination** ☐ **Positive Determination**	

Summary of Findings:

Overall, this EA satisfactorily identified the potential environmental and social impacts associated with the planned construction of the Empower African Children Academy in Mpigi District, Uganda. The BEO commends the implementing partner for providing an in depth environmental analysis of the planned construction of the Empower African Children Academy in Mpigi, with a detailed stakeholder consultation addressing the expressed concerns of ministry representatives and community representatives, and an evaluation of various alternatives to the construction project, including various design alternatives.

However, the BEO has identified the following 10 conditions for EA approval by USAID. While the conditions are not required to be met prior to BEO/DCHA approval, the first 4 conditions that focus on pesticide use will need to be addressed with the submission and DCHA BEO approval of a project-specific PERSUAP, before any pesticide-related activities can begin.

Summary of BEO Conditions (10):

Condition 1: The implementing partner should develop a project-specific PERSUAP addressing pesticide use during project activities and that incorporates conditions 2 to 4 of this ETD. No pesticide-related activities can proceed until this PERSUAP is submitted and received DCHA BEO approval.

Condition 2: The BEO rejects Aluminum Phosphide for use on campus, given its high toxicity and its proposed use in an educational setting.

Condition 3: Empower African Children Academy's PERSUAP should only include active ingredients that have been approved for proposed use by both by the US EPA and the Government of Uganda, and proposed pesticides should follow application and use requirements as stated on the product's label.

Condition 4: The implementing partner's PERSUAP should address the mitigation of environmental impacts associated with the use of various malaria vector control methods.

Condition 5: The implementing partner should ensure that adequate measures are in place to prevent the consumption of unsafe drinking water from non-potable water points on campus, and maintain water quality standards during the collection, storage and consumption of water by all campus water users.

Condition 6: The implementing partner should assess and address the cumulative impacts of the school's operations on natural resources such as water, energy and wood resources, so as to reduce the risk of further environmental degradation by project activities.

Condition 7: The implementing partner should not use soil amendments from the septic tank system to grow edible plants, crops or other vegetables for human consumption.

Condition 8: The implementing partner should ensure that waste oil generated by operation activities is adequately disposed of.

Condition 9: The implementing partner should ensure that locally sourced natural resources used during the construction and operation of the school are sustainably extracted and sourced.

Condition 10: The grantee should plant non-invasive species on campus grounds whenever possible, and avoid invasive species such as Mesquite and *Leucaena Leucocephala*.

BEO Conditions (10):

Issue 1: All proposed projects involving the procurement or use, or both, of pesticides, require additional environmental review.

Discussion: The submitted EA mentions that the implementing partner plans to use the following pesticides during the construction and operation of the school: Icon 10 CS, Actellic 25 EC, Dursban 48EC, Termidor 25EC, Contra-z termiticide 500/50EC, Quickphos tablets, pesticide-treated bed nets and mosquito-eating fish, as well as the planting of Neem trees, lemon grass and pink agapanthus for pest control.

The BEO would like to remind the grantee that no pesticides can be procured, used, transported, stored or disposed of by beneficiaries receiving USAID program support without the development (and DCHA BEO clearance) of a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) fulfilling all analytical elements required by 22 CFR 216.3(b), USAID's Pesticide Procedures. The PERSUAP provides pesticide-specific information such, as but not limited to, acute and toxicological hazards, compatibility with target and non target organisms, and effectiveness of non-pesticide control methods as part of an integrated pest management approach.

While several PERSUAPs have been developed in Uganda, none of them cover construction activities and most of them are for project-specific activities or specific regions in Uganda, outside of the Mpigi district.

The implementing partner (IP) should therefore develop a project-specific PERSUAP for planned pesticide use, including the use of Neem trees and other biological control against pests. The IP should refer to the PERSUAP template provided in ASHA P-IEE's Annex VI: Guidance for Developing a PERSUAP[2] (p.38-43) for more guidance. The BEO would like to remind the implementing partner on the importance of ensuring that the selected pesticides are appropriate for the control of target pests, in order to ensure efficient pest management, prevent the development of pesticide resistance in case of inappropriate use, and prevent potentially negative impacts on non-target organisms. These justifications should be adequately addressed in the relevant sections of the PERSUAP.

The BEO would also like to emphasize that no pesticide-related activities can proceed until this PERSUAP is submitted and received DCHA BEO approval.

The implementing partner should also refer to the following PERSUAPs in the elaboration of this PERSUAP:

- The FY14-19 USAID/Uganda PERSUAP for Development Objective (DO1), Economic Growth[3] which covers agricultural pest control for Feed the Future and Food for Peace program activities.

[2] ASHA P-IEE http://gemini.info.usaid.gov/egat/envcomp/repository/pdf/39411.pdf
[3] FY14-19 USAID/Uganda PERSUAP: http://gemini.info.usaid.gov/egat/envcomp/repository/pdf/43631.pdf

- The FY06-07 USAID/Uganda PERSUAP for SO8 Indoor Residual Spraying[4] which covers indoor residual spraying (IRS) at Kabale District using Icon WP from June-July 2006 to Feb 2007
- The FY03 USAID/Uganda PERSUAP for SO8, marketing, distribution and promotion of ITNs[5] for the use of approved insecticide-treated materials (ITNs such as bednets) by three implementing partners, namely CMS, NetMark Plus and UPHOLD.
- The 2007 USAID PEA for Integrated Vector Management (IVM) Programs for Malaria Vector Control[6], which details the environmental and human health issues related to malaria vector control, and outlines necessary guidelines to be followed by any USAID-funded project involved in the procurement of malaria vector controls including LLINs, Indoor Residual Spraying (IRS) larvivorous fish and larvicides.

The implementing partner is also required to incorporate conditions 2-4 of this ETD into its PERSUAP, as detailed below.

Condition 1: The implementing partner should develop a project-specific PERSUAP addressing pesticide use during project activities and that incorporates conditions 2 to 4 of this ETD. No pesticide-related activities can proceed until this PERSUAP is submitted and received DCHA BEO approval.

Issue 2: Aluminum Phosphide is a highly toxic chemical with significant negative health and environmental impacts if inadequately used.

Discussion: The BEO is concerned at the proposed use of Quickphos tablets (aluminum phosphide 56%) on snakes, given the potential for acute and chronic health impacts associated with the inappropriate use of aluminum phosphide, ranging from respiratory issues to death. These health impacts may affect pesticide applicators with inadequate personal protection equipment (including proper respiratory protection and cartridges), bystanders exposed to the gas from the tablets for even a few minutes without adequate protection, and even neighbors. More details on the impacts and mitigation measures associated with the use of aluminum phosphide can be found in the USAID Programmatic Environmental Assessment (PEA) for Phosphine Fumigation, available here[7].

Given these significant human health and environmental risks, exacerbated by the fact that the implementing partner plans to use aluminum phosphide in a school, the BEO ***rejects the use of aluminum phosphide tablets*** for use on the campus, and requests that the implementing partner seek other, less toxic (and preferably non-chemical) methods to control snakes on campus.

Condition 2: The BEO rejects Aluminum Phosphide for use on campus, given its high toxicity and its proposed use in an educational setting.

---

[4] FY06-07 USAID/Uganda PERSUAP for IRS: http://gemini.info.usaid.gov/egat/envcomp/repository/pdf/738.pdf
[5] FY03 USAID/Uganda PERSUAP for ITNs http://gemini.info.usaid.gov/egat/envcomp/repository/pdf/702.pdf
[6] USAID IVM PEA (2007): http://pdf.usaid.gov/pdf_docs/Pnadi081.pdf
[7] USAID Fumigation PEA (updated 2016): http://www.usaidgems.org/fumigationpea.htm

Issue 3: The PERSUAP should only include those pesticides that have been approved for proposed use by both the US EPA and the Government of Uganda:

Discussion: The BEO would like to remind the implementing partner that, like any other environmental analysis required for USAID-funded projects, the PERSUAP should not only comply with USAID regulations, but all relevant national regulations as well - in this case, the pesticide requirements outlined by the Ugandan Ministry of Agriculture. For instance, upon review of the Government of Uganda's 2014 list of approved pesticides[8], neither Fipronil (the active ingredient in Termidor 25EC) nor Contra-z termiticide (500/50EC) appear on this list; if these pesticides are not approved for use by either the government and/or US EPA, they cannot be used.

Another concern is the proposed use of certain pesticides on non-target pests and the use of certain pesticides containing active ingredients classified by the US EPA as Restricted Use Pesticides (RUP). For instance, Actellic 25 EC is registered mainly for use on stored grain, not for outdoor use, as proposed in the EA. Likewise, both Dursban 48EC and Contra-z termiticide contain chlorpyrifos, which is generally classified as an RUP by the EPA, thus requiring that they be handled only by qualified and authorized professionals.

The implementing partner is therefore required to check with the relevant government body in charge of pesticide management in Uganda, to ensure that proposed pesticides are used in accordance with national and well as US EPA regulations. Proposed pesticides should also only be used on target organisms, as specified on the product's label or Material Safety Data Sheet (MSDS)

Condition 3: Empower African Children Academy's PERSUAP should only include active ingredients that have been approved for proposed use by both by the US EPA and the Government of Uganda, and proposed pesticides should follow application and use requirements as stated on the product's label.

Issue 4: The use of Insecticide Treated Materials such as insecticide-impregnated bednets need to adequately addressed and mitigated.

Discussion: The BEO would like to remind the implementing partner that pesticide-impregnated bed nets such as Long Lasting Insecticide Treated Bed nets (LLINs) are considered to be restricted USAID goods/commodities. In accordance with USAID environmental compliance pesticide procedures 22 CFR 216.3(b)(1), USAID programs that will include support for the acquisition, distribution or marketing of insecticide treated nets (ITNs), will be required to comply with the following conditions listed below. Per 22 CFR 216.3(b) (2), these programs do not qualify for an exception to pesticide procedures. The BEO recommends that the implementing partner review the USAID PEA for Integrated Vector Management (IVM) Programs for Malaria Vector Control[9], for necessary guidelines to be followed in the procurement, handling and disposal of LLINs, among other malaria vector control methods.

---

[8] Ugandan Ministry of Agriculture (2014): http://documents.worldbank.org/curated/en/710831468209043025/text/E43610V50UG0RP0Box382134B00PUBLIC0.txt

[9] USAID IVM PEA (2007): http://pdf.usaid.gov/pdf_docs/Pnadi081.pdf

1. Procurement: Only insecticide products recommended by WHOPES (WHO Pesticide Evaluation Scheme) shall be procured and used by USAID-funded projects. As of April 2016, the following eight LLINs are recommended for use by WHOPES[10]:

Active ingredient (AI) or synergist, and treatment	**Current Product Name(s)[1], Active Ingredient(s) (mg/m^2), Status of WHOPES Recommendation 2**
Alpha-cypermethrin, polyethylene	DuraNet, 261, Recommended MAGNet, 261, Recommended Royal Sentry, 261, Recommended
Permethrin, polyethylene	Olyset, 1000, Recommended
Deltamethrin, polyester	PermaNet 2.0, 55, Recommended Yorkool, 55, Recommended
Alpha-cypermethrin, polyester	Interceptor, 200, Recommended SafeNet, 200, Recommended

2. Training: Training on the proper use/handling and disposal of the LLINs will need to be implemented for those parties responsible for the use, handling and disposal of these bed nets, and to any beneficiaries in the event that the school plans to distribute bed nets to surrounding community members (in such cases, training should be conducted before distribution). These training initiatives will increase the likelihood for nets to be effective over the proscribed life of the LLIN.
    a. Maintenance: Training initiatives should nclude guidelines on how to properly wash and maintain LLINs (e.g., discourage disposal of wash water in sensitive ecosystems, discourage washing and rinsing LLINs in water bodies, encourage mending of torn bednets to improve their effectiveness, etc.).
    b. Disposal of LLIN: Previous experience has shown that at the end of the useful life of the LLIN, users will uses nets in manners that are not recommended, i.e., fishing/seine nets and bridal garments/children swaddling having dire environmental and health implications. Preferred ultimate disposal is plastic recycling, burying or incineration. In the event that end-of life disposal of nets in Uganda involves incineration, ensure that incineration of LLINs is conducted in high-temperature incinerators, not an open pit. And if burying of nets is standard, ensure that burial occurs at designated landfills with the following criteria: controlled access, soils with low permeability, away from residences, at least 100 m away from any wells or surface water sources and at least 1.5 meters above the water table
    c. Disposal of LLIN Packaging: Packaging in which LLIN are wrapped are considered to be pesticide containers, due to trace amounts of pesticides subsisting on them after the net has been taken out. Therefore LLIN packaging should be disposed of in a similar way as empty pesticide containers, that is either by high-temperature incineration or by burial away from water sources, according to the aforementioned criteria.

[10] WHOPES (2016): http://www.who.int/whopes/Long-lasting_insecticidal_nets_April_2016.pdf?ua=1

3. Monitoring of Effectiveness of Use: The IP should conduct regular monitoring of the bednet users, to ensure proper handling and use of the LLINs by faculty, staff and students using the bednets.
4. Insecticide Resistance: One of the threats to the efficacy of LLINs is the potential for mosquitoes that carry malaria to develop resistance to the pyrethroids that are used to treat nets. WHO reports that pyrethroid resistance genes have been identified in malaria vectors in recent years in West Africa, Central America, Turkey, India, Pakistan and parts of the Arabian Peninsula. The implementing partner needs to reach out to relevant Ministries of Health and/or UN entities to determine level of resistance monitoring at the country and/or regional level.

Condition 4: The implementing partner's PERSUAP should address the mitigation of environmental impacts associated with the use of various malaria vector control methods.

Issue 5: Water quality assurance is of utmost importance, especially within an educational setting.

Discussion: The BEO commends the implementing partner for its plans to establish a filtration system to treat the school's water supply, which will be used to supply students with potable water that meet national and international drinking water standards. However, the fact that this filtration system will only be available in the school's kitchen, makes the kitchen the sole water point from where students will be able to collect potable water for drinking purposes. If other taps on campus produce untreated water, students may consume this non-potable water, thus increasing the risk of waterborne diseases associated with the human consumption of non-potable water.

In order to reduce the risk of potentially negative health impacts caused by the consumption of non-potable water from other taps on campus, the BEO recommends that the filtration system be placed at a more central location, to ensure that all water points on campus produce potable water. If this option is not feasible, the following measures must be implemented:

- Awareness-raising campaigns should be conducted among students, faculty, staff and community members (if the latter come to collect water on-campus), to ensure that water from other water points on campus is not used for human-consumption
- Visible signage in the local language (including pictorials) should be placed nearby non-potable water points, prohibiting the use of this non-potable water for human consumption
- All water users should be taught on the proper care and maintenance of the containers they will use to collect water from the kitchen, to ensure that the water quality is not compromised during the collection, storage and use of this water. Such trainings should include:
    - Using appropriate vessels for water collection and storage e.g. leak-free, and with lids to keep the water clean and free from detritus;
    - Ensure frequent cleaning of these vessels;
    - Adequate disposal of the containers after use to avoid inadequately disposed of broken vessels from accumulating water and becoming breeding grounds for mosquitoes around campus.

These measures should be included in the academy's overall water quality assurance plan, to ensure continued safe water quality and consumption on campus.

Condition 5: The implementing partner should ensure that adequate measures are in place to prevent the consumption of unsafe drinking water from non-potable water points on campus, and maintain water quality standards during the collection, storage and consumption of water by all campus water users.

Issue 6: The mitigation of all foreseen cumulative impacts of planned project activities are an important component of an Environmental Assessment.

Discussion: The BEO commends the implementing partner for having considered the cumulative impacts of planned project activities on noise, air quality, traffic, fire hazard, vegetation, aesthetics and runoff in the submitted EA. However, other project activities that may also have important long-term impacts were not considered, such as the impact of the school's use of energy, wood and water resources during its long-run operation.

Given the fact that the EA mentions that wetland degradation and deforestation are an issue in the area, as is the of lack of water availability during dry spells, it is necessary for the implementing partner to assess the potential additional stress that the school's use of these resources may have on the existing situation. The IP should subsequently develop mitigation and monitoring measures to ensure that these cumulative impacts are adequately addressed.

Condition 6: The implementing partner should assess and address the cumulative impacts of the school's operations on natural resources such as water, energy and wood resources, so as to reduce the risk of further environmental degradation by project activities.

Issue 7: The use of potentially contaminated soil amendments for agricultural purposes may have negative environmental and human health impacts.

Discussion: The BEO commends the implementing partner for address the operation and maintenance of the academy's septic tank, as outlined in the EA, and for seeking to put the sewage residue from the septic tanks to good use. The BEO would however caution the implementing partner against using any septic tank residue for soil amendments on which edible plants will be grown, or any crops intended for human consumption. This is because different soil types differ in their ability to filter out contaminants, and there is no way of way of ascertaining that all contaminants are indeed being filtered out[11]. And while soil quality can be tested, there subsist the risk for pharmaceutical residue from human waste that may remain in the soil and that may be difficult to analyze and filter out.

Therefore, because of the potential of the crops or vegetables to be contaminated by waste or wastewater effluent, it is recommended that the implementing partner test not use these soil amendments from the decommissioned septic tanks to grow edible plants. Rather, the implementing partner can use these soil amendments to grow grass used for landscaping purposes. In the event that larger shrubs and/or trees are planted, they should be planted away from the septic tanks themselves, to prevent potentially aggressive or deep roots from weakening the underground structures of the septic tanks.

---

[11] Clemson University (2010): http://www.clemson.edu/extension/hgic/plants/other/landscaping/hgic1726.html

Condition 7: The implementing partner should not use soil amendments from the septic tank system to grow edible plants, crops or other vegetables for human consumption.

Issue 8: The inadequate incineration of waste oil may create emissions that are toxic both to human health and to the environment.

Discussion: The BEO commends the implementing partner for outlining their plans for the operation and maintenance of the various alternative energy sources to be used on the school campus, including the generator. However, the BEO is concerned at the proposed disposal of oil drippings from engine oil and the generator, which the implementing partner intends to soak up with sawdust and incinerate. This is because waste oil sometimes contains toxic heavy metals including arsenic, cadmium, lead, PCBs and chromium, which may be released into the atmosphere if incinerated. Other concerning practices in oil disposal in Uganda involve applying waste oil onto the land as fertilizer, in spite of the negative environmental impacts associated with this such as soil contamination with heavy metals.

The implementing partner is therefore requested to use appropriate waste disposal measures for oil waste, to prevent both human health impacts, and environmental pollution. One recommendation is for the waste oil to be collected in a clean, empty container with a tight lid and taken to a motor oil station, a service station, a lube center, or any other collection center or auto-motive center for disposal or recycling purposes.

Condition 8: The implementing partner should ensure that waste oil generated by operation activities is adequately disposed of.

Issue 9: Unsustainable sourcing of construction material may have negative impacts on the surrounding environment and overall ecosystem.

Discussion: The BEO commends the implementing partner for their collaboration with local representatives of the Ministry of Environment, who raised issues of current deforestation and wetland degradation caused by local brick making ventures in the region surrounding the project area. Given the current state of environmental degradation and the school's plans to use locally sourced construction material in order to boost the local economy, it is important to ensure that planned project activities do not exacerbate this situation.

The implementing partner is therefore required to ensure that any locally sourced material used during both the construction and the operational phase of the project, be it bricks, wood and fuel wood, be obtained from sustainable sources and business ventures whenever possible or feasible.

Condition 9: The implementing partner should ensure that locally sourced natural resources used during the construction and operation of the school are sustainably extracted and sourced.

Issue 10: The introduction of exotic or invasive species can have important environmental impacts on the surrounding flora and fauna.

Discussion: The BEO commends the implementing partner's plans to revegetate the area after construction and would like to encourage that the implementing partner use native and/or non-invasive species where possible, in order to prevent potential invasion of surrounding flora by exotic species, which if invasive can spread rapidly and have undesirable ecological events. Invasive species can impact native plants, animals, and other ecosystems, as well as impact human livelihoods, agricultural activities, and even increase flood risk due to clogging of drainage canals, etc. Controlling damages from invasive species can be extremely costly and sometimes nearly irreversible.

Of special concern in Uganda are two invasive species, namely Mesquite or *Prosopis juliflora*, and *Leucena Leococephala*, as detailed below:

Mesquite or *Prosopis juliflora*:
"Global concern about deforestation caused by fuel wood shortages prompted the introduction of *Prosopis juliflora* to many tropical areas in the 1970s and 1980s. *P. juliflora* is a hardy nitrogen-fixing tree that is now recognized as one of the world's most invasive alien species.[. . .] Strong local support for eradication and replacement appears to be well justified. Sustainable utilization will require considerable investment and institutional innovation."[12]

Leucaena leucocephala:
"*L. leucocephala* has a number of biological characteristics which are regarded as indicating invasive tendency and make it difficult to control, e.g. precocious year-round flowering and fruiting, abundant seed production, self-fertility, a hard seed coat, an ability to build up a seed bank, and ability to resprout after fire or cutting."[13]

These two species should not be planted under any circumstances, and if any such trees subsist on the school campus, they should be removed.

Where no local alternatives are available, the BEO recommends the use of well-tested non-nuisance species approved or recommended by the Government of Uganda.

Condition 10: The grantee should plant non-invasive species on campus grounds whenever possible, and avoid invasive species such as Mesquite and *Leucaena Leucocephala*.

-

[12] Conservation & Society (2008): : http://www.conservationandsociety.org/article.asp?issn=0972-4923;year=2008;volume=6;issue=2;spage=130;epage=140;aulast=Mwangi
[13] Invasive Species Compendium (2015): http://www.cabi.org/isc/datasheet/31634

USAID APPROVAL OF ENVIRONMENTAL ACTION(S):
ASHA Uganda Empower African Children Academy FY12-16 Environmental Assessment

Mission Clearance:
Deputy Mission Director,
USAID Uganda: _____ Date: 20 Nov 16
Jo Lesser-Oltheten

Mission Director,
USAID Uganda: _____ Date: 20 Nov 16
Mark Meassick

Mission Environmental Officer (MEO),
USAID Uganda: _____ Date: 11/17/2016
Jessica Okui

Washington Clearance:
ASHA Director __cleared via email 11/7/16__ Date:_____
Jerry O'Brien

Agreement Officer (C/AO), ASHA/DCHA: __cleared 11/8/16__ Date:_____
Raymond Jennings

Concurrence:
DCHA Bureau Environmental Officer: Erika J. Clesceri Date: Nov 30 2016
Erika J. Clesceri

CC:

Brian Hirsch, Africa Bureau Environmental Officer
David Kinyua, Regional Environmental Advisor for East Africa

Agency environmental compliance analyses may be accessible on the USAID Environmental Compliance Database.

Empower African Children Limited
Makerere Kikoni P.O. Box 71747
Kampala Uganda
+256414110890
info@empowerafricanchildren.org

ENVIRONMENTAL ASSESSMENT OF THE EMPOWER INTERNATIONAL ACADEMY PROJECT

MAY 2016

www.gissat.org

Gissat Inc
Exceptional Eco-Solutions

Empower African Children Limited

DEVELOPMENT OF EMPOWER INTERNATIONAL ACADEMY

Environmental Assessment

June 2016

Primary Authors:

Harriet Mujuni
David Nelson Nkuutu
Richard Osaliya
Eng. Lam Kajubi
Leo Semanda

Disclaimer:

This report is made possible through the support of the American people sponsored by the United States Agency for International Development (USAID). The contents are the sole responsibility of the consultancy team and do not necessarily reflect the views of USAID or the United States Government.

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job Reference Number: EA/1215/001
Final 01 12.06.2016

Table of Contents

TABLE OF CONTENTS ..... **III**

LIST OF ACRONYMS ..... **IX**

EXECUTIVE SUMMARY ..... **XI**

CHAPTER 1: INTRODUCTION **20**

1.2 OBJECTIVE AND SCOPE OF WORK 21
1.3 REQUIREMENT FOR AN EA 21
1.4 ENVIRONMENTAL SCOPING STATEMENT 22

CHAPTER 2.0: DESCRIPTION OF THE DEVELOPMENT **24**

2.1 PROJECT CONTEXT 24
2.2 THE DEVELOPMENT PROPOSAL 24
2.3 THE PROPONENT 25
2.4 PROJECT HISTORY 25
2.5 PROJECT GOALS AND OBJECTIVES 25
2.6 PROJECT RATIONALE 25
2.7 DIRECT AND INDIRECT INFLUENCED AREAS 27
2.7.1 Location and boundaries of the affected areas 27
2.7.2 Bio-physical 28
2.7.3 Socio-economic 1
2.7.4 Infrastructure and services 1
2.8 DETAILED DESCRIPTION OF PLANNED PROJECT COMPONENTS AND DESIGN ALTERNATIVES 12
2.8.1 Science Laboratory & Classrooms 16
2.8.2 Dormitories 21
2.8.3 Water Supply and Consumption 24
2.8.4 Drainage 28
2.8.5 Waste Management 31
2.8.6 Waste Water Management 33
2.9 ENVIRONMENTAL MANAGEMENT FACILITIES AND CONSIDERATIONS 38
2.9.1 Climate Resistant and Appropriate Materials and Design 38
2.9.2 Pesticides 38
2.9.3 Energy Consumption 39
2.10 ACCESS ROAD 40
2.11 ANTICIPATED WASTE STREAMS AND UPSET CONDITIONS 41
2.12 PROPOSED CONSTRUCTION AND ENVIRONMENTAL RULES FOR THE CONTRACTORS 42
2.12.1 Chance Findings 42
2.12.2 Site Security 42
2.12.3 Worker Sanitation 42
2.12.4 Noise Control 42
2.12.5 Use and management of hazardous materials, fuels, solvents and petroleum products 42
2.12.6 Site stabilization, erosion control and waste management 42
2.13 LAND OWNERSHIP 43
2.14 PLANNED GREEN CONCEPTS 43
2.15 PROGRAMME OUTLINE 44

CHAPTER 3.0 APPROACH TO UNDERTAKING THE EA AND METHODOLOGY **45**

3.1 DOCUMENT REVIEW 46
3.2 FIELD SURVEYS 46
3.3 STAKEHOLDER CONSULTATION 47
3.5 ISSUES IDENTIFIED DURING SCOPING ACTIVITIES 48

CHAPTER 4.0 : ENVIRONMENTAL LAWS AND REGULATIONS **54**

4.1 USAID ENVIRONMENTAL REQUIREMENTS 54
4.2 OTHER INTERNATIONAL BEST PRACTICE 55
4.2.1 World Bank Environmental and Social Safeguards 55
4.2.2 Equator principles 56
4.2.3 IFC Environmental, Health and Safety General Guidelines 56
4.2.4 IFC guidelines: Occupational Health and Safety 56
4.2.5 IFC guidelines on Waste management 56
4.2.6 IFC guidelines: Construction and Decommissioning 57
4.2.7 IFC Environmental, Health and Safety Guidelines for Water Quality 57
4.2.8 IFC Environmental Health and Safety Guidelines for Health Care Facilities, 2007 57
4.2.9 IFC Disaster and Emergency Preparedness; Guidance for Schools, 2010 57
4.2.10 World Health Organization (WHO) Guidelines for Community Noise, 1999 58
4.3 INSTITUTIONAL FRAMEWORK 60

CHAPTER 5.0: ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE CONDITIONS 63

5.1 PHYSICAL ENVIRONMENT 63
5.1.1 Topography and Altitude 63
5.1.2 Geology 64
5.1.3 Soils 64
5.1.4 Climate 66
5.2 BIOLOGICAL ENVIRONMENT 67
5.2.1 Vegetation and fauna 67
5.2.2 Lwamunda Central Forest Reserve 72
5.3 SOCIO-ECONOMIC ENVIRONMENT 75
5.3.1 Overview 75
5.3.2 Demography 75
5.3.3 Ethnicity 76
5.3.4 Sources of Income and Employment 76
5.3.5 Land Tenure 76
5.3.6 Roads and Transport 76
5.3.7 Settlement and Housing 77
5.3.8 Energy supply 79
5.3.9 Domestic Water Facilities and supply 79
5.3.10 Health Facilities 81
5.3.11 Education and Literacy 82
5.3.12 Social Organization 82
5.3.13 Areas of Socio-cultural importance 82
5.3.14 Civil societies 82

CHAPTER 6.0: ANALYSIS OF ALTERNATIVES 84

6.1 THE "NO-PROJECT" ALTERNATIVE 84
6.2 ALTERNATIVE 2: THE PROPOSED PROJECT 85
6.3 ALTERNATIVE 3: BUILDING DESIGN ALTERNATIVE 85
6.4 COMPARISON OF ALTERNATIVES 87

CHAPTER 7.0 : PUBLIC CONSULTATION AND DISCLOSURE 88

7.1 INTRODUCTION 88
7.2 STAKEHOLDER IDENTIFICATION 88
7.3 KEY ISSUES RAISED DURING CONSULTATION 88

8.0 ANALYSIS OF POTENTIAL IMPACTS & MITIGATION MEASURES 91

8.1 INTRODUCTION 91
8.2 METHODOLOGY FOR IMPACT ASSESSMENT 91
8.2.1 Methods and Materials used for identifying project impacts 91
8.2.2 Impact Identification, Prediction, Evaluation and Mitigation 91
8.2.3 Cumulative Impacts 93

8.2.4 Beneficial Impacts ... 94
8.3 IMPACTS ARISING FROM CONSTRUCTION PHASE ... 96
8.3.1 Impacts on Standard of Living and Employment ... 96
8.3.2 Impacts arising from road construction/ improvement ... 97
8.3.3 Impacts arising from improper waste management ... 100
8.3.4 Drainage modification ... 101
8.3.5 Excavation impacts ... 101
8.3.6 Impacts arising from soil erosion ... 102
8.3.7 Occupational health and safety impacts ... 103
8.3.8 Sanitation and spread of diseases. ... 104
8.3.9 Air Quality and Climate Change Impacts ... 105
8.3.10 Traffic disruption ... 107
8.3.11 Runoff ... 108
8.3.12 Generation of revenue ... 109
8.3.13 Aesthetics ... 109
8.3.14 Loss of biodiversity ... 110
8.3.15 Impacts arising from increase in ambient noise levels ... 111
8.4 IMPACTS ARISING FROM OPERATION PHASE ... 112
8.4.1 Provision of school and medical facility in project area ... 112
8.4.2 Increase in ambient noise levels ... 113
8.4.3 Infrastructure and Services at the Facility ... 114
8.4.4 Tax Revenue to Government ... 114
8.4.5 Improved Site Aesthetics and Land Value ... 115
8.4.6 Contamination from Oil Drippings ... 115
8.4.7 Impact from Generator Servicing ... 115
8.4.8 Hazardous Substances and Effects from Pestcide Use ... 116
8.4.9 Solid Waste Generation ... 117
8.4.10 Sewage Management ... 119
8.4.11 Fire Risk ... 120
8.4.12 Traffic Disruption ... 120
8.4.13 Security ... 121
8.4.14 Resource consumption ... 121
8.4.15 Occupational Health and Safety impacts ... 122

CHAPTER 9.0: CUMULATIVE IMPACTS ... 125

9.1 NOISE AND VIBRATION EFFECTS ... 125
9.2 AIR QUALITY AND DUST EFFECTS ... 125
9.3 TRAFFIC AND TRANSPORT EFFECTS ... 125
9.4 FIRE AND POLICE ... 125
9.5 EDUCATION ... 125
9.6 VEGETATION AND WILDLIFE ... 126
9.7 VISUAL IMPACT AND AESTHETICS ... 126
9.8 RAINFALL RUNOFF ... 126

CHAPTER 10.0: RESIDUAL IMPACTS ... 127

10.1 SITE PREPARATION AND CONSTRUCTION ... 127
10.1.1 Air Quality ... 127
10.1.2 Traffic ... 127
10.1.3 Heritage and Cultural ... 127
10.2 OPERATION ... 127
10.2.1 Noise ... 127
10.2.2 Unmet Employment Expectations ... 127
10.2.3 ACCIDENTS INVOLVING COMMUNITY MEMBERS ... 127

CHAPTER 11.0: MONITORING PLAN ... 128

11. 1 ENVIRONMENTAL PARAMETERS ... 128

11.1.1 Air Quality *128*
11.1.2 Noise and Vibration *129*
11.1.3 Water *129*
11.1.3.1 Water Quality – Terrestrial (Surface and Groundwater) *129*
11.1.3.2 Water Quantity *129*
11.1.4 Soils and Geology *129*
11.1.5 Ecology *129*
11.2 SOCIO - ECONOMIC PARAMETERS 130
11.3 HAZARDS 130

CHAPTER 12: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN 131

12.1 INTRODUCTION 131
12.2 INSTITUTIONAL ARRANGEMENTS 131
12.3 GRIEVANCE MECHANISM *132*
12.4 ESTIMATED COST 142
12.5 TESTING THE EFFICACY OF THE ESMP 142

CHAPTER 13: RECOMMENDATIONS AND CONCLUSION 143

BIBLIOGRAPHIES 144

APPENDICES 145

APPENDIX 1: AID-ASHA-A-13-00001 DOCUMENT 145

APPENDIX 2: A SUMMARY OF RELEVANT LEGISLATION 152

TABLE A.2-1: NATIONAL REGULATORY ASSESSMENT FOR THE PROPOSED EMPOWER SCHOOL ACADEMY 152
TABLE A.2-2: USAID STANDARDS AND REQUIREMENTS THAT APPLY TO THIS PROJECT 160
TABLE A.2-3: REVIEW OF EQUATOR PRINCIPLES 163

APPENDIX 3: LIST OF STAKEHOLDERS CONSULTED 166

TABLE A.3-1: LEAD AGENCIES CONSULTED 166
TABLE A.3-2: CONSULTATIONS HELD AT NSWANJERE-NTULA VILLAGE, MALIMA SUB-COUNTY 173
A3-3: COPY OF THE INVITATION LETTER FOR THE STAKEHOLDER CONSULTATIVE MEETING 176
A3-4: PHOTOGRAPHIC RECORD OF THE STAKEHOLDER MEETING AT MPIGI DISTRICT 178
A3-5: PRESENTATION MADE BY THE GISSAT TEAM DURING THE STAKEHOLDER CONSULTATION MEETING HELD ON APRIL, 29 2016 IN MPIGI DISTRICT. 181
TABLE A.3-3: RESPONSES TO THE QUESTIONNAIRES ISSUED PRIOR TO EA FOR EMPOWER INTERNATIONAL ACADEMY STAKEHOLDERS MEETING THAT WAS HELD ON APRIL, 29 2016 IN MPIGI DISTRICT. 193

APPENDIX 4: RECORDS OF ATTENDANCE 199

A4-1: ATTENDANCE RECORD OF THE COMMUNITY MEETING IN NTULA-NSWANJERE VILLAGE 199
A4-2: ATTENDANCE RECORD FOR THE MEETING HELD WITH THE LC1 BY GISSAT TEAM 200
A4-3: ATTENDANCE RECORD FOR THE STAKEHOLDER CONSULTATIVE MEETING HELD ON 29TH APRIL IN MPIGI 201

APPENDIX 5: SAMPLE FIELD QUESTIONNAIRE 204

APPENDIX 6: COPY OF LAND OWNERSHIP DOCUMENTS 210

APPENDIX 7: WATER ANALYSIS RESULTS 221

APPENDIX 8: BIODIVERSITY ASSESSMENT REPORT 224

APPENDIX 9: DETAILS OF USAID EA CONDITIONS FOR THE 237

DEVELOPMENT OF THE ACADEMY 237

A9-1 CONDITION 2: PROCUREMENT AND INSTALLATION OF APPROPRIATE WATER TREATMENT TECHNOLOGY AND FACILITIES 237
A9-2: WATER QUALITY ASSURANCE PLAN 240

A9-3: UGANDA'S NATIONAL DRINKING WATER STANDARD US 201:2008 250
A9-4: CONDITION 4: ENERGY CONSUMPTION, FUEL WOOD CONSUMPTION AND WASTE MANAGEMENT 265
A9-5: INTEGRATED SOLID WASTE MANAGEMENT PLAN 270
A9-6: MEDICAL WASTE MANAGEMENT PLAN 274
A9-7 CONDITION 5: DETAILS ON IMPROVEMENT OF THE ACCESS ROAD 284
A9-8 CONDITION 6: PEST CONTROL DURING PRE-AND POST-CONSTRUCTION STAGES. 287

APPENDIX 10: SOCIAL IMPACT ASSESSMENT 289

List of Figures

Figure 1a: Map showing location of the project site 2
Figure 1b: Site location and surroundings in Ntula 3
Figure 3: Artistic impression showing planned placement of the project components 9
Figure 4: Satellite Image showing project location 10
Figure 5: Satellite Image showing site boundaries. 11
Figure 6: Site layout showing project components 15
Figure 7: Classroom diagrammatic sketch presentation 16
Figure 8: Illustration of classroom block (exterior) 17
Figure 9: Illustration of classroom block (interior) 17
Figure 10: Layout plan for classroom block (floor and roof plan elevations) 18
Figure 11: Classroom elevations 19
Figure 12: Classroom block foundation, slab, roof framing plan 20
Figure 13: Dormitory diagrammatic sketch presentation 21
Figure 14: Dormitory elevations diagrammatic sketch 22
Figure 15: Illustration of the dormitory blocks to be constructed onsite 22
Figure 16: Girls' dormitory block elevations and sections 23
Figure 17: Site Utility Plan 29
Figure 18: Grading and drainage plan 30
Figure 19: Water and waste management details 35
Figure 20: Water tank stand details 36
Figure 21: Electrical power distribution plan 37
Figure 22: Four pillars of the precautionary principle. 44
Figure 23: Topography for Uganda 63
Figure 24: Geology of Uganda 64
Figure 25: Topography of Project Area 65
Figure 26: Rainfall Pattern for Uganda 66
Figure 27: Map showing protected areas (forest reserves) in Mpigi District 68
Figure 28: Map showing protected areas in project affected area 69
Figure 29: Map showing location of Lwamunda Forest Sector 73
Figure 30: Map showing area land use cover 78
Figure 31: showing water sources distribution for the proposed area Source: Directorate of Water Development, Ministry of Water & Environment, 2010 80
Figure 32: Suggested Project Grievance Mechanism 134

List of plates

Plate 1: The access road to the project site (Ntula) viewed from Lulumba area 29
Plate 2: View of the project site and the surrounding project area (Ntula – Nswanjere) 30
Plate 3: Prevalence of termites at the site connotes a pest risk in the operation phase 31
Plate 4: View of the incomplete structure on site 32
Plate 5: View of the eastern neighbourhood of the project area showing the hills of Kasabo and Namabale 33
Plate 6: Some of the settlements within the project area..... 34
Plate 7: View of the western neighbourhood of the site – showing a section of a private commercial planted forest 35
Plate 8: Wetland degradation by brickmaking activities and ponds of stagnant water create breeding grounds for vectors 36
Plate 9: Brickmaking is a major cause of deforestation in the wider project area 37
Plate 10: View of a section of the north-western neighbourhood of the site showing the forested area and the seasonal stream in the valley (middle ground shown by blue line) 38
Plate 11: View of the northern neighbourhood seen from the site – note the private planted forest lots in the background 39
Plate 12: View of the north-western project neighbourhood showing a subsistence garden and an area recently planted with trees (in the background) 40
Plate 13: The spring well during the EA (after the boreholes were sunk). It is now mostly used for watering livestock but not for domestic consumption. 27
Plate 14: The spring well at Ntula during the IEE 27
Plate 15: The borehole to be used by the school..... 28
Plate 16: Topography of the project site 28
Plate 17: Vegetation outside the project site (across Ntula Road) 28
Plate 19: A termite mound at the project site. 67
Plate 18: Overgrazing (shown by yellow arrow) on existing site with potential to cause soil erosion 67
Plate 20: A section of a privately planted forest lot within the project area 70
Plate 21: A section of the grassland within the project area (Ntula) 70
Plate 22: Vegetation within the Ntula wetland stretch from Lulumba 71
Plate 23: A section of the Lwamunda CFR in the middleground 71
Plate 24: View of Kampala-Mityana highway..... 77
Plate 25: One of the houses in the project are. 79
Plate 26: View of the commercial units in Lulumba trading as viewed along Kampala-Mityana highway.. 79
Plate 17: View of onsite borehole used by the community 79
Plate 27: A borehole within the project site at Ntula 80
Plate 29: Animal rearing is a major activity in Ntula area. 83
Plate 28: Brick making is a major activity in Ntula area. 83
Plate 30: Trading in firewood is also an economic activity in Ntula 83
Plate 31: Subsistence farming is the dominant activity in the area..... 83
Plate 33: Consultative meeting with the LCI secretary for information, USAID representative, project coordinator and consultants. 90
Plate 32: Consultation meeting between the chairperson - Ntula and the consultants at the chairperson's residence..... 90

List of tables

Table 1.2: Phase I project components for proposed Empower International Academy 12
Table 2.1: WHO selected water quality standards for human health 24
Table 2.2: Physico-chemical and bacteriological analysis of surface water during the IEE 25
Table 2.3: Results of Analysis of surface water during the EA (30th/12/2015) 25
Table 2.4: Results of Analysis of surface water of borehole (45249) during the EA (30th/12/2015) 26
Table 2.5: Results of Analysis of surface water of borehole (45250) during the EA (30th/12/2015) 26
Table 2.6: Likely waste scenarios 31
Table 3.2: Issues / Observations Identified During Environmental Analysis 50
Table 4.1: Guideline values for community noise in specific environments 59
Table 4.2: Key institutions that have an interest in the project – in charge of issuance of permits 60
Table 5.1: Land use and implications to biodiversity 74
Table 5.2: 2014 Population and Household Totals 75
Table 5.3: Estimated population of Muduuma Sub County and Malima parish (project area) 75
Table 5.4: Distribution water points per sub-county in Mpigi district 81
Table 5.5: Health facilities by type and location. 81
Table5.6: Civil Societies registered in Mpigi district 82
Table 7.1: Strategic focus areas 89
Table 8.1: Colour coding description of adopted impact analysis 93
Table 8.2: Environmental and social sensitivities likely to be affected by project activities 93
Table 8.3: Summary of Beneficial Environmental and Social Impacts 94
Table 8.4: Identified impacts for the pre-construction phase of the project 95
Table 8-5: Typical construction equipment noise levels 111
Table 8-6: Potential Impacts from Use of Hazardous Substances 116
Table 8-7: Expected waste from the clinic 118
Table 11-1: The World Health Organization's (WHO) Air Quality Guidelines 129
Table 12-1: Environment and Social Management Plan 135

LIST OF ACRONYMS

A&E:	Architectural and Engineering
AP:	Action Plan
ASHA:	American Schools and Hospitals Abroad
BOD:	Biological Oxygen Demand
CFR:	Code of Federal Regulations
EA:	Environmental Assessment
EAC:	Empower African Children
EGSSAA:	Environmental Guidelines for Small Scale Activities in Africa
EHS:	Environmental, Health, and Safety
EIS:	Environmental Impact Study
EPFI:	Equator Principles Financial Institutions
EPA:	Environmental Protection Agency
GPS:	Global Positioning Systems
IA&P:	Interested and Affected Parties
IEE:	Initial Environment Examination
IFC:	International Finance Corporation
LC:	Local Council
Ltd:	Limited
MFL:	Music for Live
Mm:	Mini metres
NEA:	National Environment Act
NEMA:	National Environment Management Authority
NGO:	Non-Government Organization
NFA:	National Forestry Authority
O&M:	Operation and Maintenance
PVC:	Poly Vinly Chloride
STD:	Sexually Transmitted Diseases
TSS:	Total Suspended Solids
TOR:	Terms of References
UBOS:	Uganda Bureau of Statistics
USAID:	United States Agency for International Development
US:	United States
UNEP:	United Nations Environment Programme
VCT:	Voluntary Counselling & Testing
WHO:	World Health Organization
WQAP:	Water Quality Assurance Plan

EXECUTIVE SUMMARY

E.1 Background

Empower African Children (EAC) Limited seeks financial support from USAID to develop a boarding secondary school ("*Empower International Academy*") in Nswanjere-Ntula village, Malima parish, Muduuma Sub County in Mpigi district, which will have a technical component incorporated with an international curriculum. The development will require new facilities for waste management, drinking water supply, sanitation structures besides improvement of some sections of the 1.5 km access road leading to the proposed school site (although this is expected to be undertaken by the District Local Government). Changes in land use following project implementation coupled with project operation aspects have potential to cause significant impacts on the environment hence the need for an Environmental Assessment (EA).

This study has been conducted in accordance with national and international environmental standards, guidelines and regulations. This section of the report further presents the project, baseline issues, findings from consultations with key stakeholders, highlights the supporting legal framework and summarizes the findings of the environmental and social investigations conducted and the risks identified.

In support of the EA, an Environmental Scoping Statement (ESS) was prepared for the project in compliance with 22 CFR 216, which USAID approved in April 2016. The issues identified during the Scoping process for further assessment are provided here below:

1. Changes arising from the physical footprint of the proposed construction and operations:

Possible changes to the site (levels, drainage system, etc.) as a result of earthworks or excavation on the land. Specific attention should be paid for the potential of land clearance for construction of buildings, parking and other proposed land uses to impact on the site especially the hilly areas (stability).

a) Flood potential in adjacent lands arising from proposed drainage modifications.
b) Changes to visual aesthetic arising from excavation (if any), demolition and construction works.

2. Changes arising from storage of project subsidiary inputs and disposal of waste streams:

a) Increased total suspended solid loads during construction works (including material stockpiling) in low-lying areas as well as during site preparation and construction.
b) Effects on receiving water bodies during the operational phase of the project (arising from upset conditions, sewage effluent disposal and other school operations). This shall include, but not necessarily be limited to, demand created on the importation, storage and disposal of e.g. fuels and other chemicals including pesticides if they are to be used.
c) Any potential effects on air quality.
d) There should be a thorough examination of the effects of any proposed drainage modification and associated outfalls to the roadside and adjacent low lying environments.

3. Impacts on biological receptors and habitats:

a) Biodiversity, biomass and populations, with specific attention to endemic, protected, endangered species, migratory species and commercially important species.
b) Eco-system functions and integrity (e.g. habitat reduction/modification or fragmentation; introduction of invasive alien species, and predators, breeding grounds).
c) Impacts arising from usage of resources (e.g. fuel wood, water, deforestation)

4. Impacts on the socio-economic environment, specifically:

The effects of having large numbers of visitors and employees at this site:

a) The impact of increased traffic flows to the site at specific periods, including during the construction period.
b) The effects of the proposed development on transients and other informal users of the site surrounding areas.
c) The effect of demand and consumption of the following services and utilities to this location: police services, emergency services, solid waste (including hazardous) collection and disposal, water, electricity.
d) Off-site impacts of construction material sourcing and transportation.
e) The availability of water for this development must also be indicated.
f) Student's welfare, including:
- Communicable disease prevention
- Indoor and outdoor safety issues for students
- Protection from intruders
- Safety in workshops and laboratories
- Provisions for students with special needs

E.2 Project Description and Location

The proposed project site is located within Nswanjere-Ntula village, Muduuma Sub County in Mpigi district. It is a rectangular-shaped site with an acreage of approximately 10 acres and it is geographically referenced within the following coordinates; N00.36425 E032.32809; N00.36365 E032.32668, N00.36333 E032.32605, N00.36329 E032.32834, N00.36240 E032.32653.

The site lies in a rural serene setting with a few residences interspersed between farmland, open grassland and woodland with hedgerows. Development of the academy will put emphasis on sustainable and eco-friendly ways, ensuring that observation of mandatory buffer zones and protection ecologically sensitive areas as required by the relevant authorities are met.

Acess to the site is by using Mityana Road through Buloba and Bujuko Trading Centres to Lulumba Trading Centre. Ntula road that stretches from the branch off Mityana road at Lulumba leads to the site. It is a small parochial road that currently terminates at Eng. Byekwaso's farm in Ntula. The road has not received designated maintenance funding from the district so far and all efforts to keep it motorable are from the community members currently. During the rainy season some sections become almost impassable while the dry season creates a very dusty environment mostly from the moving vehicles.

E.3 Major Project Components and Natural Features

The school master plan incorporates educational facilities with associated operational structures and buildings (reception, administration block, staff rooms, stores, library, computer and lecture rooms, kitchen, sanitary units, hall), recreational facilities, a health unit, amphitheater, a service

road running up the north boundary of the property, provision of car parking spaces distributed at a number of locations around the site, football pitch and multi-courts, staff and guest housing, maintenance building (workshop), network of footpaths, welfare facilities and other ancillary facilities including; water supply and distribution system, water storage tanks, waste water evacuation system, waste storage facilities, septic tanks with grease traps and soak pits.

A 2km radius of the project area was delineated as the study area. This distance was chosen as it encompasses the villages in proximity and also a surface spring that could potentially be impact by the proposed development. The villages include Ntula, Nswanjere, Lulumba and the parts of Malima all in Muduma Sub County. The property to be developed will cover 10 acres.

The project will provide approximately 40 jobs during the construction phase engineers (civil, electrical and mechanical) technicians and unskilled workers). During operation, the project will provide approximately 60 direct jobs which will include skilled and unskilled labour. The clinic will be the only offering medical services in this part of Muduma Sub County.

E.3.1 Project Establishment Phases

The proposal is to be executed in phases. The client proposes a sequencing that is in line with the business plan. Key features for phase I include four building blocks with three classrooms each, a hall (convertible to classrooms in future), administrative block, science laboratory, girls' dormitory (32-bed occupancy), boys' dormitory (32-bed occupancy), sanitary facilities, among others. Two boreholes have already been sunk onsite with an estimated yield of 2,400litres per hour. It is planned to supplement water supply by rainwater harvesting from buildings. The community will have access to one of the boreholes for regular water supply. The entire school is to be enclosed in a perimeter fence with one main entrance. The school is to be designed in a sustainable and eco-friendly way, ensuring that all environment protection requirements by the relevant authorities are met. Local materials such as stone, timber, gravel and sand will be used for project construction. Glass, steel for concrete reinforcements and other ancillary construction materials that are not readily available within the project area will be sourced from neighbouring urban centres.

E.4 USAID Environmental Requirement

Every USAID-funded program is required to comply with the US Government's (USG's) environmental regulations (often referred to as, "Reg. 216). This outlines the Environmental Impact Assessment (EIA) process that USAID has designed to identify potential effects – positive or negative – that a project or activity may have on the environment. The process is intended to prevent activities that are likely to cause significant environmental harm and to ensure that projects monitor and mitigate any negative effects on the environment.

In accordance with section 216.6(a) of the CFR, "the purpose of the EA is to provide the agency and host country decision-makers with a full discussion of significant environmental effects of a proposed action. It includes alternatives which would avoid or minimize adverse effects or enhance the quality of the environment so that the expected benefits of development objectives can be weighed against any adverse impacts upon the human environment or any irreversible or irretrievable commitment of resources."

E.5 Stakeholder Engagement Process

Public participation is the involvement, during the assessment process, of all parties who potentially have an interest in a development or project, or may be affected by it. The principal objective of public participation in an EA process is to inform and enrich decision-making. Public consultation is an integral part of the EA process that ensures that the views (on the

proposed development) of the local community members and other stakeholders are heard and taken into consideration.

For the project, the process of public consultation followed a logical sequence of steps starting with informative interviews with a wide spectrum of residents and visitors to gather views and perceptions on development. Stakeholders were consulted and an overview of the project was provided to relevant agencies and the community. Their inputs into the project were also sought in order to ensure that their issues/matters are considered during the EA study.

According to the USAID guidelines, public consultation is viewed as critical in raising awareness of project impacts and gaining agreement on management and technical approaches in order to maximize benefits and reduce negative consequences.

In general, there were divergent views regarding the project development. While some officials raised concerns about security, noise and environmental pollution, most stakeholders and local residents supported the project and found it to be beneficial. For example, according to the local leaders and lead agencies, the project is expected to have the following benefits:

- ✓ Increase in the number of secondary schools and medical facilities in the area;
- ✓ Increased job opportunities; and
- ✓ Promote markets for locally produced goods and services and general area development.

E.6 Project Alternatives

During the project's design phase, a number of alternatives were identified and analyzed, including project location, design and the "no project" alternative. The project location alternative was analyzed against distance from the city centre, road network, landscape and availability of land and other utilities. Also the site was assessed to see whether it had a community value or cultural heritage beliefs/values and distances from any sensitive receptors. Other design alternatives considered, mainly related to access roads and placement of project components at the site. The "no project" alternative was also discussed basing on both environmental and socio-economic benefits the project may have over the cost it may have on the environment.

E.7 Summary of Environment and Social Baseline Setting

Climate: Mpigi district climate is tropical in nature and modified by relief, existence of wetlands, traversing River Mayanja to the north and proximity (nearness) to Lake Victoria to the south.
The rainfall pattern of Mpigi district is bimodal having two seasons with dry spells between July to August, and January to March. The months of March, April and May receive very heavy and well distributed rains of up to 1,200mm. The second season occurs in the months of September to December with the exception of a few years of declining trend in precipitation, the annual average rainfall received is between 1,100mm – 1,200mm with 100 – 110 rainy days, therefore, favorable for agricultural production.
Temperature – is generally mild. Dry periods are experienced from mid-November to mid-March and mid-June to August.

Topography: The topographic pattern of the project site does not differ from that of the rest of Mpigi district. It is part of a plateau characterized by broken flat-topped mesa-like hills in central and western Buganda. These flat topped hills, owing their distinctive form in part to a duricrust capping rise to much the same height along the immediate Lake Victoria watershed.

Geology and Soils: Mpigi district lies within the Buganda catena that comprises of red laterite soils on the slopes and black silicate clays in the valley bottoms. There are four (4) principal soil

types of this catena viewed from the highest altitude to the lowest and they include Shallow lithosols on the highest ridge crests, Red Earths (Red Latosols) – occurring on most of the land surface, Grey Sandy Soils – normally at the base of slopes of the catena and Grey Clay – usually waterlogged and occupied by papyrus.

Drainage Resources: L. Victoria drains most parts of Mpigi to the south while River Mayanja drains the northern parts towards Kalangala and Mityana districts. Lulumba wetland forms part of the drainage line system for storm water from the project area.

Biological Resources: The vegetation cover of Mpigi district is very varied. It ranges from medium altitude evergreen forest, through medium altitude moist semi-deciduous forests, savannas, and swamps. Mpigi district has over nineteen (19) government forest reserves with a total area of 6,773 ha. All the reserve forests have experienced illegal forest activities such as charcoal burning, encroachment, pit swaying and cutting trees for firewood. The pressure on the forest reserves is due to high population density around the forest, abject poverty and the place being very near to the main market outlet (Kampala).

The Forest mosaic is found in medium altitude. Lwamunda forest reserve is the nearest forest with its extensions (sectors) being approximately 4km to the south of the proposed site. The forest is classified as tropical medium altitude moist (TMF) semi-decidous forests (Lange-dale Brown and Osmaston, 1960). Lwamunda occupies valleys and lower hill - slopes where cultivation and grazing were or are still difficult.

At the time of assessment, a variety of flora/vegetation was observed onsite and in the immediate neighborhood. Generally, onsite vegetation is dominated by short tree shrubs intermingled with patches of grass. Tree species that were observed and recorded at the site included *Albizia coriaria, Ficus natelensis, Erythroxylem fischeri, Ficus exasperate*. Other plant species recorded include; *Khaya grandifolia, Terminalia glaucesceus, Acacia hockii, Asparangus africanus*. One of the invasive species *Lantana camara* was observed within the site. Grass that was identified includes Couch grass, Star grass, Spear grass, Nut grass, Elephant grass and Guinea grass.
Information from residents indicated unidentified antelope and the *African Civet Civettictis civetta* sightings in the nearby NFA plantation forests, Vervet monkey *Chlorocebus pygerythrus* have also been sighted sometimes crossing from the plantation forest to raid crops in the gardens adjacent to the site. There was a single record of the Banded Mongoose *Mungos mungo,* three records of the Black rat, *Rattus* a common rodent in homes and there was evidence of presence of Lesser Cane rat *Thryonomys gregorianus*

Population: According to UBOS 2014 Population Census, Mpigi district has an average of 4% population growth rate with a total population of 251,512 people from the 2014 census. The highest population proportion of Mpigi lives in rural areas (rural population is 207,238 people and urban areas is 44,274 people).

Mpigi district is dominated by the Baganda. The project area Mudduma in particular accommodates mainly Baganda (as the dominant tribe) followed by Banyoro and Banyakole.

Cultural Heritage: The site has no known cultural, historical, archaeological or material assets of significance.

Settlement and Housing: The population in the study area is mainly rural with clustered settlements in a linear arrangement especially along access roads and trading centers. There

are some scattered or isolated cases also identified within the project area where households are distant from each other. Some residential structures within the project area are improved and constructed with bricks especially for the middle income earners. However, houses made from mud and wattle also exist. Use of bricks for construction is becoming popular especially in urban centres. Development of settlements (including trading centres) is generally not planned. This has had a negative effect on the provision of social services and improved environment management for instance sanitation.

Health Care: The project area has access to health facilities (Nswanjere Health Centre III and Muduuma Heath Centre III at 2 and 3 miles approximately from the site respectively.

Water Supply: The project site has two boreholes with one serving the community members.
The district has access to safe water with accessibility varying from 55 % in Buwama Sub-County to 95 % in Budde, Bulo, Kalamba, Ngando, Mpenja, Kamengo, Kiringente, Kituntu, Mpigi and Muduma Sub-Counties. There are approximately 2,033 domestic water points of which 72 have been non-functional for over 5 years in the district. The main water supply technology is the shallow well.

Land Use: Mpigi is predominantly an agricultural district and most people depend on both subsistence and commercial agriculture. However there are several people in the district who also depend on livestock rearing, fishing and brick making among others. The district has numerous land use activities and infrastructure, which include schools, health units, roads network and water services.

E.8 Pertinent Legal Framework

The study has been conducted in accordance with the following legislation:

- The National Environment Management Policy, 1994
- National Water Policy, 1999
- The Land Use Policy, 2004
- The Constitution of the Republic of Uganda, 1995
- The National Environment Act (Cap 153)
- The Education Act 2008
- The Investment Code Act, 1999
- The Land Act, 1998
- National Environment (Waste Management) Regulations
- The National Environment (Noise Standards and Control) Regulations, 2003
- The Occupational Safety and Health, 2006
- The Physical Planners Act, 2010
- The Public Health Act, 1964
- The Water Act, 1995

Standards

- Uganda National Drinking Water Standard (US 201: 2008)

USAID Standards and Requirements

- 22 CFR 216 Agency Environmental Procedures
- USAID Sector Environmental Guidelines: Construction
- USAID Sector Environmental Guidelines on Small-Scale Energy
- USAID Sector Environmental Guidelines: Rural Roads

- USAID Sector Environmental Guidelines: Solid Waste
- USAID Sector Environmental Guidelines: Water Supply and Sanitation
- USAID Sector Environmental Guidelines: Healthcare Waste

IFC Performance Standards

- ✓ International Finance Corporation (IFC) Environmental, Health, and Safety guidelines

World Bank Operational

E.9 Study Materials and Methodology

A team of environmental professionals carried out the assessment, determination of potential impacts and recommendation of mitigation measures. The methodology used consisted of desktop studies to review literature on environmental impacts of establishment of the academy. Field investigations were undertaken to establish baseline physical, biological and socio-economic environmental aspects. Baseline data for the study area was collected using a combination of: surveys, site reconnaissance, desktop research, analysis of maps and plans, review of reports and background documents, public consultations and field studies *inter alia*.

E.10 Possible Environmental Impacts and Mitigation Measures

The environmental impacts of the proposed academy were primarily assessed based on the current baseline environment and on other similar existing facilities. The project has many positive impacts, such as job creation, provision of education and medical services and improved health, induced area development and increased government revenue inter alia. The project could also result in various potential and predictable negative environmental impacts.

There is significant positive impact to be gained through provision of education and medical facilities in an area which had none (Ntula) and this (assuming suitable mitigation measures are incorporated) far outweighs any other negative impacts associated with the proposed development.

The project will lead to the rehabilitation of the project road (through partnership with the district local government) bringing about wider economic growth and associated benefits. It is a major step towards realizing sustainable economic growth in the district.

Other potential positive impacts arising from project development include:

1. Improvement of infrastructure e.g improved amenities/services (e.g power, roads, communication among others thereby improving the life of the local populace.
2. Boost to small businesses in the area during the construction phase.
3. The academy will increase the economic activities around the area creating avenues for direct and indirect employment in the post project period. The wider economic impact stems from generation of opportunities for other businesses like transportation, marketing, repair and maintenance among a host of other similar tasks.

The project could also result in various potential and predictable negative environmental impacts. The identified impacts during the course of the study that could result from improper construction and/or operation activities of the academy during the functional phase include:

1. Disruption of traffic patterns during construction phase will be affected by the engineering works that will be necessary to construct, establish and install project components. Haulage activities may lead to congestion outside the site especially on adjacent highway and bypass links. During operation, the possible traffic disruption factors will basically result from incoming and outgoing vehicles.

2. There could be impacts to water quality. There is a surface spring and a wetland - sources of water to the surrounding communities. These could arise from oil/fuel and waste spills, improper debris disposal during construction phase, discharge of sewage and discharge of contaminated storm water.
3. Most of the activities involved in the establishment of the proposed academy may pose occupational health and safety risks to employees, occupants and transient public.
4. It is expected that during operation of the academy, waste will be generated. This may include domestic wastes (food waste, packaging, used containers and scrap from various maintenance activities. Other waste likely to be generated during operation phase is medical waste from the clinic, used equipment and other scrap metals (from repairs and maintenance). Most of this waste is categorized as hazardous waste and should be handled using hazardous waste best managing practices.
5. Water used in flash toilets, kitchens and other activities like housekeeping may be potentially contaminated with VOCs (solvents), Suspended Solids, and Pollutants that may trigger BOD and COD process and other non-conformances to water quality parameters.
6. Construction and operation of is likely to affect local ambient air conditions. Dust emissions from site preparation, excavation, material handling and other construction activities and during the functional phase through particulate and gaseous emissions from vehicle movement.
7. There risks that could arise from fire outbreaks.
8. Noise associated with site development is likely to be generated from vehicular engines associated with the haulage of construction materials and construction equipment on site. The recommended maximum permissible noise level for residential, industry or small-scale production and commerce in general environment is 70 dBA and 60 dBA during the day and night respectively.
9. Impacts from the expected transient labour force could arise as a result of project development.
10. Drainage Modification could result in possible flooding especially downstream of the site.
11. Potential impacts to area soils that could arise from fuel and material spills leading to pollution. Soil erosion and destabilization of soil structure by heavy machineries could also arise.
12. Impacts on ecology, fauna and flora owing to the landuse change.

A number of mitigation measures have been suggested to avoid, minimize or compensate for the likely negative impacts. They include the following;

1. Providing employees with appropriate PPE e.g. special footwear, clothing, gloves, helmets and other necessary protective equipment for use;
2. For water quality, impact will be temporary during construction phase. It is planned to employ mostly the local labour force to reduce on the size of permanent labour camps and toilets and potable water will be provided to the labour force to protect the adjacent wetland and surface water resources. For the operation phase, there will be no wastewater discharged outside the premises to nearby water sources and wetland resources.
3. Impacts to soil will be reduced owing to the fact that most of the site is already graded and leveled therefore warranting minimum cutting and infilling and excavation for foundations of structures. Adequate mitigation measures will reduce the same. All excavated topsoil will be preserved and reused for landscaping the operational site.

4. The planned development has no significant flora and fauna diversity and density. There are no endangered species recorded in the study area.
5. Developing and implementing a fire management plan;
6. Preparing a site waste management plan with the designation of appropriate waste storage areas, collection and removal schedule;
7. Noise impacts are temporary during construction phase. Impacts will be confined to short distances and baseline noise is within the standards. Contribution of noise will be confined in time and space. Utilizing silent machinery of efficient mechanical condition during construction;
8. Air quality impacts are temporary during construction phase. Impacts will be confined to short distances, as course particles will settle within the short distance activities. Trucks for ferrying construction materials will be fitted with tailgates that close properly and covered with tarpaulins. For the operation phase, this will be mostly limited along side routes.
9. Sorting solid waste by type and keeping them in different clearly labeled containers, recycling or reclaiming where possible;
10. Transporting construction materials shall be scheduled for off-peak traffic hours;
11. Developing a well-planned drainage system to minimize the possibility of flooding on the site or its neighborhoods;
12. Developing a code of conduct for drivers to ensure safety of other road users;
13. Erecting a fence around the facility; and
14. Employing security guards at the plant, both during the day and at night, to plant facilities.

E.11 Environment and Social Management Plan

To ensure effective management of all impacts likely to be generated during the construction and operation phases of the project, an Environment and Social Management Plan (ESMP) is provided in section 12 of this report. It includes potential impacts identified, mitigation/enhancement measures proposed, timing, desired outcomes, indicators, persons responsible and any capacity building requirement.

Continued monitoring should be implemented as recommended in the EMP to quickly identify budding impacts and stem them from developing into severe adverse socio-economic or environmental effects.

E.12 Conclusion

The final recommendation of the EIA is that when the mitigation actions and the environmental and social management plan proposed are implemented, the adverse environmental impacts of the project could be minimized to acceptable levels.

CHAPTER 1: INTRODUCTION

Empower African Children (EAC) Limited seeks financial support from USAID to develop a boarding secondary school ("*Empower International Academy*") in Nswanjere-Ntula village, Malima parish, Muduuma Sub County in Mpigi district, which will have a technical component incorporated with an international curriculum. The development will require new facilities for waste management, drinking water supply, sanitation structures besides improvement of some sections of the 1.5 km access road leading to the proposed school site (although this is expected to be undertaken by the District Local Government). Changes in land use following project implementation coupled with project operation aspects have potential to cause significant impacts on the environment hence the need for an Environmental Assessment.

Development of the project in a socio-environmentally responsive manner will require collective and proactive responsibilities starting with prudent sustainable design by the architectural and engineering (A&E) contractor, responsible implementation, monitoring and maintenance by Empower African Children all in compliance with USAID environmental guidelines.

Although an environmental certificate was obtained by this project from NEMA (Uganda), compliance with USAID environmental guidelines is a prerequisite to securing agency financing. USAID's mandatory life-of-project environmental procedures require that the potential adverse impacts of USAID-funded and managed activities be assessed prior to implementation via the Environmental Impact Assessment (EIA) process defined by 22 CFR 216 (Reg. 216). They also require that the environmental management/mitigation measures ("conditions") identified by this process be written into award documents, implemented over life of project, and monitored for compliance and sufficiency. While the main sector guideline in respect to this project will be that on "*Primary and Secondary Day Schools*", the following listed USAID guidelines will apply to the proposed project in varying extent and scope depending on project activities or facilities that will be developed on site:

i) Sector Environmental Guidelines: Construction
ii) Sector Environmental Guidelines: Energy
iii) Sector Environmental Guidelines: Healthcare Waste
iv) Sector Environmental Guidelines: Housing
v) Sector Environmental Guidelines: Rural Roads
vi) Sector Environmental Guidelines: Pest Management II/ Safer Pesticide Use
vii) Sector Environmental Guidelines: Solid Waste
viii) Sector Environmental Guidelines: Water Supply and Sanitation

These were utilized during the environmental assessment to ensure USAID compliance and project socio-environmental sustainability.

Besides overall regulatory requirements expected of an ESIA in Uganda, specific conditions below required by USAID were also addressed in various chapters:

i) <u>Condition 1:</u> The grantee is required to develop an Environmental Assessment for project activities, and submit for MEO and BEO review and approval.

ii) <u>Condition 2:</u> The grantee EA must address plans to procure and install appropriate water treatment technology and facilities as needed, and include a Water Quality Assurance Plan (WQAP).

iii) Condition 3: The grantee must conduct stakeholder consultations with local community, stakeholders and locally active environmental conservation organizations to ascertain past and current environmental issues, in order to estimate potential, unforeseen environmental impacts of project activities, and mitigate these impacts accordingly in the grantee EA.

iv) Condition 4: The grantee EA must address energy consumption, fuelwood consumption, waste management, medical waste management as well as infrastructure maintenance/upkeep. Deliverables here include an Integrated Waste Management Plan and Medical Waste Management Plan for the academy's health clinic.

v) Condition 5: The grantee must incorporate details on the access road to be improved by the project, as well as follow USAID best practices on construction/rehabilitation of access roads in project implementation and include appropriate mitigation measures to attenuate the negative impacts of rural road construction in the EA.

vi) Condition 6: The grantee will describe the steps it intends to follow to control termites, rodents, malaria-vectors and other pests during pre- and post-construction stages, and ensure that these measures are in compliance with USAID regulations.

vii) Condition 7: The grantee will ensure that project design use climate resilient and appropriate materials and designs during construction.

1.2 Objective and scope of work

Every USAID-funded program is required to comply with the US Government's (USG's) environmental regulations (often referred to as, "Reg. 216). This outlines the Environmental Impact Assessment (EIA) process that USAID has designed to identify potential effects – positive or negative – that a project or activity may have on the environment. The process is intended to prevent activities that are likely to cause significant environmental harm and to ensure that projects monitor and mitigate any negative effects on the environment.

In accordance with section 216.6(a) of the CFR, "the purpose of the EA is to provide the agency and host country decision-makers with a full discussion of significant environmental effects of a proposed action. It includes alternatives which would avoid or minimize adverse effects or enhance the quality of the environment so that the expected benefits of development objectives can be weighed against any adverse impacts upon the human environment or any irreversible or irretrievable commitment of resources."

1.3 Requirement for an EA

The construction of Empower International Academy is to be funded by USAID. The donor environmental regulations (Reg 216) establish procedures necessary for project review within the US Agency for International Development. The regulations define a class of actions that are normally considered to have a significant effect on the environment and therefore require identifying the significant issues relating to the proposed action and of determining the scope of the issues to be addressed in an EIA. Construction of a school is included within the class of actions of 22 CFR 216.2(c)(2i); education, technical assistance, or training programs except to the extent such programs include activities directly affecting the environment. It is on this basis that an Environmental Assessment (EA) is required to consider environmental impacts of the academy to be constructed in Nswanjere-Ntula village in Mpigi district.

The need to comply with the requirements of Reg 216 ensures that decision makers are provided the opportunity to consider the potential environmental impacts of a project early in the project development process, and assess if environmental impacts can be avoided, minimized or mitigated to acceptable levels.

The environmental assessment for this project includes the following main objectives:

- Describes the physical, natural and social conditions of the study area;
- Evaluates the issues identified during the scoping exercise to determine significant direct and indirect environmental issues and eliminate insignificant issues;
- Determines and compares alternatives for project implementation, including an analysis of the “No Action” alternative; and
- Provides an Environmental Mitigation and Monitoring Plan (EMMP), which shall comprehend all
- project activities and include realistic mitigation and monitoring measures for construction and
- operation of the academy.

1.4 Environmental Scoping Statement

In support of the EA, an Environmental Scoping Statement (ESS) was prepared for the project in compliance with 22 CFR 216, which USAID approved in April 2016. The Scoping Phase culminated in the identification of a preferred area for development within the broader 10-acre site. The Scoping Phase included input from the project proponent, specialists with experience in the study area, EIAs for similar projects, as well as a public consultation process with key stakeholders that included both government authorities and interested and affected parties (I&APs). Scoping sessions were held with stakeholders as part of this process in December 2015 which identified the need to explore a range of viable alternatives for the proposed project. They also helped to identify the environmental issues that the EA must address.

The rest of this report comprises the following chapters:

Chapter 2: Project description: provides a concise description of the proposed project, the key design components and parameters, timescales, the construction process and operation requirements.

Chapter 3: Details the methodology used for conducting the EA.

Chapter 4: Policy, Legal and Administrative Framework: discusses the policy, legal and institutional framework within which the EA was conducted and the regulatory requirement for which the project should follow. National regulations are discussed, together with USAID requirements and international best practices.

Chapter 5: Provides the available baseline data on physical, biological and socio-economic resources within the project area, the district and to some extent national. This section also includes the primary data findings during the assessment.

Chapter 6: This section presents technical details of the proposed project and alternatives considered. It outlines reasonable alternatives to the proposed project site, technology, design,

environmental and economic options that were considered in terms of potential environmental impacts.

Chapter 7: Sets out who the project stakeholders are, how they were identified and the consultation and project disclosure that has taken place.

Chapter 8: Provides a summary of the predicted positive and negative impacts of the development, along with mitigation measures that will ensure that all identified potential impacts are managed appropriately in line with national and USAID regulations and best practice.

Chapter 9: Sets out the Residual negative impacts that cannot be mitigated.

Chapter 10: This section provides project cumulative impacts that were assessed as appropriate.

Chapter 11: Details the project proposed monitoring plan indicating environmental and socio-economic parameters and identified hazard risks.

Chapter 12: This section provides the environment and social management plan proposed for the project which includes mitigation, monitoring, responsibilities, costs and capacity building requirements.

Chapter 13: Conclusions and Recommendations - a summary of the findings of the EA.

References and bibliographies

Summary of Appendices

Appendix 1: AID-ASHA-A-13-00001 Document – Terms of Reference
Appendix 2: Legal, Policy and Institutional Overview
Appendix 3: List of Stakeholders Consulted and Responses
Appendix 4: Summary Records of Stakeholder Consultations
Appendix 5: Sample Field Questionnaires
Appendix 6: Copies of Land Ownership Documents
Appendix 7: Results from Water Analyses
Appendix 8: Biodiversity Assessment
Appendix 9: EA Conditions for Development of Academy
Appendix 10: Social Impact Assessment

CHAPTER 2.0: DESCRIPTION OF THE DEVELOPMENT

2.1 Project Context

The development proposal is for the construction and operation of a boarding secondary school to be known as the "*Empower International Academy*" in Nswanjere-Ntula village, Malima parish, Muduuma Sub County in Mpigi district. EAC is planning a school with a technical component incorporated with the international curriculum[1]: to have a global connection and impact. The school development project is to be funded by USAID.

It is planned that majority of the students will be orphans and vulnerable children who are sick, have sick parents; have a disability or whose parents live in abject poverty. Other students will come from the surrounding communities and other parts of the country and to a lesser extent internationally. The school will start with children that are already being sponsored by EAC.

The Academy will serve a student population of approximately 400 students (in the age group of 14 – 18 years). For six years, through Ordinary level (four years) and Advanced level (two years), students will be immersed in an intensive environment, designed to maximize their potential and equip them for future success. The majority of students will attend school on scholarship (80%) while the remaining students (20%) will pay tuition. All students will be admitted on merit, based on primary school performance, demonstrated abilities and aspirations, recommendations, and interviews. Students will also be required to maintain a high standard of discipline and achievement to study at the Academy. They will benefit from an innovative curriculum and teaching methods that are designed to give them a globally competitive education.

EAC aims among others at empowering scholars by providing them with the tools they need to become change-makers and people of influence in their communities. It strives to provide a fresh approach that unlocks the potential of a new generation of leaders through pragmatic learning. The organization's holistic approach provides tools for success in life, thus inspiring confident, skillful and visionary leaders. Children are placed in various schools thus exposing them to different environment of culture, traditions, attitude and self-handling. The plan for EAC is to bring together these children to a common environment with similar culture and same values. This is in line with the organization's mission of creating transformative and globally connected learning experiences, preparing orphaned and vulnerable children for a lifetime of influence.

2.2 The development proposal

The school master plan incorporates educational facilities with associated operational structures and buildings (reception, administration block, staff rooms, stores, library, computer and lecture rooms, kitchen, sanitary units, hall), recreational facilities, a health unit, amphitheater, a service road running up the north boundary of the property, provision of car parking spaces distributed at a number of locations around the site, football pitch and multi-courts, staff and guest housing, maintenance building (workshop), network of footpaths, welfare facilities and other ancillary facilities including; water supply and distribution system, water storage tanks, waste water evacuation system, waste storage facilities, septic tanks with grease traps and soak pits.

[1] The Cambridge International Curriculum (CIC) is being considered for adoption.

Figure 1 shows the application boundary of the proposed development which has an approximate surface area of 10 acres. The current 'outline plan' for the academy is shown in figure 2. This plan is provided for illustrative purposes only; all information shown is subject to further modification as per the approved engineering design concept.

2.3 The Proponent

EAC is a private company registered in Uganda (with liability limited by guarantee) under the Companies Act[2]. Plans are currently underway to register EAC with the Non-Governmental Organization Board. The parent organization is registered as a non-profit organization in USA.

The company's founders and trustees have long experience working in partnership with individuals, governments, public institutions and corporations in USA, Africa (including Uganda) to support AIDS orphans and vulnerable communities.

2.4 Project History

The history for the project is line with Africa's future. The founders of EAC believe that the future of Africa will be determined by its children and that is why they believe the best investment they can make is in the youth. EAC must prepare a movement of passionate young adults with the skills and courage to shape a better future for their country and for the world. It is emphasized that a transformative education, matched with global connections is the key to preparing students for a lifetime of influence.

Initial plans involved taking care of few children who were needy but smart and talented. Over the years, this number grew and EAC started taking their students to different schools. It is at this point that the organization acquired land in Ntula to construct a modern school for the growing student numbers. The proposal is to be partially funded through the USAID – ASHA award (AID-ASHA-A-13-00001**)**.

2.5 Project Goals and Objectives

In line with one of EAC's strategies: "*Children in Africa are empowered to reach their full potential*", the proposed school development project has the following goals:

a) Instill strong character and inspire personal passion;
b) Promote servant leadership and develop model citizens;
c) Teach life skills to prepare young people for a healthy life full of possibilities.

2.6 Project Rationale

Uganda believes that the three major enemies of its citizens are ignorance, disease and poverty. By fighting ignorance, it is possible to reduce the incidence of disease and poverty. Education is a key factor in determining access to formal employment, household livelihoods, well-being of women, adolescents and children. It is also instrumental in influencing adaptation and attitudes. Seen in this context, a literate and affluent society is important in the quest for sustainable development.

The national literacy rate currently stands at approximately 73% (Uganda Bureau of Statistics, 2014). The rate, however, differs between sexes. The literacy rates for females and males are 79% and 66%, respectively. The urban and rural populations show wide variations in the

[2] Cap 110 of the Laws of Uganda, 2000.

literacy rates with the urban areas having a rate of 89%, 8% more than the rural rate. This is due to the greater opportunities available in the urban areas in addition to higher demand for literate people in such areas.

Uganda's formal education is based on seven years of primary school and six years of secondary school. Vocational, technical and academic courses are offered through post-primary and secondary institutions. The education system is still centrally managed by the Ministry of Education and Sports, although primary education is supported jointly by Local District Administrations. Formal and non-formal education is provided jointly by the above Ministry and that of Local Government. Non-governmental organizations and private proprietors also contribute substantially to providing education.

It is observed that enrollment in both primary and secondary schools is on the rise. The School enrollment for primary (percentage-net) in Uganda was last reported at 90.87 in 2010 (*World Bank report published in 2012*). However, many children still do not complete primary school. The system is still characterized by high primary dropout and repetition which further lead to non-completion of school. Pupil-to-teacher ratios are another constraint in the education sector, making the teaching environment more difficult. Other factors are the costs of education which have been an inhibiting factor although this is now being tackled by increasing the share of Gross Domestic Product spent on education.

The government has introduced new priorities of accessing, equity and quality education. As they strive to achieve good levels of access, and full gender parity, it is clearly time to increase education spending and focus on the quality of infrastructure, teaching, and learning achievements. In addition, the national population explosion remains a hindering factor for enrolling and education service delivery. This therefore calls for continuous investment in education service provision in order to meet the increasing demand.

It should also be noted that over the last 2 decades, Uganda has gone through a period of turmoil. Approximately 2.5 million adults are infected with HIV/AIDS and over a million children are orphaned mostly either as a result of the AIDS pandemic or internal strife that characterised mostly parts in Northern and Eastern regions. Uganda has experienced a catastrophic increase in number of children living in AIDS-affected households or struggling to survive after the death of one or both parents. Most of the orphans are living on their own or with extended families in abject poverty. They are faced with pressing needs of school fees, scholastic materials, housing facilities and medical care.

The project was conceived upon realizing that despite their predicament, orphans and vulnerable children are full of promise and when given the right environment, opportunity and support, they can achieve their full potential, live a full active life and change their communities.

The planned academy is to be the first of its kind within the project area and also in the district. Consultations from the district during the assessment also revealed that over the past few years, the government has also taken some responsible measures to improve the education system in the country. One aim is to increase vocational training. Pre-vocational preparatory courses are being taught in upper primary school and technical vocational courses in secondary school. It is anticipated that the cost of education to families is going to be reduced with the free education for four children per household. Adequate facilities for girls are to be provided in co-educational post-primary institutions to balance enrolment. These efforts, together with the initiative by private investors like EAC, will improve national education and literacy.

2.7 Direct and Indirect Influenced Areas

This section describes the socioeconomic and environmental baseline conditions of the project area. The EA team evaluated the current conditions concerning population demographics and activity, economic development, gender, physical geography and climate, and various ecosystem characteristics that may change, either positively or negatively, as a result of project development. The study uses a broad definition of the environment, to include not only natural biophysical elements but also social-economic and infrastructure and services.

2.7.1 Location and boundaries of the affected areas

The proposed project site is located within Nswanjere-Ntula village, Muduuma Sub County in Mpigi district. It is a rectangular-shaped site with acreage of approximately 10 acres and it is geographically referenced within the following coordinates;

0°21'45.03"N 32°19'43.10"E - South East
0°21'43.45"N 32°19'36.12"E - South West
0°21'48.10"N 32°19'33.78"E - West
0°21'51.24"N 32°19'41.12"E - North East

The site lies in a rural serene setting with a few residential premises characterized by farmland, open grassland and woodland with hedgerows. There is an incomplete structure within the site close to the north eastern boundary and two boreholes that will serve both the facility and the surrounding communities. The project area is surrounded by the Sub Counties of Nswanjere, Ggavu, Kasabo and Namabale.

South of the Site

The site borders with Greenfields for about 140 metres before the nearest residence to the south. A stretch of about 2 kilometres from the site to Lulumba trading centre is dominated by residences, subsistence farmland, a few retail shops, private planted forest lots and brick-making in Ntula marsh land. It is estimated that Lulumba trading centre is about 2 kilometres from the site along Mityana-Kampala road. The immediate surrounding area is characterised predominantly by woodland and grassland similar to that of the site itself (see plates 1-4).
There are also private woodlots within the project area and another stretch of woodland directly to the far South of the proposed development site which is managed under the Lwamunda Forest Sector under the National Forestry Authority (NFA). The demarcation to the NFA designated area and the neighbouring subsistence farm is a band of trees which forms an extension of the Lwamunda sector, itself located mainly off-site to the south. Most of this area is licensed to private planters.

North of the Site

To the North, the site is bordered by a farm that stretches to the valley adjoining Sserugo's poultry and piggery farm. Further to the north is Nswanjere hill that gently falls to a marsh land linking to a section of Mayanja wetland. Views to the north are dominated by Greenfields interspersed with scattered residences.

East of the Site

The eastern boundary of the site is along Ntula road (this side of the site has the lowest elevation of all site boundaries). Just like other directions, the immediate neighborhood is dominated by residences and subsistence farmland. However, further to the east, about 900 meters is Ntula marshland in the valley below Nkwata hill. There is a small demonstration farm

lot (KDS Limited Coffee under the ABT Project) in the immediate vicinity of the site across Ntula road.

West of the Site

The western side of the site is dominated by farmland that surrounds the site along the northern boundary. It has the highest elevation of the site which falls gently through the farm into the valley with an unprotected well (currently used for watering animals from the surrounding farms).

Access to the Site

Acess to the site is by using Mityana Road through Buloba and Bujuko Trading Centres to Lulumba Trading Centre. Ntula road that stretches from the branch off Mityana road at Lulumba leads to the site. It is a small parochial road that currently terminates at Eng. Byekwaso's farm in Ntula. The road has not received designated maintenance funding from the district so far and all efforts to keep it motorable are from the community members currently. During the rainy season some sections become almost impassable while the dry season creates a very dusty environment from the moving vehicles.

2.7.2 Bio-physical

The climate in the project area just like the rest of Mpigi district, is tropical in nature and modified by relief, existence of wetlands, traversing River Mayanja to the north and proximity (nearness) to Lake Victoria to the south with rainfall pattern which is bimodal having two seasons with a dryer spell. The mean annual temperature is around 20.7^{o}C while the mean minimum and maximum are around 15.1^{o}C and 26.3^{o}C respectively while the humidity level is generally low with the exception of lakeshore areas where it tends to rise.

The project area lies within the Buganda catena that comprises of red laterite soils on the slopes and black silicate clays in the valley bottoms. By virtue of site location, presence of large sized mammals is not expected on site as the surrounding natural forest and connecting corridors have been completely erased and replaced by homesteads and farmland. However, information from residents (pers. com) indicated unidentified antelope and the African Civet *Civettictis civetta* sightings in the nearby NFA plantation forests. A total of eight insect species belonging to three families were reported for this study.

The site was previously farm land that has been abandoned into fallow for over five years. It is surrounded by a road on its down-slope and gardens, thickets and grass cover dominate the site dictating livestock rearing as current activity preferred to crop farming with a few mature and medium age tree species. From the southern boundary, the site lies within 20m proximity to the designated boundary of Lwamunda Central Forest Reserve. The forest is a mono-species with Terminalia as the plantation tree species.

Plate 1: The access road to the project site (Ntula) viewed from Lulumba area

Plate 2: View of the project site and the surrounding project area (Ntula – Nswanjere)

Plate 3: Prevalence of termites at the site connotes a pest risk in the operation phase

Plate 4: View of the incomplete structure on site

Plate 5: View of the eastern neighbourhood of the project area showing the hills of Kasabo and Namabale

Plate 6: Some of the settlements within the project area

Plate 7: View of the western neighbourhood of the site – showing a section of a private commercial planted forest

Plate 8: Wetland degradation by brickmaking activities and ponds of stagnant water create breeding grounds for vectors

Plate 9: Brickmaking is a major cause of deforestation in the wider project area

Plate 10: View of a section of the north-western neighbourhood of the site showing the forested area and the seasonal stream in the valley (middle ground shown by blue line)

Plate 11: View of the northern neighbourhood seen from the site – note the private planted forest lots in the background

Plate 12: View of the north-western project neighbourhood showing a subsistence garden and an area recently planted with trees (in the background)

2.7.3 Socio-economic

The project site just like the sub-county, Mudduma, in particular accommodates many people with Baganda being the dominant tribe followed by a few Banyoro and Banyakole. According to the 2014 population and housing census; Muduuma Sub County had a population of 30,403 people, 7616 households and 3.9 household size.

As established from interviews with focal people, maize, beans and potatoes form the main food crops while vegetables such as cabbages, egg plants and *nakati* are grown mainly for sale in the village. Family income in the project area is also supplemented by piggery, poultry, goat and cow rearing. Other activities such as crafts, maize milling, brick making, commercial forestry and petty trade are also a source of income in the project area. Freehold land tenure is the dominant land ownership system in the project area followed by Mailo and customary land ownership.

2.7.4 Infrastructure and services

The length of the gravel road from where it originates to the proposed school site is approximately 1.5 kilometers from Mubende-Mityana highway. It is characterized by uneven width varying between 5-7 meters. The sources of energy in Nswanjere-Ntula village include; firewood, charcoal, paraffin and a few households which use electricity. In the project area, there are two boreholes (one used by the community while the other will be used by the school).

There is no police or fire station within the project area. Fire services must be considered inadequate in the event of there being a significant incident, not to mention an emergency situation of multiple fires or need for emergency service. The nearest police station is in Nswanjere. The crime situation in Ntula is not high.

The study area is served with wireless communication (cellular) services provided by several national licensed providers (MTN, UTL, Africell, Airtel, Vodafone among others). A network to support internet connectivity is also provided by most of them. There is no post office within the project area the one in Mpigi town is the closest to the proposed development area.

No health centres exist within Ntula; that closest to the proposed development area is Nswanjere (Seminary) Health Centre III, situated approximately 1.5 km northwest of the development area. This health centre, along with the one situated at Muduma (Health Centre III) fall under the responsibility of the district local government.

Interested and affected parties

The Nswanjere-Ntula communities living in the area are the main interested and project affected parties. Other agencies with an interest in project development and/or implementation include: USAID, NEMA, NFA, Mpigi District Local Government, NGOs operating within the project area, among others.

The site location and surrounding areas is given in Figures 1a & 1b below.

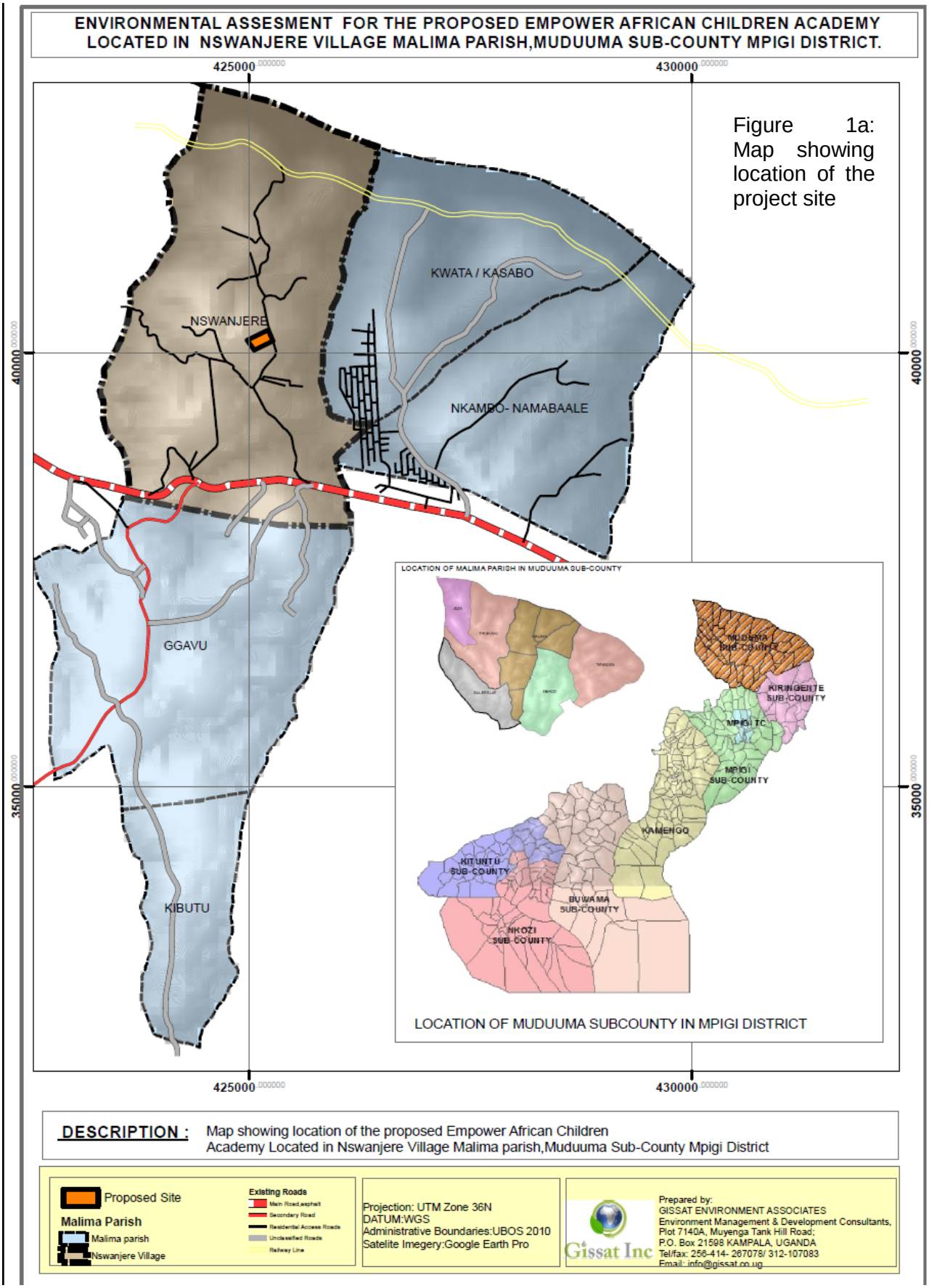


Figure 1a: Map showing location of the project site

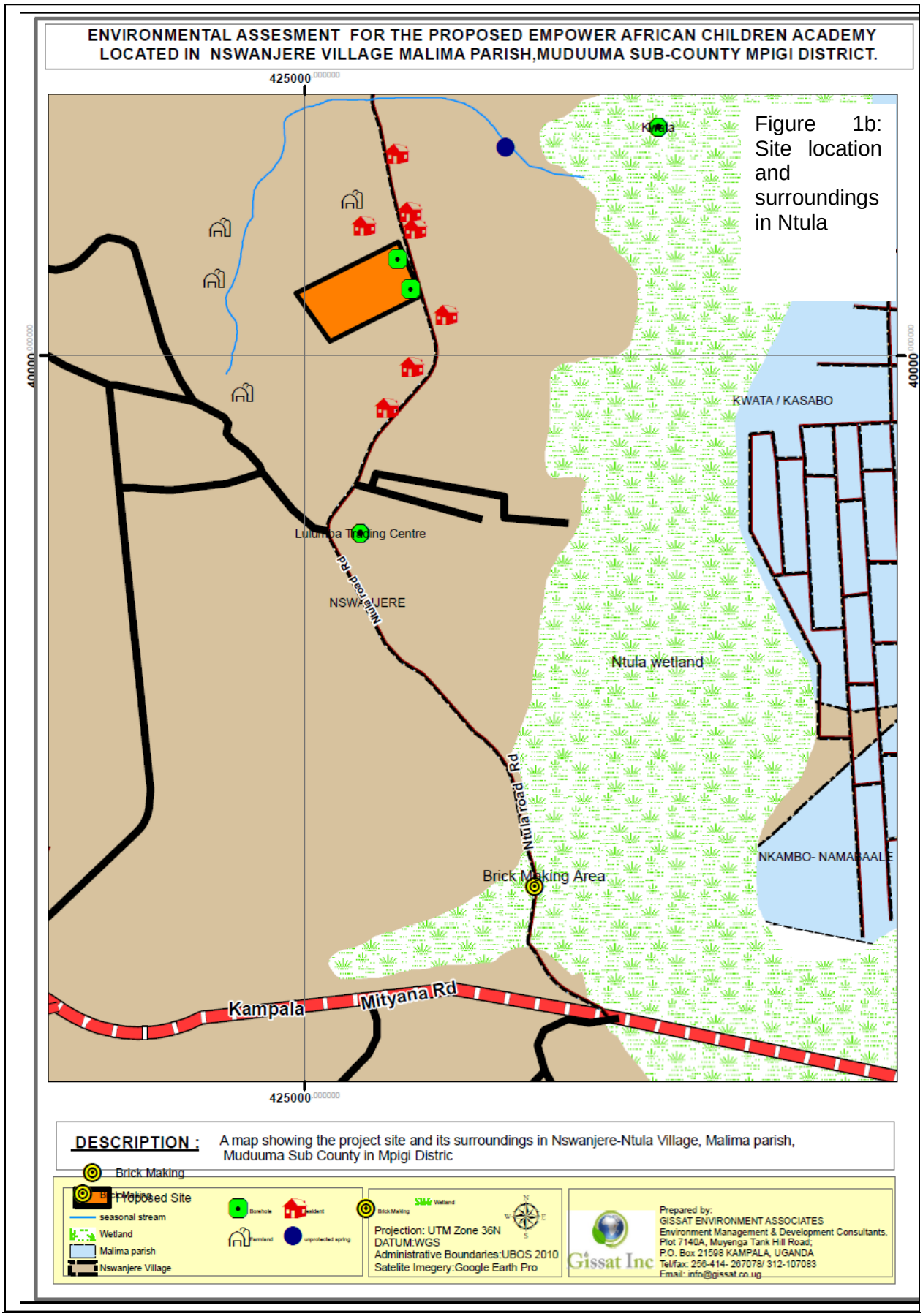


Figure 1b: Site location and surroundings in Ntula

Figure 3: Artistic impression showing planned placement of the project components

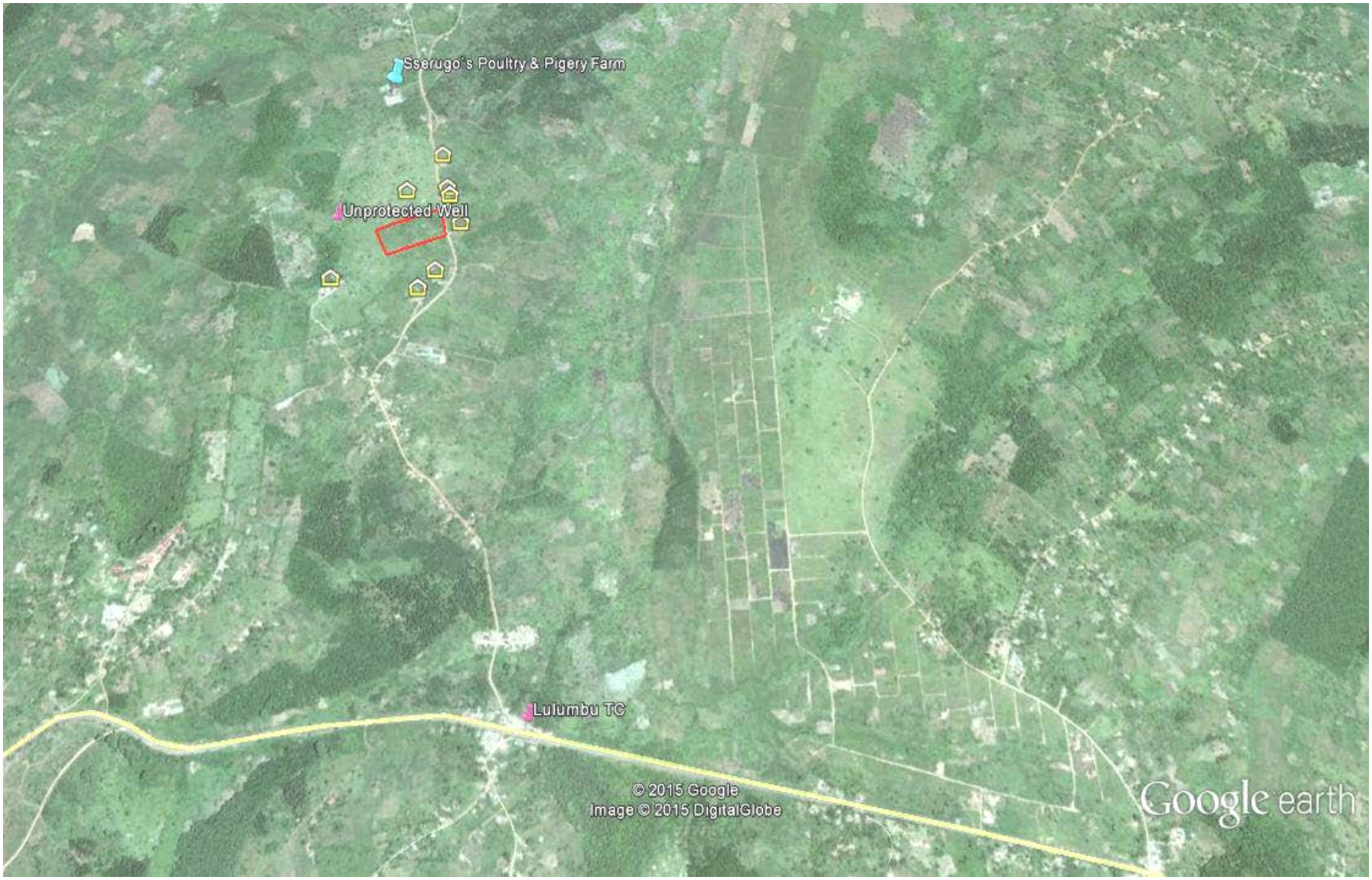


Figure 4: Satellite Image showing project location

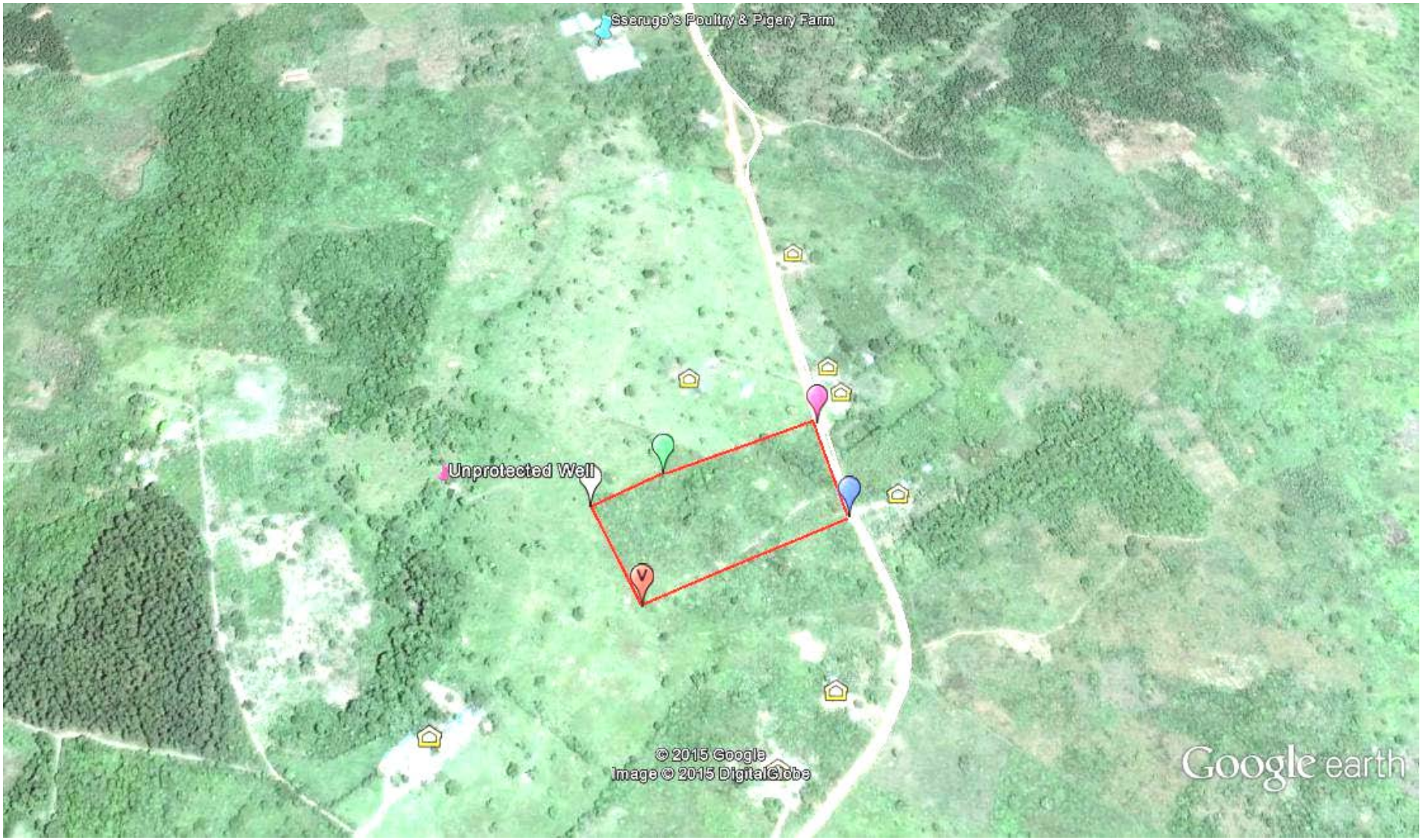


Figure 5: Satellite Image showing site boundaries.

2.8 Detailed Description of Planned Project Components and Design Alternatives

A summary of the key project components for phase 1 of the development is given in table 1.2 below. Figure 6 provides a detail of planned project components on site.[3]

Table 1.2: Phase I project components for proposed Empower International Academy

Project Component	Particulars	Remarks
Classroom Blocks	▶ Four Blocks each with three classrooms	▶ Each class room covers 60m^2 ▶ Each room has operable evacuation window (in case of emergencies) ▶ Internal masonry wall ▶ Foundation reinforced with 12mm bars ▶ Floor finish with cement and sand screed with 25x125mm screed wall base ▶ Wall finish with plaster and exposed bricks, varnished exposed clay masonry ▶ Roofing with a slope of 4:12, sheets enclosed with gutters <u>Notes</u> Classrooms are in an East-West orientation (avoiding sun infiltration) and arranged around a large central courtyard approximately 2/3 the size of a football pitch.
Administration Block	▶ The administration block in phase 1 could be converted to classroom in future ▶ 2-storey administration block over a library ▶ 2-storey music and computer block over staff rooms and stores	
Science Laboratory and Generator house	▶ Laboratory area ▶ Preparatory room ▶ Stores	▶ Two laboratory rooms each covering 8x12m with capacity of about 50 students ▶ Floor finish with 25x125mm wall base and terrazzo

[3] Drawing has been scaled down to fit onto paper size. Detailed project drawings (already approved by USAID on Dropbox. https://www.dropbox.com/sh/in29jue6futs750/AABK10BbuTBDzZDAIdC8qDnWa?dl=0

	▸ Free standing shelving area ▸ Secure store ▸ Emergency wash down room	▸ Wall finish with terrazzo to 2 m above the floor and painted cement plaster ▸ Generator house on 1.5mx2m
Hall	▸ One hall in phase 1 to be converted to class rooms in future	
Dormitories	▸ 32 bed girls' dormitory ▸ 40 bed girls' dormitory ▸ Girls' bathroom block ▸ 32 bed boys' dormitory ▸ 24 bed boys' dormitory ▸ Boys' bathroom block	▸ Separate staff bathroom ▸ Each room compartment of 4.25mx4.6 m ▸ Each dormitory has a common lounge shared with staff ▸ Circulation corridor
Kitchen	▸ Kitchen with energy saving design	▸ The kitchen is located between the hall and service access for ease of delivery of energy and food supplies.
Medical Facility	▸ Well-equipped clinic	
Computer Laboratory	▸ Music and computer rooms over staff block	
Sports grounds	▸ Indoor and outdoor sports facilities	▸ Football pitch, basketball and other indoor games ▸ The football pitch is close to the northern boundary to allow ample space for the main approach and parking. There will be a high bank along the western side to allow for change in levels during excavation and provide a sitting area for spectators.
Staff Quarters	▸ Adjoined to students dormitories	▸ Staff bathrooms ▸ Common lounge with students
Sewage Management facility	▸ All project components connected to onsite sewerage system	▸ Concrete septic tank sufficient to hold onsite generated sewage ▸ The septic tank is adjoined to an oil interceptor ▸ Open vents ▸ Access manholes with removable cast iron covers ▸ Inlet pipe with 2-110 mm PVC connections at 300 mm designed to allow septic tank pipe above and one below for oil interceptor ▸ The bottom slab reinforced with BRC –A-132 mesh <u>Notes</u> A toilet block is provided close to the hall for the use of other patrons within the facility
Security house	▸ Located at the main entrance gate	
Storm water Management	▸ Localised drainage system	▸ Drainage around girls' dormitory will be constructed with stone pitched retaining wall (minimum 100mm) above adjacent grade.

		▸ Downpour from classrooms is to drain into the adjacent swale ▸ All drains connect to public storm water channel along Ntula road.
Water Sources	▸ Two onsite bore holes	▸ The estimated daily water demand for full build is 40,000 litres. The estimated borehole yield is 2400 litres per hour, therefore pumping 17 hours each day will meet the demand. Water storage tanks on site will have capacity for two days' demand. ▸ Rainwater harvesting from buildings is an option which is being explored and may be included to supplement the borehole sources.
Others	▸ Reception ▸ Maintenance building ▸ Temporary parking space ▸ Generator and electricity distribution panel building ▸ Waste composite pit ▸ Site entrance ▸ Multipurpose court (over flow parking space) ▸ Amphitheatre ▸ Landscaped area ▸ Stepped entrance to the main gate ▸ Service yard ▸ Water tank ▸ Community access borehole.	▸ Access paths traverse the steepest part of the site to cater for persons with disabilities, ▸ The amphitheatre is retained, but without building a stage area. Instead, it faces the hall to maximise multi-purpose use. ▸ A service road running up the north boundary is included, and can also be used for start- and end-of-term drop off / pick up close to the dormitories

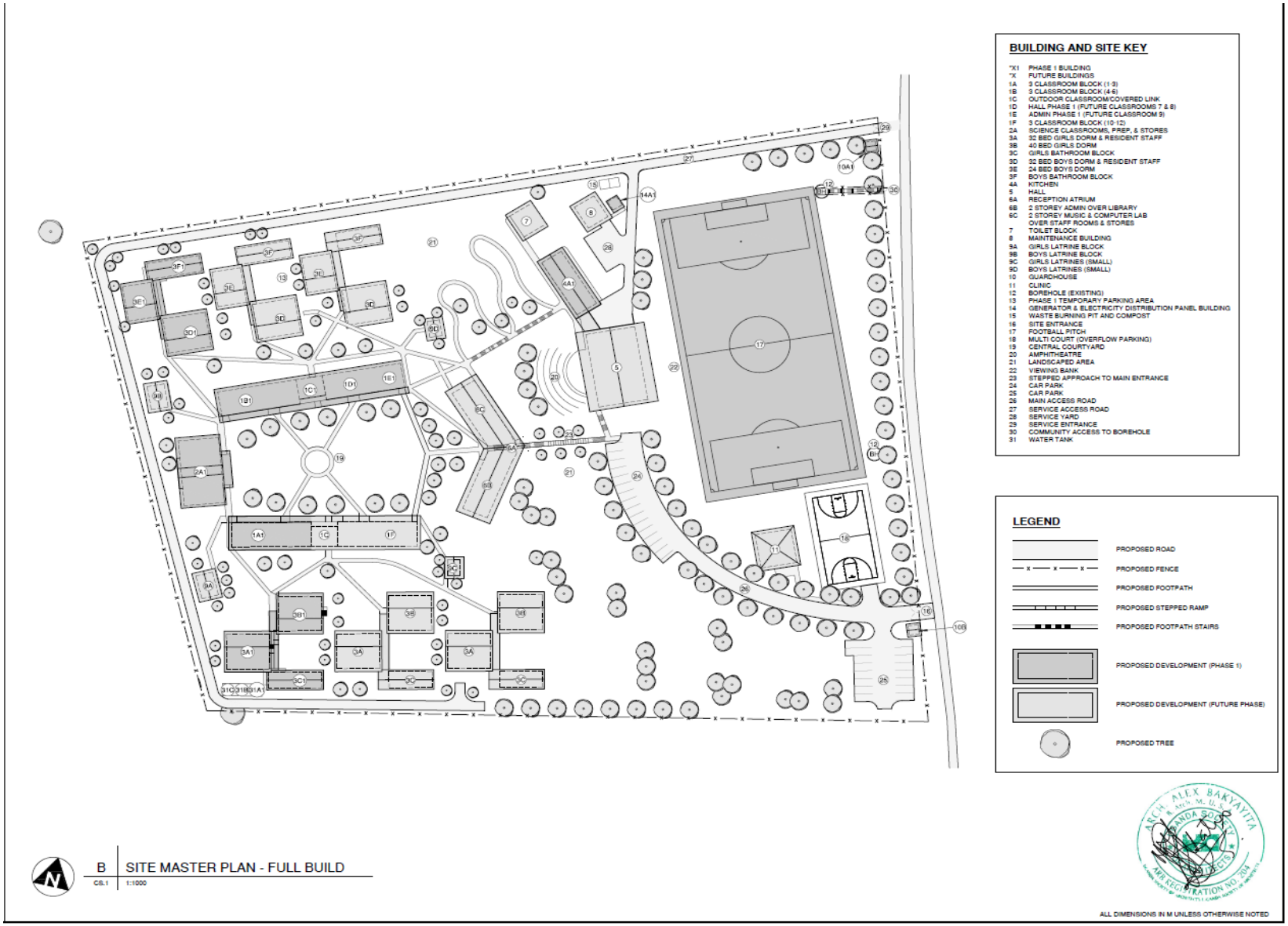


Figure 6: Site layout showing project components

2.8.1 Science Laboratory & Classrooms

The science classrooms are located at the top of the hill and designed with clear day lighting with windows on the North and South sides.

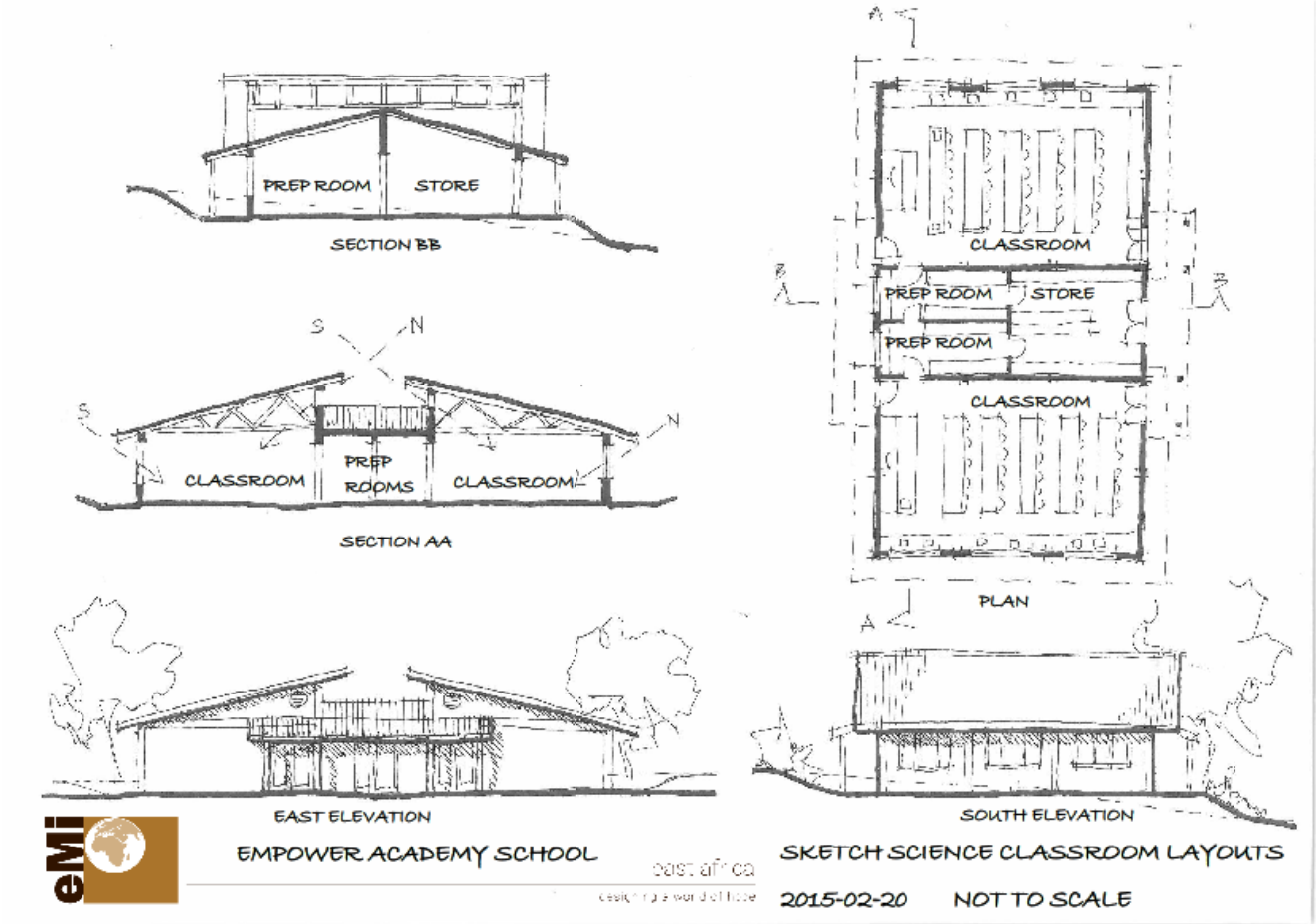


Figure 7: Classroom diagrammatic sketch presentation

All classrooms have a distant view either over the administrative block or through the gap between the administrative block and the classrooms. The classroom size has been the subject of considerable discussion. Whilst the initial desire is for 25 students per class, this could increase to around 30-35 students. The following sizes are useful for comparison:

- JEN proposals for standard classroom = 85m^2
- JEN proposals for science = 108/118m^2
- Current Uganda regulation size = 47m^2 for up to 40 students
- UK standard classroom = 54m^2 for 30 students
- UK enhanced classroom = 62m^2 for 30 students
- UK for science = 83/90m^2 for 30 students
- USA sizes vary hugely; a minimum 55m^2 for 30 students and up to around 90m^2
- MFL classrooms = 67 m^2

For the development, the preferred size of 4m grid = 60m^2 for standard classrooms and 90m^2 for the science classrooms has been selected. This is in line with British standards and well above the typical Uganda classroom size.

Figure 8: Illustration of classroom block (exterior)

Figure 9: Illustration of classroom block (interior)

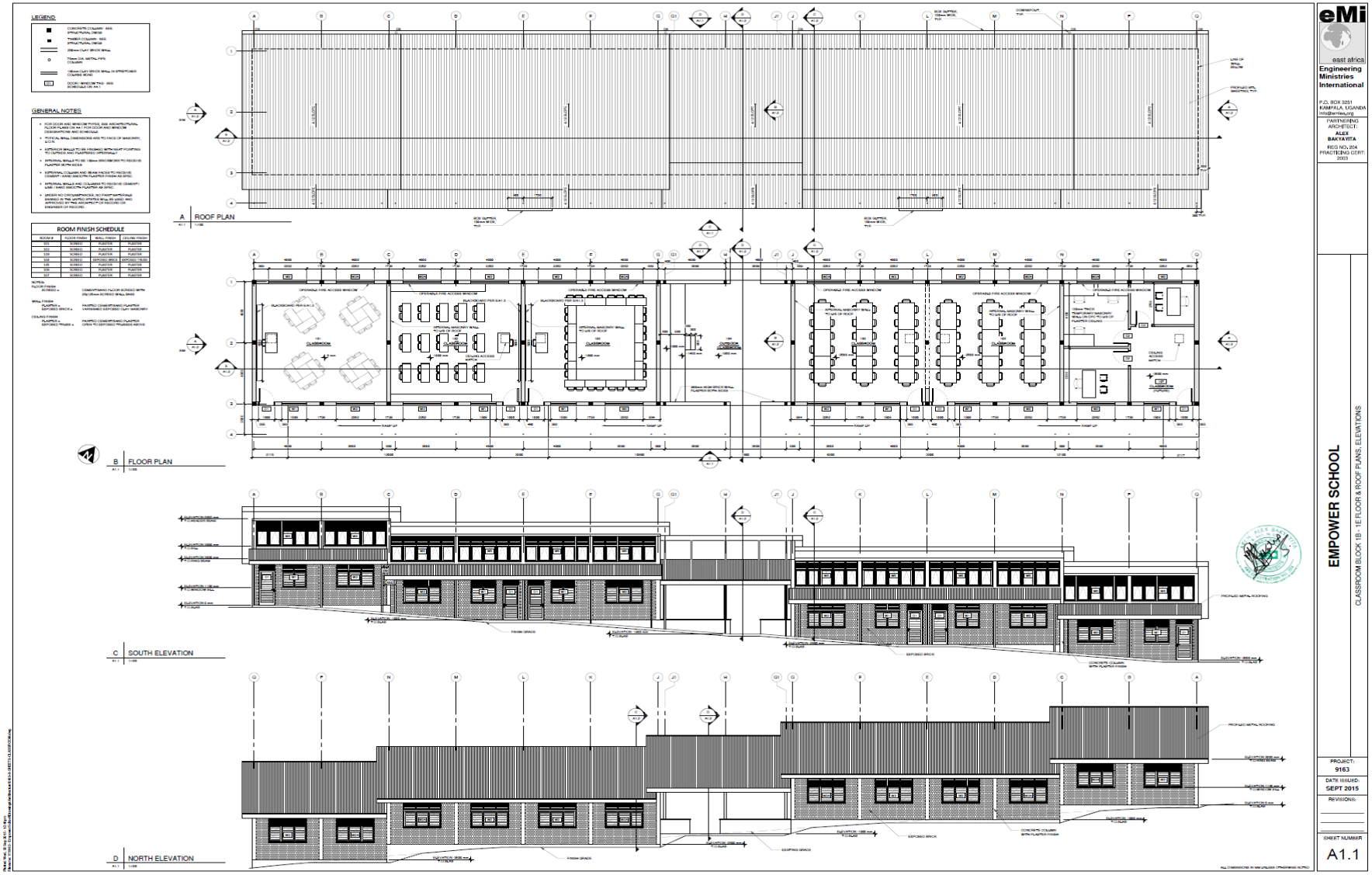


Figure 10: Layout plan for classroom block (floor and roof plan elevations)

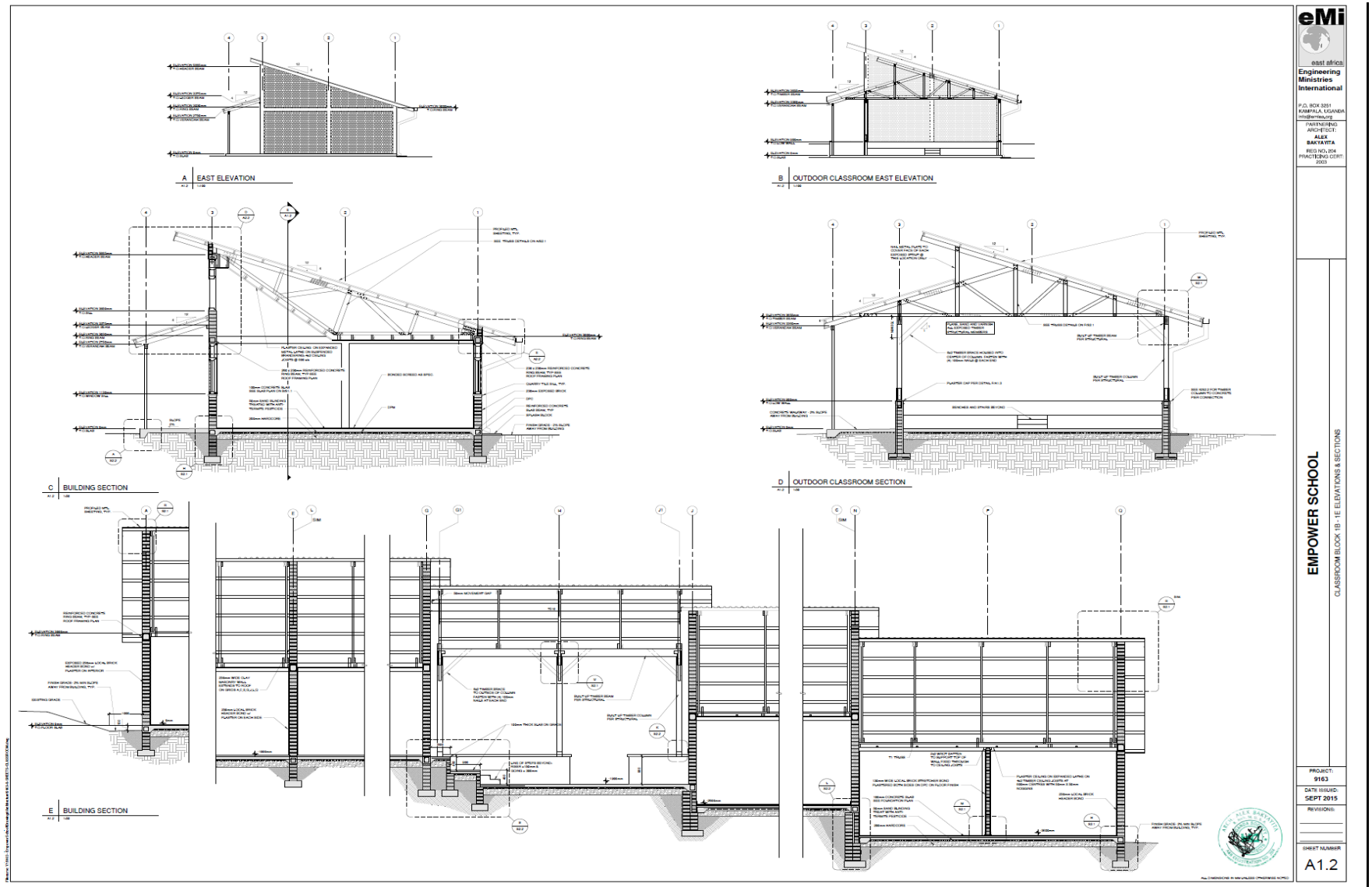


Figure 11: Classroom elevations

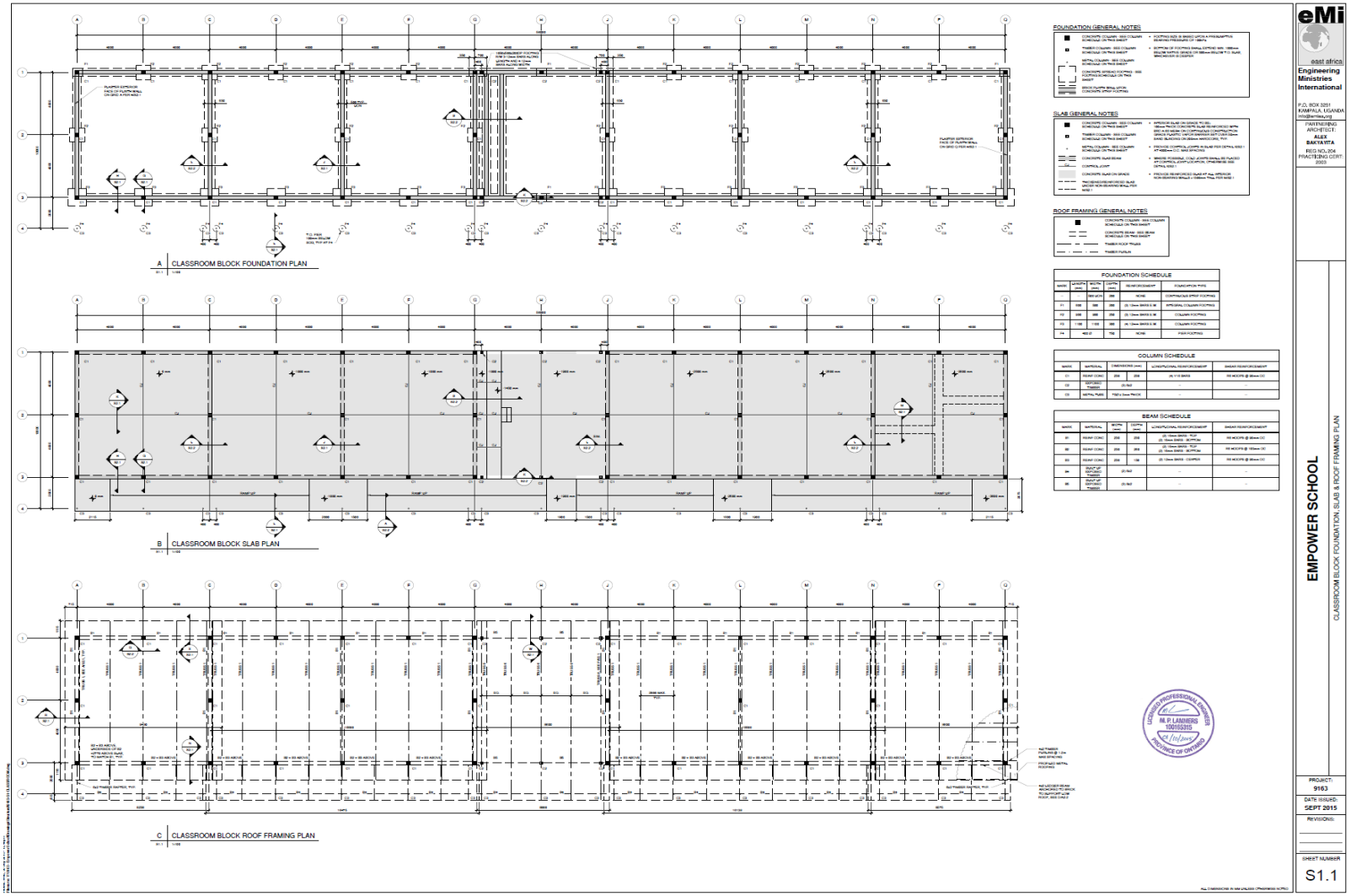


Figure 12: Classroom block foundation, slab, roof framing plan

2.8.2 Dormitories

Boys' and girls' dormitories are separated - with the boys adjacent to the northern boundary and girls to the southern boundary.

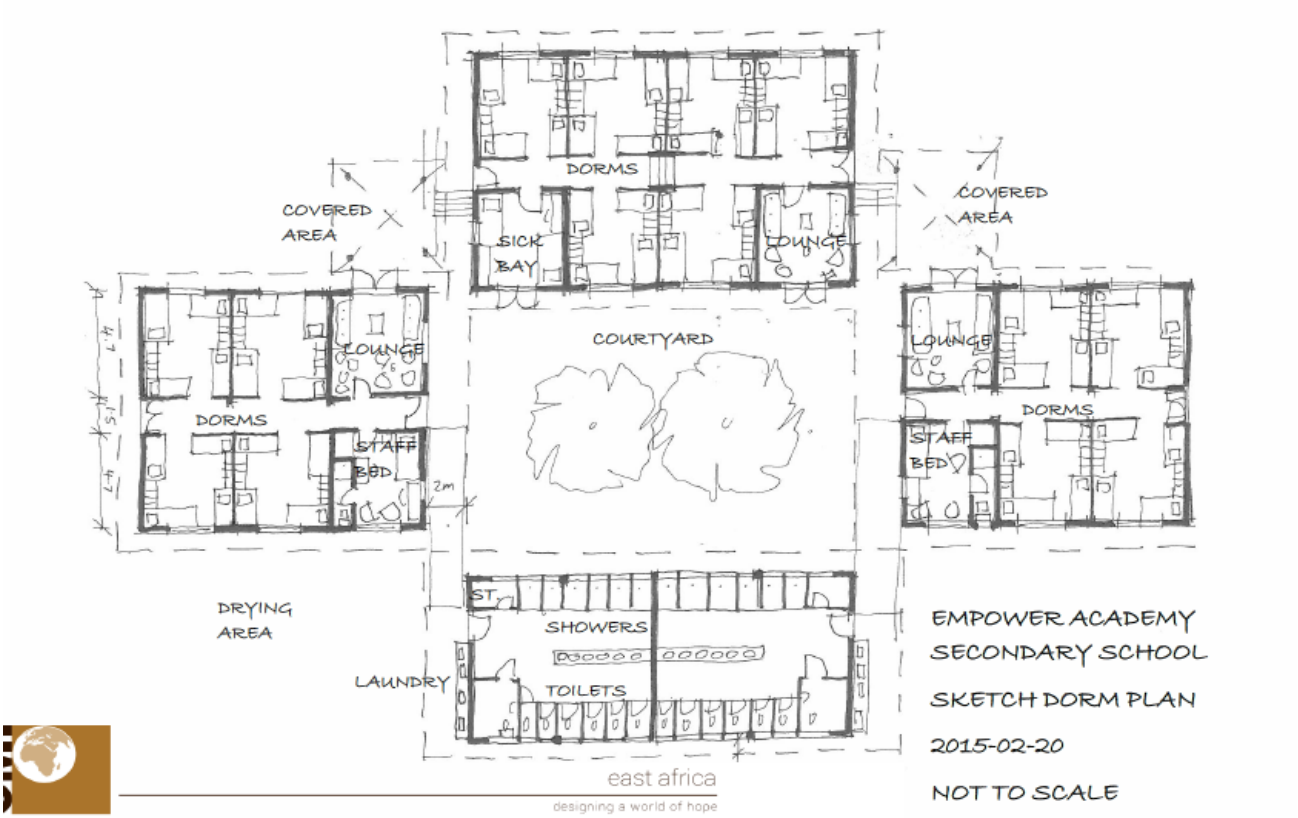


Figure 13: Dormitory diagrammatic sketch presentation

The dormitory layout includes the following:

- A flexible layout that can be used in various ways;
- Layout based on four bunk beds (eight students) in 4.5m x 4m area;
- 400mm cupboard space per student;
- Four resident staff for the boys' dormitories and four resident staff for the girls' dormitories including an en-suite toilet/shower room to each. One of these on each side could become a sick room.
- One lounge per block (total six on each side) which could become additional dormitory spaces for eight students in each lounge, or some could be used as staff lounges or sick bays.
- Separate toilet and shower block with flushing squat toilets.

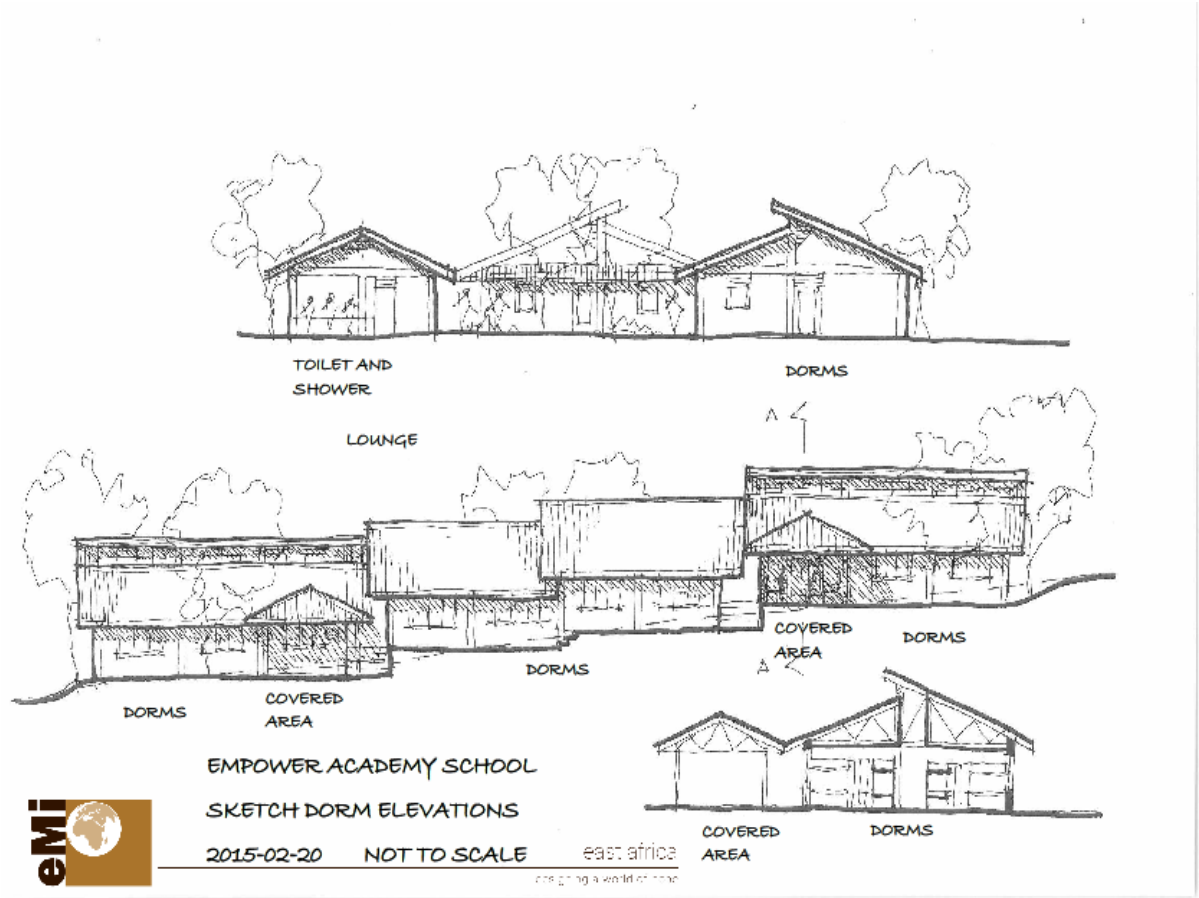


Figure 14: Dormitory elevations diagrammatic sketch

Figure 15: Illustration of the dormitory blocks to be constructed onsite

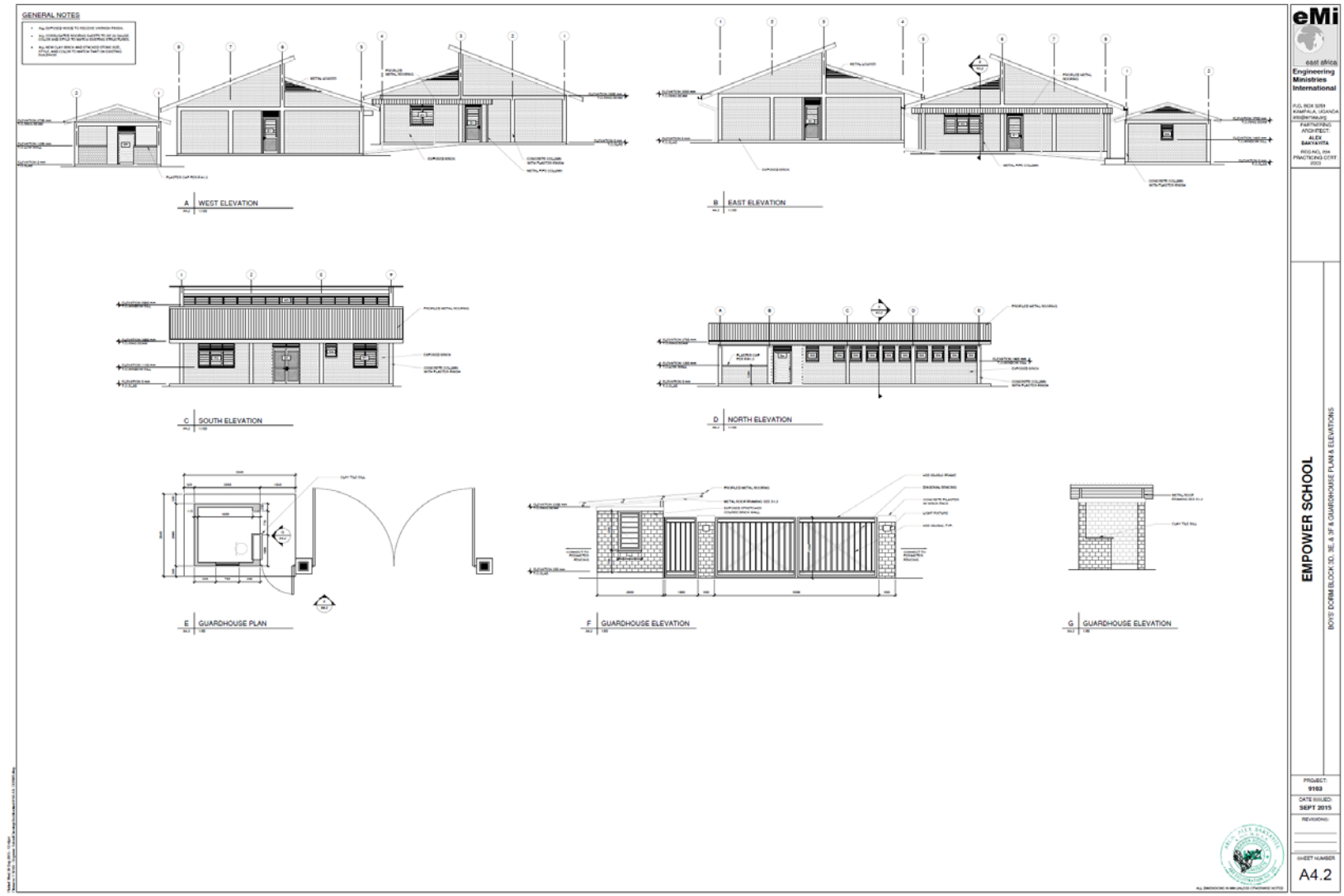


Figure 16: Girls' dormitory block elevations and sections

2.8.3 Water Supply and Consumption

The school will procure and install a water system that ensures provision of safe and adequate water supplies for both human (student, staff) use and operational activities. For a school population of 400 students and about 30 staff, expected water requirement is 25,800 liters per day and will be obtained from a borehole the project has sunk. The pumped borehole will supply water all over the school campus through a reticulated system.

The water system will have inherent saving provisions such as self-closing push-down faucets (rather than the twist types) in public student or staff washrooms that automatically shut off water flow after use. In addition, shower heads and other water discharging fixtures (e.g. hoses) will be water-saving. The system will have a two-day demand storage capacity as a contingency against any interruptions in supply. The water system storage and all other units will have efficient water systems to conserve water.

A combination of flush toilets and pit latrines is planned in order to reduce the water demand for the facility. Rainwater harvesting from buildings is an option which is being explored and may be included to supplement the borehole sources which were drilled at an average depth of about 60 metres to reduce feacal contamination risk.

The project has prepared a Water Quality Assurance Plan (WQAP) to address quality of the source water and how the quality of provided water will be assured. The WQAP has also provided a response protocol in the event that water does not meet required drinking standards. At minimum, fecal coliform, arsenic will always be tested prior to use and thereafter quarterly for four quarters. Arsenic testing must conform to the requirements in Guidance provided under Cable State 98 108651.

Table 2.1 below shows WHO's recommended water quality standards for human health.

Table 2.1: WHO selected water quality standards for human health

Selected water quality standards for human health	
Arsenic	< 0.01 mg/L
Total Coliforms	Not detectable in any 100 ml sample
Lead	< 0.01 mg/L
Copper	< 2 mg/L
Nitrate (as NO^{3-})	< 50 mg/L
Nitrite (as NO^{2-})	< 0.2mg/L for long-term exposure
Flouride	< 1.5 mg/L

Source: WHO Guidelines for Drinking Water Quality (3rd Ed), 2004.

The plan adopts drinking water standards of Uganda, which were developed basing on World Health guidelines for drinking water quality. As required by USAID Guidelines, the project proponent undertook initial water quality testing and will undertake this role throughout the life of the project.

During the Initial Environment Examination (IEE) surface water from the spring/well located at Coordinates: 0°21'54.75"N, 32°22'7.38"E at Ntula south of the site across the road in the valley was sampled and results are shown in table 2.2 below.

Table 2.2: Physico-chemical and bacteriological analysis of surface water during the IEE

Parameter	Units	Source: Stream in Ntula. 0°21'54.75"N, 32°22'7.38"E.	National standards for potable water (Maximum permissible)
pH		5.89	**6.5 – 8.5**
Electrical conductivity	µS/cm	103	**2500**
Colour apparent	PtCo	36	**15**
Turbidity	NTU	4.1	**10.0**
Total dissolved solids	mg/l	55	**1200**
Total suspended solids	mg/l	5	**0.0**
Alkalinity total as $CaCO_3$	mg/l	32	**500**
Hardness total as $CaCO_3$	mg/l	26	**500**
Calcium (Ca^{2+})	mg/l	10.4	**75**
Magnesium (Mg^{2+})	mg/l	1.4	**150**
Bicarbonate as $CaCO_3$	mg/l	32	**500**
Chloride (Cl)	mg/l	0.00	**500**
Fluoride (F)	mg/l	0.18	**1.5**
Iron total	mg/l	0.66	**1.0**
Sulphate (SO_4^{2-})	mg/l	0	**200**
Nitrate- N	mg/l	0.08	**5.0**
Faecal coliforms	Cfu/100ml	3	**10**

Table 2.3: Results of Analysis of surface water during the EA (30th/12/2015)

Parameter	Units	Source: Stream in Ntula. 0°21'54.75"N, 32°22'7.38"E.	National standards for potable water (Maximum permissible)
Temperature	^{0}C	23.8	**25-32**
pH		7.11	**6.5 – 8.5**
Electrical conductivity	µS/cm	168	**2500**
Colour apparent	PtCo	80	**15**
Turbidity	NTU	12	**10.0**
Total dissolved solids	mg/l	132	**1200**
Total suspended solids	mg/l	5	**0.0**
Alkalinity total as $CaCO_3$	mg/l	58	**500**
Hardness total a $CaCO_3$	mg/l	66	**500**
Calcium (Ca^{2+})	mg/l	13.6	**75**
Magnesium (Mg^{2+})	mg/l	7.68	**50**
Chloride (Cl)	mg/l	40	**500**
Iron total	mg/l	0.96	**1.0**
Sulphate (SO_4^{2-})	mg/l	26	**200**
Nitrate- N	mg/l	2	**5.0**
Faecal coliforms	CFU/100ml	0	**0**
Arsenic	mg/l	0.0	**0.01**
Ecoli	CFU/100ml	0	**0**

Water from this spring will not be used as a water source for the school.

Table 2.4: Results of Analysis of surface water of borehole (45249) during the EA (30th/12/2015)

Parameter	Units	Source: Borehole (DWD No. 45249)	National standards for potable water (Maximum permissible)
Temperature	^{0}C	23.5	**25-32**
pH		7.10	**6.5 – 8.5**
Electrical conductivity	µS/cm	216	**2500**
Colour apparent	PtCo	160	**15**
Turbidity	NTU	15	**10.0**
Total dissolved solids	mg/l	138	**1200**
Total suspended solids	mg/l	6	**0.0**
Alkalinity total as $CaCO_3$	mg/l	52	**500**
Hardness total a $CaCO_3$	mg/l	74	**500**
Calcium (Ca^{2+})	mg/l	16	**75**
Magnesium (Mg^{2+})	mg/l	8.16	**50**
Chloride (Cl)	mg/l	45	**500**
Iron total	mg/l	1.95	**1.0**
Sulphate (SO_4^{2-})	mg/l	30	**200**
Nitrate- N	mg/l	0	**5.0**
Faecal coliforms	CFU/100ml	0	**0**
Arsenic	mg/l	0.0	**0.01**
Ecoli	CFU/100ml	0	**0**

Table 2.5: Results of Analysis of surface water of borehole (45250) during the EA (30th/12/2015)

Parameter	Units	Source: Borehole (DWD No. 45250)	National standards for potable water (Maximum permissible)
Temperature	^{0}C	23.6	**25-32**
pH		7.09	**6.5 – 8.5**
Electrical conductivity	µS/cm	224	**2500**
Colour apparent	PtCo	218	**15**
Turbidity	NTU	14	**10.0**
Total dissolved solids	mg/l	143	**1200**
Total suspended solids	mg/l	5	**0.0**
Alkalinity total as $CaCO_3$	mg/l	50	**500**
Hardness total a $CaCO_3$	mg/l	70	**500**
Calcium (Ca^{2+})	mg/l	16.8	**75**
Magnesium (Mg^{2+})	mg/l	6.72	**50**
Chloride (Cl)	mg/l	50	**500**
Iron total	mg/l	1.80	**1.0**
Sulphate (SO_4^{2-})	mg/l	36	**200**
Nitrate- N	mg/l	0	**5.0**
Faecal coliforms	CFU/100ml	0	**0**
Arsenic	mg/l	0.0	**0.01**
Ecoli	CFU/100ml	0	**0**

Both boreholes are located downhill from planned waste water infiltration systems and the separation distance is adequate at more than 30m away to prevent ground water contamination.

Except for color and total suspended solids (TSS), water quality analysis of samples from the boreholes indicated satisfactory quality to the extent that the water should be suitable for operational functions (washing, cooking) without treatment but shall be treated before drinking. The borehole samples had no arsenic or coliforms. The importance of these two parameters is indicated by the following facts:

- Ingesting water contaminated with fecal-oral route pathogens is the leading cause of diarrheal diseases, dysentery, cholera, typhoid, other gastroenteritis diseases.
- Shallow groundwater is easily contaminated by latrines, livestock, exchange with surface waters.
- Arsenic occurs naturally in geologic formations and can move into groundwater. It is a potent and bio-accumulative poison that causes skin lesions, neurological disorders, cancer, heart and lung disease.

Water for consumption at the school will routinely be tested. Specifically this role will be a responsibility of the School's Facilities Manager who will carry out water sampling and dispatch to a national laboratory for testing. As a minimum, testing will be done for the following parameters:

- Fecal coliform
- Inorganic arsenic
- Other criteria drinking water parameters regulated by Uganda's national drinking water standard US 201:2008 for Class II (untreated water) potable water available for water consumers from boreholes, protected springs, shallow wells, gravity flow schemes and harvested rainwater.

After initial testing the project will carry out quarterly analysis for four quarters.

The project's Water Quality Assurance Plan (WQAP) is provided in Appendix A9-2.

Plate 13: The spring well during the EA (after the boreholes were sunk). It is now mostly used for watering livestock but not for domestic consumption.

Plate 14: The spring well at Ntula during the IEE

Plate 15: The borehole to be used by the school

The school will have a specified point for use as a treatment system for drinking water which uses UV disinfection after filtration standards (a Viqua system *http://viqua.com/product/vt4-dws11/).* It will be wired to a critical circuit connected to the backup generator. This will solve turbidity issue and treat water to WHO potable standards. This unit will be installed in the kitchen for use by the school community. This eliminates the need for boiling thus conserving energy and reducing firewood consumption.

Water Purification by UV Process

Water is disinfected as it runs through a stainless steel chamber containing a UV lamp. As water flows past the lamp, disease-causing microorganisms receive a lethal dose of UV light that attacks their DNA and eliminates their ability to reproduce. Harmful bacteria and viruses are deactivated, and water is safe for consumption. UV water disinfection is a safe, chemical-free way to treat water. Even chlorine-resistant microorganisms are made harmless through UV exposure. Lack of chemicals means no harmful chemical byproducts are going back into the environment, and the taste is not affected.

2.8.4 Drainage

The project site is on a relatively hilly terrain (1182m asl at the peak) and the property drains into the valley across Ntula road (1161m asl on the lower side). The proposed project will mostly maintain the existing natural drainage conditions. Hardscape areas such as roads and parking lot will capture surface water via curbs and channels and deposit in sinkholes located downstream towards the road. The storm water will be conveyed via roadways and storm sewer to unpaved or stone lined earth drains that lead to the road side drainage system. Following construction, most of the areas within the site will be re-graded and vegetated which is projected to reduce erosion to downstream areas and lower the risk of flooding in the low lying areas owing to removal of vegetation cover (post construction).

Plate 16: Topography of the project site

Plate 17: Vegetation outside the project site (across Ntula Road)

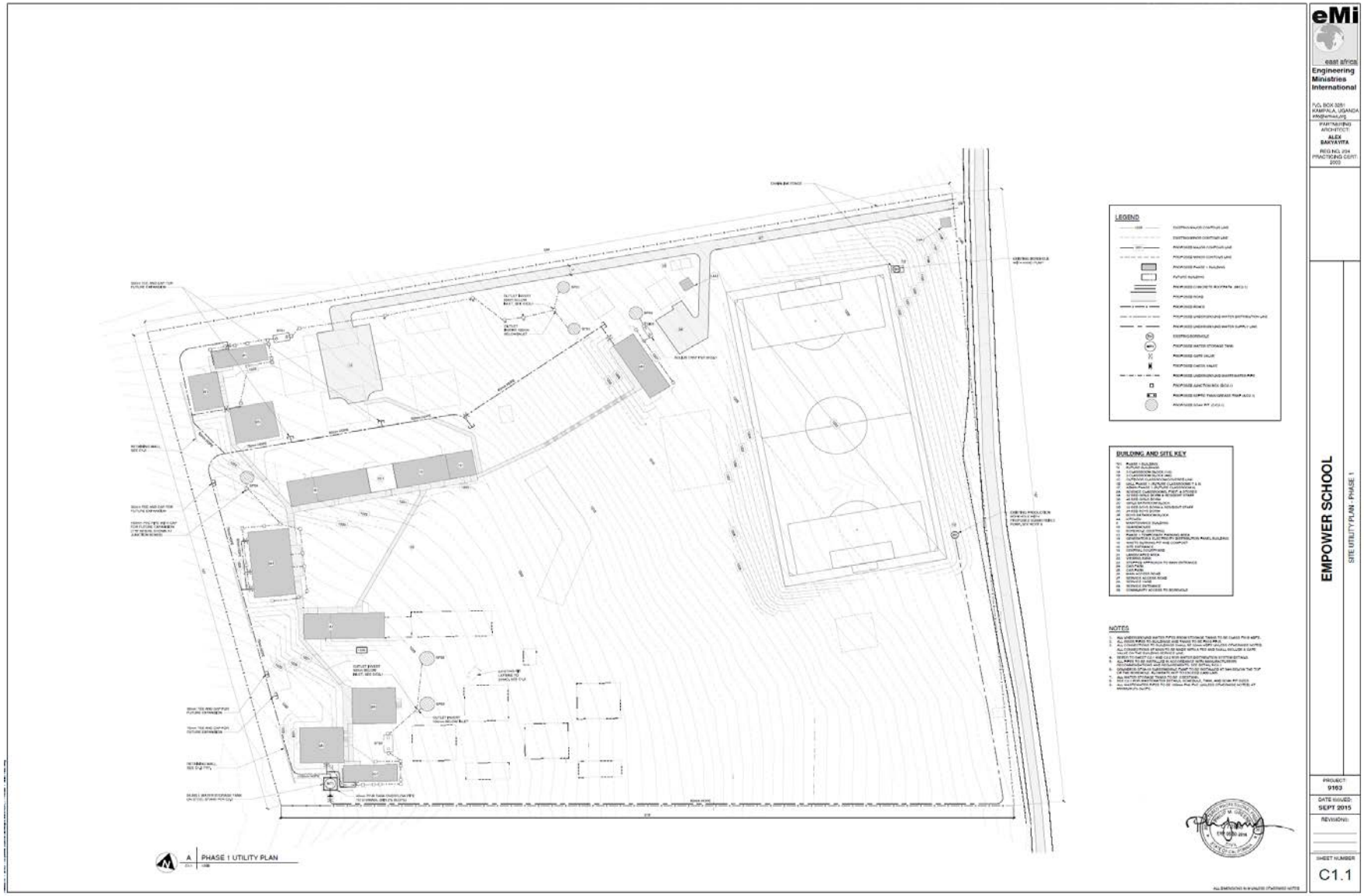


Figure 17: Site Utility Plan

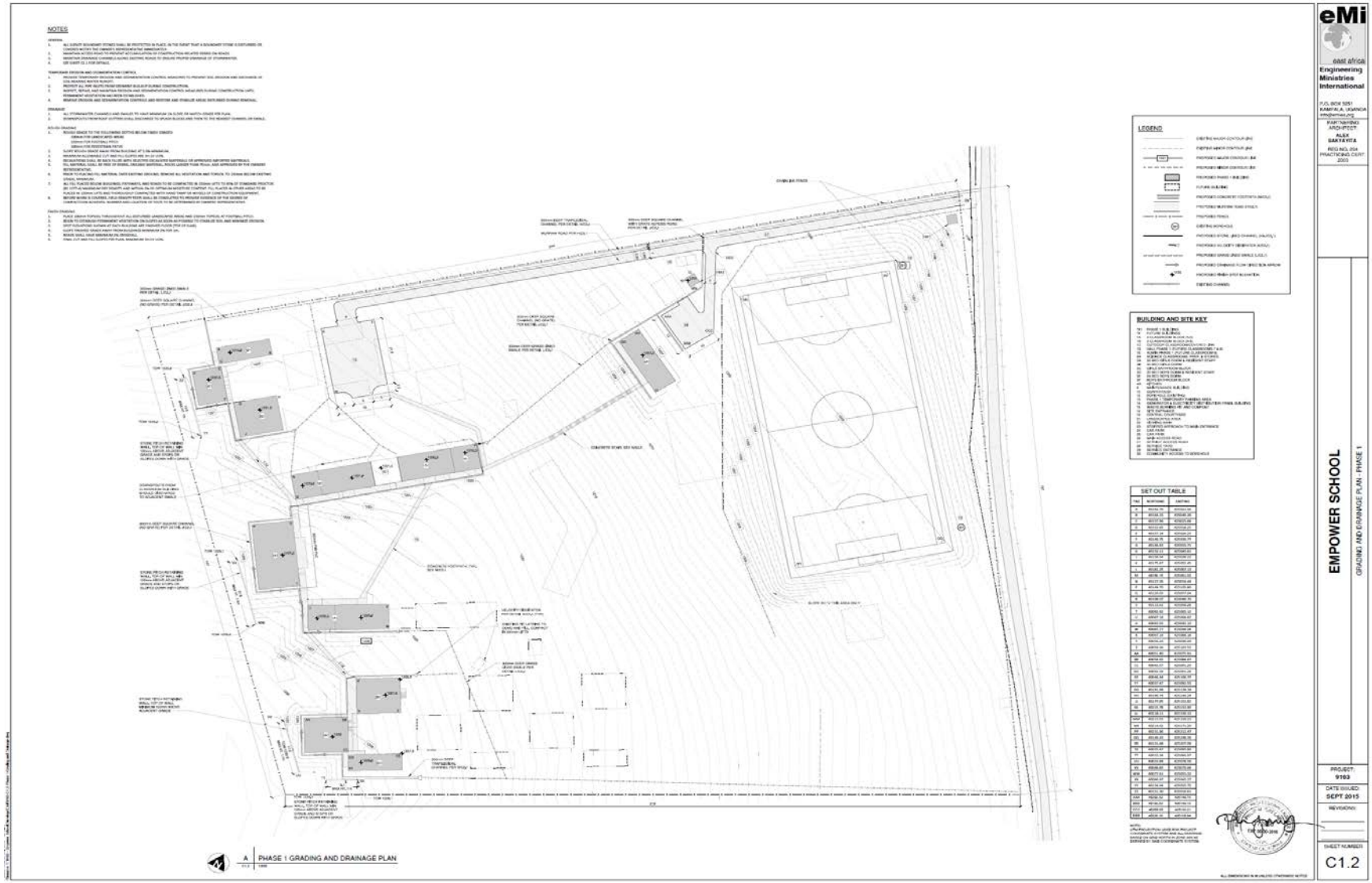


Figure 18: Grading and drainage plan

2.8.5 Waste Management

Large amounts of solid waste (mainly domestic) may be generated at the academy. Though there are several ways of managing solid waste, the academy will explore composting to manage biogradable waste. Hazardous waste may be managed by licensed companies. Compost can then be used on site for agricultural purposes once degradation is complete or used in the community for agricultural schemes.

Garbage receptacles will be strategically placed around the school grounds and along the access roads. They will be adequately designed and covered to prevent access by vermin and minimise odour. Staff members will be designated to empty contents of the garbage receptacles into a central garbage skip easily accessible by the licensed handler garbage truck. Disposal of the contents of the skip will be done at an approved disposal site (in Mpigi).

Likely types of waste to be generated at the facility can be classified as follows and are further elaborated in table 2.6.

a) **Mixed heavy plastics** - Soft drink bottles, detergent bottles, cooking oil/fat bottles, household plastics, etc;
b) **Mixed light plastics** - Shopping bags, wrapping films, waste collection bags;
c) **Rubber** - Old tires, shoe soles etc;
d) **Mixed paper** - Books, office paper, newspapers carton pieces etc;
e) **Metals** - Pieces and sheets of aluminum, steel and other metals;
f) **Mixed glass** - Coloured and non-coloured, broken or whole glass bottles, panes, household
g) glass items etc
h) **Organics** - Food remnants, wooden debris, yard waste etc;
i) **Biomedical waste-** waste from dispensary / medical clinic.

Table 2.6: Likely waste scenarios

	Practice	Observation	Notes
1	Total population	430 (comprising 400 Students and 30 staff)	Total campus population: 430
2	Waste generation rates	Estimates of total waste from campuses: ▪ Solid waste: 387 kg/day ▪ Sullage / effluent: 10,750 litres/day Typical waste generated by a school campus can be characterized as shown in box below: Type %	Solid waste generation rate average per capita considered as: 0.9 kg per person per day. Effluent generation rate: 25 litres/ day

Type	%
Vegetable matter	75
Paper	5.4
Wood waste	2.7
Plastic	2.6
Metal	3.1
Glass	0.9
Yard/ green waste (grass, tree cuttings, etc)	9

	Practice	Observation	Notes
		Rubber 0.5 Foam/Sponge mattress waste 0.3 Leather waste 0.17 Ceramic tile waste 0.2 Total 100%	
3	Typical waste management practices	a) Sewage/ effluent: ▪ Disposal method: Septic tank-soakaway system. ▪ Possible challenges: Overflow due to blockage of drainage pipes, stagnation/ponding of sullage in some cases hence vermin and vector (mosquito) infestation.	
		b) Medical waste: Relatively small (less than 5 kg/week) quantities of medical waste is expected to be generated. This waste constitutes syringes, glass bottles, cotton, paper and plastic packaging (but excludes menstrual sanitary pads which will depend on population of female students and types of pads used). Common disposal method: Open air burning at edge of school compound Noted risks: Waste not completely destroyed by burning and, through scavenging or accidental contact, sharps pose a risk to health of students and workers. Recommended practice: Procurement of an appropriate small capacity incinerator for the school's medical waste (noting that locally fabricated iron or masonry kilns are ineffective as waste incinerators)	
		c) Solid (domestic) waste: Disposal method: Solid waste is non-hazardous. Typical disposal method: Use of a waste pit or compost pit on school campus Noted risks: ▪ Students exposed to waste at dumps. ▪ Dumps pose risk of vermin (rodents, snakes, etc) infestation. ▪ Risk of death (due to intestinal obstruction) of livestock when they ingest plastic waste. Recommended practice: Compost pit - compost could be used for landscaping	
		d) Metal waste or "Hard Waste": This mostly constitutes broken chairs, beds and construction waste (reinforcement bars). Typical disposal practice: While this waste could be sold to recyclers, it rusts away at dumps on school campuses. Noted risks: ▪ Injury to students, with possible disease such as tetanus. ▪ Vermin from metal scrap stockpiles. Recommended practice: Sell scrap metal to recyclers	

	Practice	Observation	Notes
		e) **Kitchen waste:** This comprises food waste and peelings (of bananas, potatoes etc). Typical disposal method: Taken offsite by workers to feed swine	
		f) **Canteen waste:** Typically this comprises egg shells, plastic beverages bottles, discarded paper and plastic packaging. Typical disposal method: Burnt on site Noted risks: Vermin infestation and air pollution Recommended practice: Sort waste to recycle recyclables and compost organics	
		g) **e-Waste:** This comes from discarded computers and associated equipment (screens, keyboards, etc.) and electronic equipment such as copiers, printers and spent electric bulbs/ florescent tubes. These are of probably small quantities kept in stores at school campuses. Typical disposal method: Stockpiled in school stores Recommended practice: Contract a licensed e-Water contractor	

In order to minimize waste, materials will be reduced or reused. Selecting products with less packaging or products with greater usable materials, for example purchasing bulk quantities, will reduce the amount of waste generated at the site. Waste can be reduced by reusing spent materials or packaging (e.g., reusing plastic bags for collecting rubbish, or using old papers to clean windows). Recycling will be optimized for metals, glass, and plastics when available and feasible. Segregation i.e. one designated location for compostable waste and another for non-compostable waste will be done. The waste pits will be located where the water table is low and at a minimum of 30m from the respective site water sources. The waste pits will be located far from any ponds or streams and measures will be taken to protect the area from vermin.

The school has developed waste management plans initially for a period between years 2017 – 2022. These include:

- Integrated Solid Waste Management Plan provided in appendix A9-5.
- Medical Waste Management Plan presented in appendix A9-6.
- Waste Minimization Policy in appendix A9.
- Implementation Action Plan in appendix 9.

2.8.6 Waste Water Management

Waste water management specifies measures to be implemented during the construction period and operational phase of the proposed school. The proposed strategy is such that waste water is collected and ultimately disposed without causing adverse effects to the environment. Sanitation will include a combination of double vault pit latrines and (water-borne) flush toilet facilities. Wastewater will be stored in on-site septic tanks connected to soak-away pits.

Construction Phase

During the construction period, the construction Site Manager shall be responsible for effecting strategies for effective collection and disposal of sanitary waste water. Strategies shall be such that potential adverse effects of waste water to the environment are mitigated e.g. to avoid ground water contamination, the use of pits as sanitary facilities shall not be permitted. The Project Manager shall ensure that the strategies proposed by the contractor are in line with provisions, regulations and recommendations of the relevant statutory guidelines.

Operational Period

Collection

The waste water shall be collected by a system of drainage pipes from the generation points. The pipe system shall have intermediate inspection and cleanout manholes. The pipes shall then discharge the effluent into a septic tank system. The septic tank shall be sized such as to retain waste water so as to allow for settling of solids and some natural treatment of the water over a period of time.

Rain Water Drainage system – The rain water drainage system shall include:-

a) Rainwater outlets will be provided to open areas for rainwater drainage. These will be collected into down stacks inside services ducts or parking area and routed to manholes via a series of underground pipes by gravity fall.
b) Rainwater outlets at areas subject to pedestrian or vehicular traffic will have flat grating. Domed grating outlets will be provided elsewhere throughout the development.
c) Rainwater will be discharged to the area storm water drain through manholes. Subject to the approval by the district authorities, several connections will be proposed to serve the development.
d) In order to comply with the waste water regulations, a separate rainwater system shall be provided at the carpark. All stormwater from the carpark shall be connected to an oil/fuel interceptor that would allow stormwater bypass during peak flow periods.

Treated effluent from the septic tank shall be conveyed into soak away pits. Accumulated sludge in the septic tanks shall be periodically removed using cesspool tanks and disposed of to be used as manure.

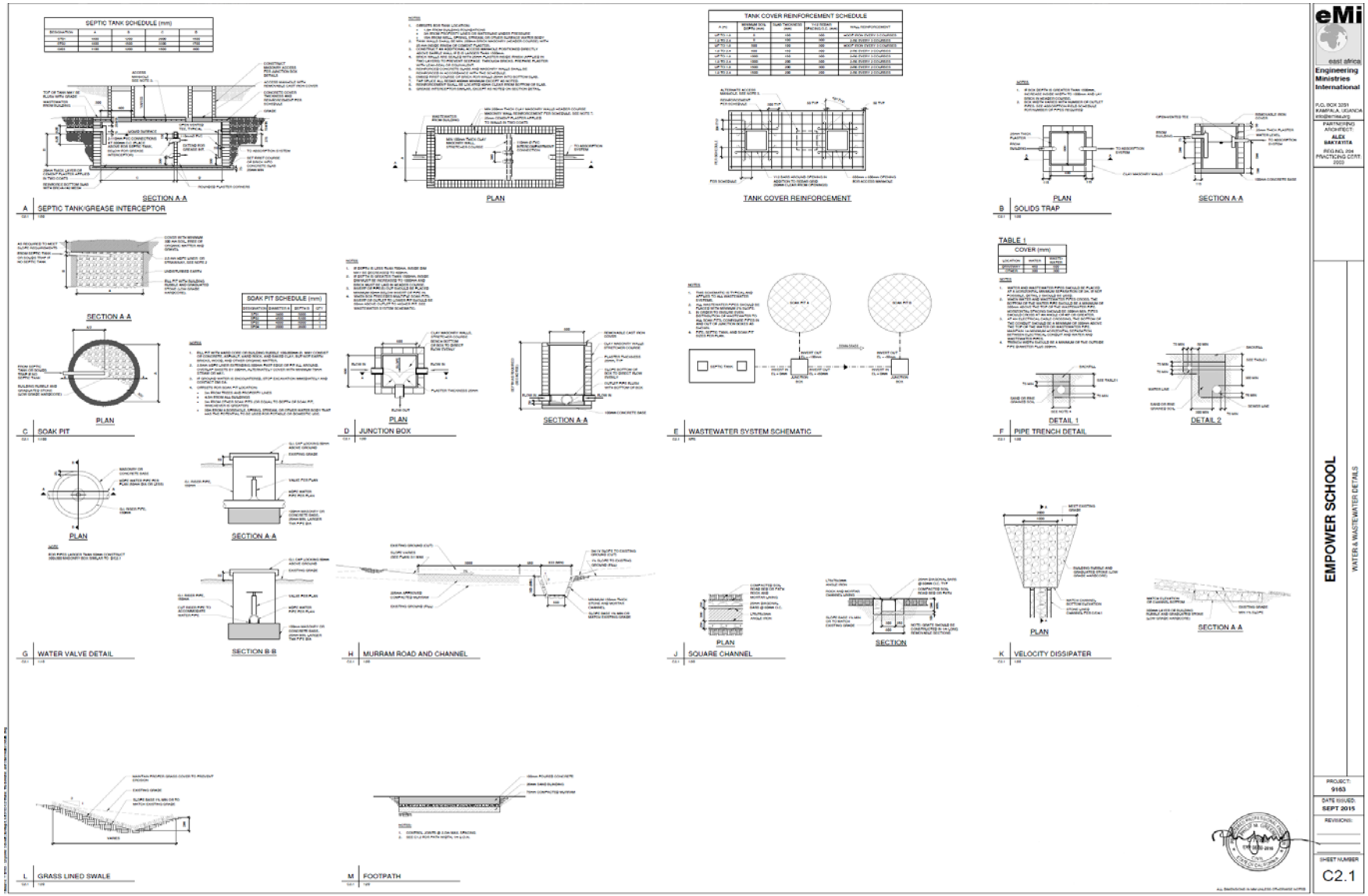


Figure 19: Water and waste management details

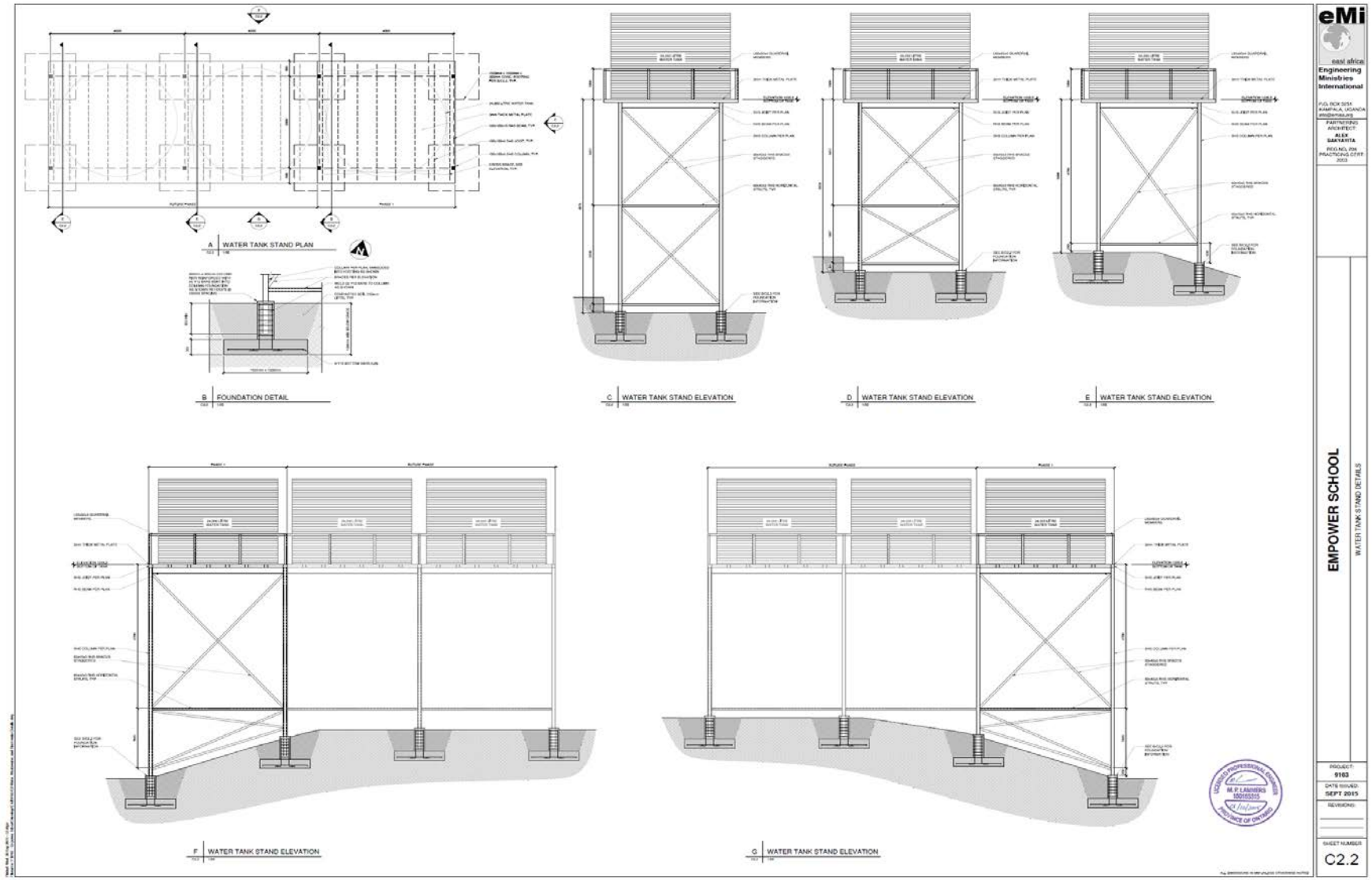


Figure 20: Water tank stand details

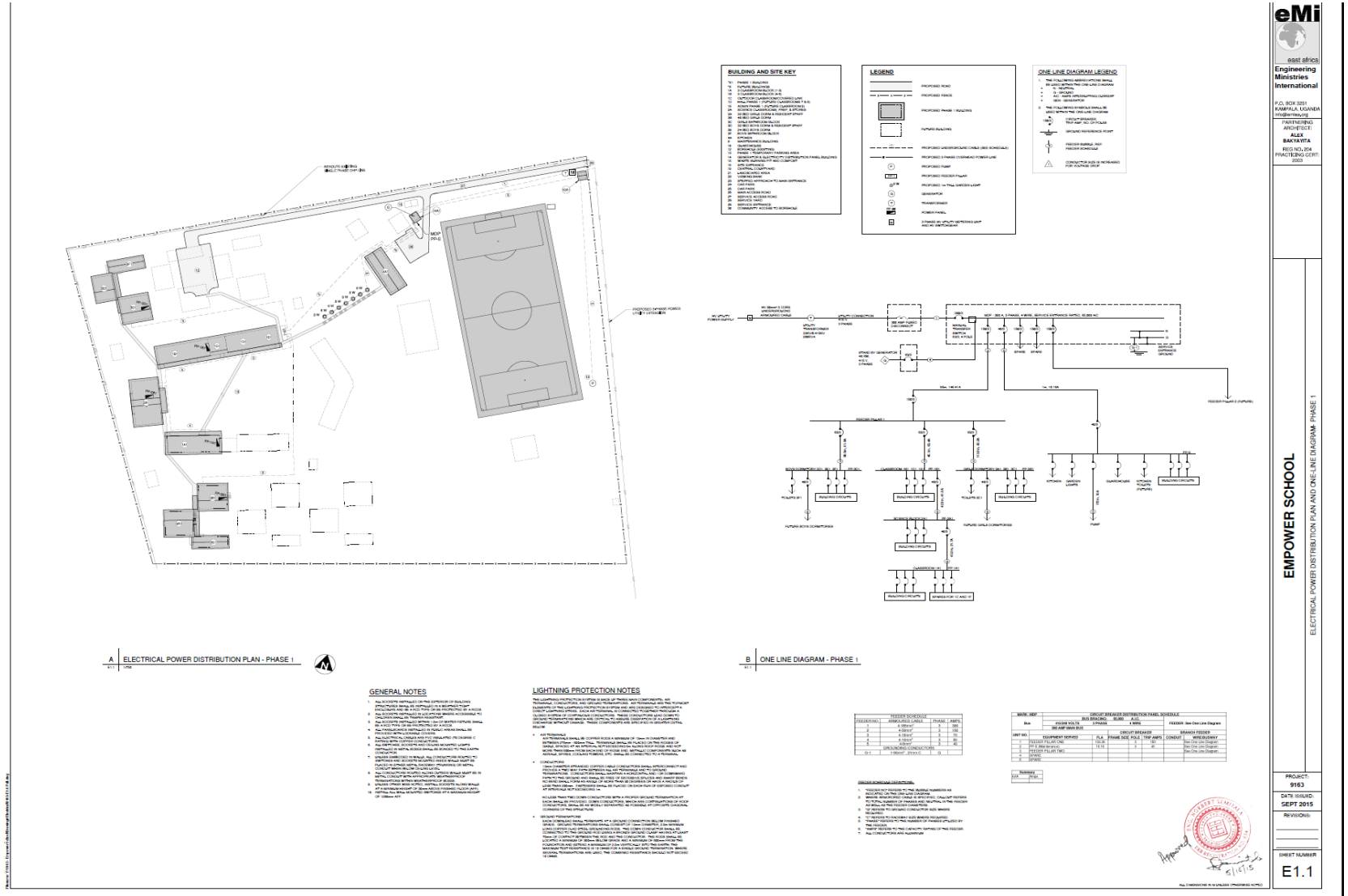


Figure 21: Electrical power distribution plan

2.9 Environmental Management Facilities and Considerations

2.9.1 Climate Resistant and Appropriate Materials and Design

Wherever possible, locally sourced materials will be utilized to reduce on the carbon footprint of the development. Building materials such as local stone, bricks and timber will be used to ensure that the buildings blend in well with the environmental sensitivity of the location. EAC has considered the local climate in construction designs and material choice. Building materials will include local clay bricks and reinforced concrete frame system with wood roof trusses and metal roof sheets. This is in line with the local construction methods and available materials which are deemed appropriate and sustainable, and similar construction in Uganda has proven to be climate resilient.

The classrooms were designed by the A&E team with high roofs to aid ventilation and thermal comfort, several windows to save energy through utilizing the natural light, and spacious enough to aid creative learning. The design of the structures has a high open roof which caters for wind at a speed of 80 miles per hour.

2.9.2 Pesticides

The school plans to implement a vermin control program on quarterly basis (every after three months) a week before the school opens for a term to ensure that the school is free from pests when school opens. Termites are controlled at construction stage by treatment of foundation of a new structure /building before construction starts. This avoids building damage by termites in the future. Any wood used in construction (roof trusses) will be treated to resist termites.

Vermin control will be carried out by a private fumigation company and the following chemicals will be used:

i) **Mosquitoes, cockroaches, ants and other crawling insects**

Indoor
- Icon 10cs (lambdacyhalothrine)
- Gel bait

Outdoor
- Actellic 25EC
- Dursban 4E

ii) **Bats**
- Durban 4E
- Chlorpyrifos (48%EC)

iii) **Termites**
- Termidor 25Ec
- Contra-z termiticide (500/50EC)

iv) **Snakes**
- Quickphos tablets (aluminium phosphide)

v) **Rodents**
- Bait stations

- Storm block

a) Compliance with USAID Pesticide Guidelines

USAID guidelines on pesticide use are comprised in "Environmental Guidelines for Small-Scale Activities in Africa (EGSSAA) Chapter 13: Pest Management II: Safer Pesticide Use". It is however noted that the guidelines dwell more deeply on control of agricultural pests, warning that while pesticides usually succeed in their main purpose—killing pests—they should be used as a tool of last resort because of their unintended effects on health and environment. The "safer pesticide use" approach advocates considering, testing and integrating all options for pest management.

USAID pesticide guidelines advise use of protective clothes and masks as part of safe pesticide use, noting common reason why they fail to help, namely:

i) Being too costly for most African farmers to buy;
ii) Being too hot to wear in tropical climates;
iii) When worn, they often accumulate pesticides because they are not thoroughly washed between uses, thus exposing the wearer to *more* toxins.

Compliance measure: All vermin control staff will wear appropriate protective gear.

The guidelines also advise against use of outdated/ expired pesticides for any purpose.

Compliance measure: In compliance with above advice requirement, no expired chemicals will be used at the school for purposes of vermin control.

USAID Guidelines advocate for integrated pest control or use of non-chemical options before chemicals are used. Some non-chemical options are given below:

- While in many countries, malarial mosquitoes are controlled by indoor sprays on walls and ceilings, water management, screens, and pesticide-treated bed mosquito nets (see Hirsch et al., 2002). Introduction of mosquito-eating fish in mosquito-breeding waters can preclude use of conventional pesticides
- Window screens and bed nets can be used in school buildings to keep out mosquitoes.
- Mice can be trapped by baiting and trapping. Mice can also be prevented by keeping a clean indoor environment free from food crumbs/ waste that would attract mice.
- Planting repellent plants such as *neem* tree or lemon grass near buildings on the school campus can prevent mosquito infestation or at least reduce quantities of chemicals required for vector control

Compliance measure: Utilizing advice of botanical experts, mosquito repelling plants will be identified and planted on the school campus. This may also apply to snake-repelling plants. Smell of the Pink Agapanthus and tobacco plant are also known to repel snakes.

2.9.3 Energy Consumption

The school will use both electric power and biomass energy in form of firewood. The latter will be used for lighting while the latter for cooking. Consumption levels will depend on final project design and are not certain at the moment however for a typical school of population 400 students, about 30 staff, expected consumption levels are:

- Firewood: 6 tonnes per month
- Electricity: 9000 units/ month (averaging a cost of about UgShs 5 million/month noting that for commercial establishments, a unit of electricity costs UgShs540: *Note 1 USDollar =UgShs 3320*).

All this depends on number of buildings on campus, energy efficiency measures integrated in design and operation of the school.

Building designs incorporate large windows and clear roof designs to utilize sunlight for daytime lighting to reduce electricity usage. Lighting fixtures will use energy efficient bulbs. The design for the buildings provide for maximum natural air circulation and measures will be taken (e.g. planting shade trees to the east and west facing walls) to reduce on internal heat gain during the day. This will eliminate the need for air conditioning. The kitchen will be fitted with energy efficient wood-burning stoves reducing electricity usage for cooking. A 40 KVa diesel powered backup generator will be installed for emergency power supply. Electricity will be provided by Umeme Company Limited – the national utility provider. The proponent will ensure that overhead cabling is run within the property from unit to unit.

The project will explore the use of energy conservation technologies such as use of light fixtures that are energy efficient, making use of LED lights and energy savers. These shall be powered by electricity generated using the photo voltaics. This can be used to provide power for lighting purposes within the buildings in the academy.

External lighting shall also be installed around the academy. Standard security solar powered energy (saver lights shall be placed on external and internal facades. These can be controlled via a daylight sensor.

Solar water heating may be used to warm domestic water. This makes use of a conventional boiler (immersion heater) to heat up the water. This can be used in areas where electric water heaters may be needed e.g the clinic.

2.9.3.1 Fuel wood Consumption

Conservation of natural resources is a key aspect for the proposed project, thus minimum wood fuel usage is to be emphasized. There will be no unsustainable sourcing and harvesting of fuel wood for energy needs. The kitchen is to be fitted with energy efficient wood-burning stoves. Trees removed from the site during the construction phase are to be utilized for the initial fuel wood supply. It is planned to purchase fuel wood locally from the community. This will not only eliminate competition for resources but improve local economy and support the community.

2.10 Access Road

The proposed site will be accessed using Ntula Road. The length of the gravel is 1 kilometer from Mubende-Mityana highway where it originates to the proposed school site. Currently the road has uneven width varying between 5-7 meters.

Rehabilitation of the road will be a responsibility of the District Local Government although the project has pledged support in this undertaking. Where vegetation grew close to the road, bends are turned into dangerous blindspots. In such locations, vegetation should be cleared from the road reserve during its upgrade, as well as placing roads signage on stretches approaching bends.

Some impacts that could arise from road upgrading and maintenance are:

- Soil erosion
- Degradation of water quality (minor impact since road remote from surface watercourses)
- Adverse effects on quantities of water
- Altered hydrology and flooding
- Loss of vegetation (minor impact to occur along the road reserve)
- Adverse impacts on human health and safety (accident risk to road users and occupational OHS risks to road workers)
- Socio-economic and cultural impacts both negative and positive. Road rehabilitation often improves livelihoods. Access to educational opportunities and to social services, including health care, is often a key rationale for road improvements. However, socio-cultural values may also be altered and communities adversely affected by exposure to social change.

2.11 Anticipated Waste Streams and Upset Conditions

Project construction phase will generate emissions, effluent and solid wastes including:

Emissions:

- Combustion emissions from diesel engines.
- Construction noise (demolition, removal, etc) and heavy vehicular noise.
- Fugitive dust from haulage vehicles, stockpiles, land clearance, demolition and earthwork activities.
- Light: during construction night time lighting will be limited to security purposes only. No construction works will be undertaken at night.

Effluents

- Sewage from any portable lavatories (off site disposal).
- Suspended sediment plumes associated with the bare soils, and materials stockpiles.
- Site run-off (storm water that may contain mobilized material such as cement or fine sediment).
- Oil and grease from vehicle and equipment servicing during construction period.

Solid Waste:

- Vegetation waste (from cleared plants).
- Earth materials from grading, levelling.
- Packaging materials (pallets, bags, boxing etc.)
- Domestic waste associated with workers on site: food and beverage containers.
- Oily rags from vehicle and equipment maintenance.

During the construction period, there is a risk of the following upset conditions:

- Construction site accidents: injury or loss of time. It is assumed that suitable worker safety protocols will be implemented by the contractors.

- Disruption of main access road between Ntula road and the site and traffic congestion.

2.12 Proposed Construction and Environmental Rules for the Contractors

During project implementation phase there is need for the contractors to observe and maintain sustainable construction management standards to ensure environmental sustainability key among which include the following:

2.12.1 Chance Findings

If during the execution of the project development activities any material is discovered onsite which may be considered of historical or cultural interest, such as evidence of prior settlements, native or historical activities, evidence of any existence onsite which may be of cultural significance, all work shall stop and the supervising contracting officer shall be notified immediately. The area in which the material was discovered shall be marked and the evidence preserved for examination and handed over to the relevant regulatory agency for examination. Work may resume, after permission from the relevant district / national officers after ensuring that the site is properly protected.

2.12.2 Site Security

The contractor shall be responsible for maintaining security over the construction site including the protection of stored materials and equipment. In the event of severe weather, the contractor shall secure the construction site and associated equipment in such a manner as to protect the site and adjacent areas from consequential damages. This includes the management of onsite wastes, construction and sanitary, additional strengthening of erosion control and soil stabilization systems and other conditions resulting from contractor activities that may increase the potential for damages.

2.12.3 Worker Sanitation

Sanitation facilities shall be provided to site workers. All sanitary wastes generated as a result of project activities shall be managed in accordance with the National Waste Management Regulations. The contractor shall provide a site sanitation plan for approval and implementation prior to the commencement of site activities.

2.12.4 Noise Control

The contractor shall control noise emissions generated as a result of contracting activities to the extent possible. In the case of the site location where noise disturbance will be a concern, the contractor shall ensure that the equipment is in good working order with noise suppression systems (where necessary) functioning and in good repair. Where noise management is a concern, the contractor shall make reasonable efforts to schedule activities during normal working hours (between 8am and 5pm). Where noise is likely to pose a risk to the surrounding community, the contractor shall inform the site manager and shall notify the concerned parties.

2.12.5 Use and management of hazardous materials, fuels, solvents and petroleum products

Any use of hazardous materials shall conform to the proper use recommendations of the product. Waste hazardous materials and their containers shall be disposed of in a manner approved by NEMA and in accordance with the Waste Management Regulations. Spill management and control shall also be in accordance to the product manufacturer's instructions and the Waste Management Regulations.

2.12.6 Site stabilization, erosion control and waste management

The contractor shall implement measures at the site of operations to manage soil erosion through minimization of excavated area, preservation of existing ground cover to the extent

possible and provision of approved ground cover. Where excavations are made, contractor shall implement appropriate stabilizing techniques to prevent cave-in or landslide.
All waste to be generated onsite shall be managed in accordance with the National Waste Management Regulations. Under no circumstances shall the contractor allow construction wastes to accumulate so as to cause a nuisance or health risk due to propagation of pests and disease vectors. Wastes to be generated onsite shall be described, method of storage, collection and disposal in accordance with the law. Regular removal and disposal of all site wastes and the schedule of removal must be available onsite.

2.13 Land Ownership

The site for the proposed project is owned by EAC and its legal description is Plot 95, Block 24 at Ntula, Muduuma Sub County, Mpigi District. It is held under leasehold for an initial period of 99 years with effect from 1st July 2009.

2.14 Planned Green Concepts

To create a green and healthy school, the *Precautionary Principle* based on the following four pillars will be used as the cornerstone and a basis of decision–making:

a) Strive for a toxic–free environment;
b) Use resources sustainably;
c) Create a green and healthy space;
d) Teach, learn and engage.

The *Precautionary Principle* promotes decision–making based on the concept of "an ounce of prevention is worth a pound of cure."
Rather than wait for crises to occur, a proactive approach to addressing issues of children's environmental health and ecological impacts of the school will be based on the *Precautionary Principle*. This approach will:

1) Take anticipatory action to prevent harm,
2) Examine a full range of alternatives (such as less-toxic and environmentally friendlier pesticides, insecticides, cleaning agents and environmentally sound purchasing or *green purchasing*),

   "For example the school will adopt the *Precautionary Principle* as the foundation for its decision to provide the safest, least toxic approach to pest problems to avoid children exposure to chemicals that can induce asthma attacks."
3) Provide relevant communities with the right to know about potential harm,
4) Consider all reasonably foreseeable costs of an activity.

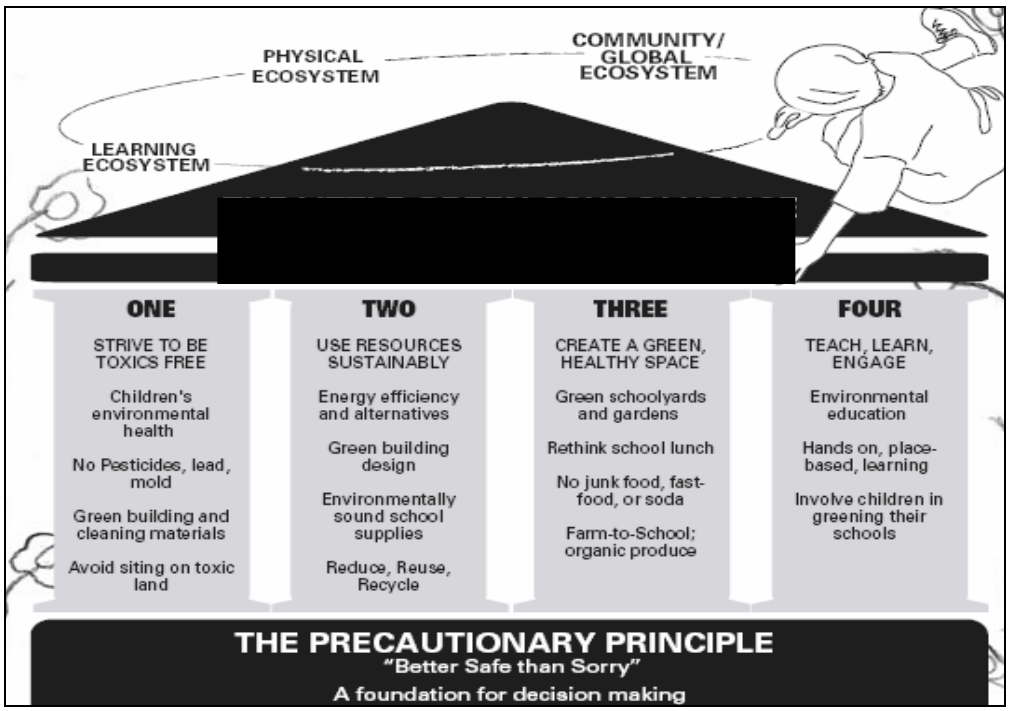
The four pillars of *Precautionary Principle* and actions that can be under taken under each are graphically represented in Figure 22 below.

Poor indoor air quality will be avoided by designing and constructing all school buildings so as to ensure adequate ventilation and avoid mold infestation. Inadequate ventilation can cause symptoms such as upper respiratory infections, irritated eyes, nose and throat, nausea, dizziness, headaches and fatigue, or sleepiness collectively referred to as "*sick building syndrome*". These and other ailments such as asthma exacerbated by poor indoor air quality can make students miss a lot of valuable school days a year hence slowing their progress along the learning curve.

Wherever applicable the school will utilize the concept of *green purchasing*, i.e. buying in bulk to minimize packaging waste, purchasing recyclable and reusable products and procuring

environmentally safer materials such as non-toxic pest control chemicals and phosphorus-free cleaning agents.

Energy efficiency and conservation will be a key pillar of the school's operation and driven by use of energy-saving fluorescent lamps, energy-efficient cooking stoves and solar water heaters. To the extent possible, buildings will be designed to maximize the benefit of natural sunlight during daytime. The above concepts will be tailored into the students' way of school life to inculcate and foster a culture of environmental responsibility.



Source: Adapted from www.greenschools.net

Figure 22: Four pillars of the precautionary principle.

2.15 Programme Outline

The proposal is to be executed in phases. First phase will include construction of classroom blocks, kitchen, and administration block, sinking boreholes (already done), dormitories, laboratory, and perimeter fence and circulation roads within the school. Other structures will be completed subsequently in other phases.

Generally Phase 1 should see the following comments complete before end of December 2017

- Nine standard classrooms of 60m^2 including three to be used on a temporary basis for administration, assembly and stores).
- Temporary kitchen
- Two science classrooms of 90m^2 plus prep rooms
- Dormitory accommodation for 72 girls and 56 boys, which totals 128 students (160 including lounges)
- Guard house (included in external works costs)
- External works

CHAPTER 3.0 APPROACH TO UNDERTAKING THE EA AND METHODOLOGY

The information for the preparation of this environmental assessment comes from the review of available information from related studies and reports on the project area, and through field investigation and consultation with relevant authorities, organizations, and individuals. A scoping study was conducted for the project and included preliminary investigation and consultation with relevant authorities, organizations, and individuals in December 2015 to gather issues to help identify issues for inclusion in the EA and also project development alternatives.

USAID is required by law to ensure that environmental and socioeconomic factors and values are integrated into decision making for new development projects. The regulations and procedures that outline these requirements are provided in Title 22 on Foreign Relations of the United States Code of Federal Regulations (CFR), Chapter II (Agency for International Development, Part 216. This EA is prepared in accordance with the procedures established in Section 216.6 of this regulation, and also complies with the environmental requirements set forth by Ugandan environmental legislation as well as International Best Practice Standards governing environmental assessment. A conceptual architectural and engineering plan with general design specifications has been prepared for the project and has already been approved by USAID.

As part of the EA process, CFR Section 216.2 and 216.3 require the completion of a Scoping Statement to identify the significant environmental issues relating to the proposed activities and to determine the scope of the issues to be addressed in the EA. It includes consultation with USAID and appropriate stakeholders. The EA is submitted to the Bureau Environmental Officer (BEO) for approval.

The initial component of the EA process is preparation of a Scoping Statement. The Scoping Statement, which was submitted in December 2015, provided interested and affected parties (I&APs) with the opportunity to receive information regarding the proposed project, to participate in the process and raise issues or concerns. The Scoping Statement aimed at detailing the nature and extent of the proposed facility, identifying potential issues associated with the proposed project, and defining the extent of studies required within the EA Phase. This was achieved through an evaluation of the proposed project, involving the project proponent, specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and I&APs. In accordance with the requirements of the EA Regulations, feasible project-specific alternatives were identified for consideration within the EA process. The scoping statement was submitted to USAID for review and approval. All the comments, concerns, and suggestions received during the scoping phase and the review period were included in the EA.

Through the scoping study, a number of issues requiring further investigation for all components of the project were highlighted. These issues have been assessed in detail within the EA which aimed to achieve the following:

- Provide an overall assessment of the social and biophysical environments affected by the proposed alternatives put forward as part of the project;
- Assess potentially significant impacts (direct, indirect, and cumulative, where required) associated with the proposed facility;
- Comparatively assess identified site layout alternatives put forward as part of the project

- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts;
- Undertake a fully inclusive public participation process to ensure that all stakeholders are afforded the opportunity to participate, and that their issues and concerns are recorded.

This EA addresses potential environmental impacts and benefits associated with all phases of the project including design, construction, operation and decommissioning, and aims to provide USAID with sufficient information to make an informed decision regarding the proposed school academy project.

The EA process followed for this project is described in detail below.

3.1 Document Review

A number of documents were reviewed to gain a clear understanding of the project and obtain information on the physical environment (particularly topography, geology, seismicity, soil, climate, drainage and hydrology), the biological environment (particularly flora and fauna) and the socio-economic environment (particularly population, ethnicity and economy) of the area.

These documents include previous environmental studies in the project area and documents and drawings provided by the proponent (particularly the detailed project feasibility study, hydrological study, geological investigation and power market study). Other materials reviewed were satellite imagery and other published maps of the project area.

A review of the country's legislation was also undertaken in order to identify policy and legal issues associated with the proposed project activities and use of the site proposed for the project. Others reviewed were USAID Environmental Guidelines for sectors relevant to the project, World Bank Safeguard Policies and IFC Performance Standards.

3.2 Field Surveys

Field surveys were carried out in the project area to verify information collected from document reviews and acquire supplementary data to fill gaps realized from the review of existing information. Surveys were done on the different components of the environment, particularly physical (topography, drainage and water), biological (flora and fauna) and socio-economics.

To determine the quality of surface and ground water resources in the direct area of influence, three water samples were collected from the surface spring well and the two boreholes for the proposed academy at Ntula. The water samples were analyzed in the National Water and Sewerage Corporation laboratory using standard methods according to APHA, 1995.

To determine the ecological status of the project site, an inventory of flora and fauna species was carried out. Dominant plant species and their life forms were identified from the site whereas fauna species were obtained from observations on the site and reports from the community.

To determine the socio-economic status of the project area, a combination of focused group discussions, informal discussions and key informants interviews was used to obtain information on the socio-economic conditions of the area. Social disruption which is typically a construction phase impact was also investigated by understanding of the structure of the communities in the neighbourhood of the proposed site, its social code of belief and attitude to foreign or transient

communities, vulnerability of the local community to social disruption and developed mitigation recommendations.

3.3 Stakeholder Consultation

Stakeholder consultation and disclosure are essential for acceptance and ownership of the proposed project. Relevant and adequate project information was provided to stakeholders to enable them understand project risks, impacts and opportunities. Stakeholder consultations aimed at:

a) Generating a good understanding of the project;
b) Understanding local expectations of the project;
c) Characterizing potential environmental, socio-economic impacts;
d) Developing effective mitigation recommendations;
e) Enabling project-affected households to suggest desired mitigation measures for impacts / risks that could arise from project implementation.

Consultation was done with various project stakeholders. It was done through community meetings with affected people in the proposed project site. Meetings were also held with officials from local authorities and relevant government lead agencies.
Ongoing stakeholder engagement so far has been with:

a) the land owners within the affected area for project disclosure and to ascertain whether there were any issues they wanted addressed during the project implementation phase;
b) Representatives of the Buganda Kingdom to inquire whether there any heritage / cultural properties within the project area;
c) National Forestry Authority (NFA) to inquire about the buffer area for Lwamunda Central Forest Reserve as per the Management Plan for the forests within the sector. This was also in regard to the fact that some land owners have acquired land within the boundaries of the reserve.
d) NEMA on advice relating to monitoring the project during the construction and post construction phases of development;
e) Ministry of Education and Sports on the required permits for operation of the academy;
f) USAID Mission Offices in Uganda for guidance on conducting the EA as per the USAID Guidelines.
g) Local Council Authorities (I, II, II and V – Secretaries for Production and Chairpersons and Opinion leaders) to elaborate more on project requirements, land ownership and other issues relating to project development. This also was for purposes of communicating to the project affected persons the locations for the various project components. A consultation meeting was also held with these area local council leaders in order to discuss the findings and conclusions of the Scoping Statement.
h) Mpigi DLG on matters to be addressed during project implementation phase;
i) Ministry of Lands (Mpigi) on land tenure and ownership within project area and specifically for project affected land;

A record of all agency consultation undertaken prior to the commencement of the EA phase is included within the scoping statement. A record of the consultations during the EA process is included within the appendices. While all stakeholders especially project affected persons were encouraged to register their interest in the project from the onset of the process, their identification and registration of concerns / comments / views has been on-going for the duration of the EA process.

In addition, following the approval of the scoping statement, a focus group meeting was held in order to provide feedback of the findings and recommendations of the EA study undertaken. Stakeholders were given summaries of the project findings and were invited to attend a meeting to discuss the project held on 29th April 2016 at the Mpigi District Local Government Chambers. Issues and comments raised by stakeholders over the duration of the EA process have been factored into the EA report and into project design and implementation schedule. Where issues were raised that the EA team considers beyond the scope and purpose of this EA process, clear reasoning for this view is provided.

3.5 Issues Identified During Scoping Activities

During the scoping process, issues were identified through field study, literature review, and stakeholder consultations. Stakeholder consultations were conducted with relevant institutions at departmental and local levels. A letter was disseminated explaining the objectives of the proposed academy and requesting participation and comment (Appendices A3-3 and A3-5).

Stakeholder consultations yielded 32 different issues associated with the project. These issues represent seven major categories of impacts and concerns as follows:

a) Changes arising from the physical footprint of the proposed construction and operations
b) Changes arising from storage of project subsidiary inputs and disposal of waste streams
c) Impacts on biological receptors and habitats
d) Impacts on the socio-economic environment
e) Health and Safety Impacts
f) Impacts on the environment
g) Lead Agencies and Local Government Concerns

The issues identified during the Scoping process, in addition to other issues identified during environmental analysis, are provided here below and in Table 3.2

1. Changes arising from the physical footprint of the proposed construction and operations:

Possible changes to the site (levels, drainage system, etc.) as a result of earthworks or excavation on the land. Specific attention should be paid for the potential of land clearance for construction of buildings, parking and other proposed land uses to impact on the site especially the hilly areas (stability).

c) Flood potential in adjacent lands arising from proposed drainage modifications.

d) Changes to visual aesthetic arising from excavation (if any), demolition and construction works.

2. Changes arising from storage of project subsidiary inputs and disposal of waste streams:

e) Increased total suspended solid loads during construction works (including material stockpiling) in low-lying areas as well as during site preparation and construction.

f) Effects on receiving water bodies during the operational phase of the project (arising from upset conditions, sewage effluent disposal and other school operations). This shall include, but not necessarily be limited to, demand created

on the importation, storage and disposal of e.g. fuels and other chemicals including pesticides if they are to be used.

g) Any potential effects on air quality.

h) There should be a thorough examination of the effects of any proposed drainage modification and associated outfalls to the roadside and adjacent low lying environments.

3. Impacts on biological receptors and habitats

d) Biodiversity, biomass and populations, with specific attention to endemic, protected, endangered species, migratory species and commercially important species.

e) Eco-system functions and integrity (e.g. habitat reduction/modification or fragmentation; introduction of invasive alien species, and predators, breeding grounds).

f) Impacts arising from usage of resources (e.g. fuel wood, water, deforestation)

4. Impacts on the socio-economic environment, specifically:

The effects of having large numbers of visitors and employees at this site:

g) The impact of increased traffic flows to the site at specific periods, including during the construction period.

h) The effects of the proposed development on transients and other informal users of the site surrounding areas.

i) The effect of demand and consumption of the following services and utilities to this location: police services, emergency services, solid waste (including hazardous) collection and disposal, water, electricity.

j) Off-site impacts of construction material sourcing and transportation.

k) The availability of water for this development must also be indicated.

l) Student's welfare, including:

- Communicable disease prevention
- Indoor and outdoor safety issues for students
- Protection from intruders
- Safety in workshops and laboratories
- Provisions for students with special needs

The EA Phase focuses on the preferred area for development identified during the Scoping Phase. It addresses identified environmental impacts (direct, indirect, and cumulative as well as positive and negative) associated with all phases of the project including design, construction, operation, and decommissioning. This Final EA Report also incorporates all issues and responses raised during the public stakeholder consultations following the scoping statement.

Significant issues / observations related to positive or negative impacts associated with the proposed action and alternatives are noted by "✓" in Table 3.2 below.

Table 3.2: Issues / Observations Identified During Environmental Analysis

Issues / Observations identified during scoping	Considered in analysis of proposed action	Considered in analysis of alternatives
Socio-economic Impacts		
Potential to improve on the markets for products from the area especially farm produce, crafts, poultry, bricks among others if they are bought by the school	✓	
Need for employment opportunities for local residents	✓	
Project to be an economic boost to the area and also benefits through economies of scale	✓	
Welfare of the children especially orphans who have not gone to school at all but who are talented or need employment – need for vocational skills from the school technical department	✓	
There is no school in the wider project area that caters for orphans and vulnerable children. Empower Academy will be the first of its kind and is a welcome idea in the district!	✓	
Noise as a result of construction and operation phases of the school project	✓	
Water is an issue in the project area especially during the long dry spells	✓	
Anticipated social conflicts and crime as a result of project development	✓	
Flooding in communities and along the road during heavy rains.	✓	✓
Poor road conditions	Road repairs are under the vote of government and are outside the scope of the EA	
Potential increase in fugitive dust and noise levels in the area	✓	
Traffic congestion	It is anticipated that the impact will be minimal to none existent since the operation of the new school is not expected to increase the level of vehicular traffic when compared to the existing condition	

Issues / Observations identified during scoping	Considered in analysis of proposed action	Considered in analysis of alternatives
Health and Safety Impacts		
Safety of area residents from speeding vehicles accessing the project site	✓	✓
Safety of community during construction (physical risks from construction activities and security risks from influx of external labour force	✓	✓
Potential adverse impacts on air quality	✓	
Health risks from dust and vehicle emissions	✓	
Poor management of wastes especially from the clinic may lead to pollution of both soil and water resources	✓	✓
Effects of project construction noise and dust on the local community		
Safety of construction workers	✓	
Impacts on the environment		
Change of land use is going to impact on the ecosystem which has been existing in the affected project area.	✓	✓
The need for the proposed development to have a pest control plan	✓	
Impact of project development on the Lwamunda Central Forest Reserve (especially rivers and wetlands). Aquatic life especially in the valleys could be adversely affected by sediment, overland migration of liquid pollutants during rains, contamination of ground water	✓	✓
Cumulative effects from multiple activities being proposed within the area could cause adverse effects not considered significant when analyzed individually	✓	✓
There is need for environmental screening during the construction of project premises and trees should be planted to replace vegetation removed during project implementation.	✓	
It is recommended to use energy saving stoves for conservation purposes and also sensitize the students on energy saving and environmental issues.	✓	✓
Project may be harmful to the biodiversity of the area through destruction of habitats and pollution of water and soil. Need to work with Natural Resources Office and National Forestry Authority to identify issues and how to address them.	✓	
Waste management	✓	✓

Issues / Observations identified during scoping	Considered in analysis of proposed action	Considered in analysis of alternatives
Protection of wetlands in the area and minimized usage of fuelwood to conserve the environment		
Lead Agencies and Local Government Concerns		
Identification of genuine (true) orphans & vulnerable children (OVC) using the tools approved by the Ministry of Gender, Labour and Social Development	✓	
Occupational health and safety of conditions of workers once construction gets underway	✓	
Management of Health risks (including HIV/AIDS and provision of work plans for both construction crew and operation phase staff	✓	
There is need for continuous consultations by the proponent both from the local government, agencies and the community during project implementation phase	✓	
Project proponent should strive to meet both national and international standards for such facilities and as shown in the architectural designs	✓	
It is important that the proponent identifies funding for all the other project components that have not received donor funding	✓	
Proponent needs to ensure that they regularly (annually) consult with all key stakeholders giving progress of the development.	✓	
The project needs to become more programme-focused for sustainability purposes.	✓	
Creation of perimeter boundaries and site development should integrate use of plants/tree species that are not evasive.	✓	
Involvement of district officials during implementation of project to ensure general acceptability of the proposed project by both district and community-based stakeholders.	✓	
Need to work closely with the District Technical Team attached to the identified areas.	✓	
Formation of interactive clinics with the community both for ownership and sustainability of service delivery.	✓	
Need for acquisition of all project related permits prior to occupation and	✓	

Issues / Observations identified during scoping	Considered in analysis of proposed action	Considered in analysis of alternatives
commencement of project works.		
There are very few schools within the project area and there is no secondary school at all. More of such developments are welcome to Mpigi district.	✓	
Pupils from the local primary schools should at least be given priority during enrolment at the academy whenever possible.	✓	
Community members should be considered for employment on the project and the fees charged to the locals should also be under concession.	✓	
Proponent should ensure that all progress made on project development is regularly reported to the district leadership and the district should ensure that they monitor project activities.	✓	
Integrate project activities with the various district programs e.g school health immunization and reproductive health, tree planting among others.	✓	
There are only 3 secondary schools in Muduuma Sub County (1 private and 2 under the Universal Secondary Education initiative) compared to the 10 primary schools therefore project development will lead to improved access to secondary education.	✓	
Project will provide market for local producers	✓	
Project tackles three critical areas of service delivery i.e water and sanitation, health and environment.	✓	
Project planning process should involve all stakeholders		

CHAPTER 4.0 : ENVIRONMENTAL LAWS AND REGULATIONS

This chapter seeks to provide an overview of Ugandan national environmental legislations and policies linking these with other institutional framework policies (education), and identifying USAID regulations for foreign country assistance and environmental sector guidelines that apply to this project.

Some of the legal and safeguards instruments triggered by the project and which thus must be taken cognizance of include:

National regulatory assessment for the proposed development

- The National Environment Management Policy, 1994
- National Water Policy, 1999
- The Land Use Policy, 2004
- The Constitution of the Republic of Uganda, 1995
- The National Environment Act (Cap 153)
- The Education Act 2008
- The Investment Code Act, 1999
- The Land Act, 1998
- National Environment (Waste Management) Regulations
- The National Environment (Noise Standards and Control) Regulations, 2003
- The Occupational Safety and Health, 2006
- The Physical Planners Act, 2010
- The Public Health Act, 1964
- The Water Act, 1995

Standards

- Uganda National Drinking Water Standard (US 201: 2008)

Current national environmental policies are based on the need to take an integrated approach to environmental management and the need to work towards the goal of sustainable development. Key legislations governing the conduct of EIA in Uganda are the National Environment Act (Cap. 153) and the Environmental Impact Assessment Regulations of 1998. The National Environmental Act established the National Environment Management Authority (NEMA), and entrusts it with responsibility to ensure compliance with the EIA process in planning and execution of development project likely to impact on the environment. The salient laws and policies that were reviewed during the study are provided in Appendix 2

4.1 USAID Environmental Requirements

USAID proposes to fund the Empower African Children Academy. Activities identified for such funding are subject to the Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216). Pursuant to those Procedures, actions that have a potential for significant impact within a country require the preparation of an Environmental Assessment (EA) and subsequent approval of the EA and its recommendations to avoid or otherwise mitigate potential adverse impacts. The Procedures identify 11 classes of actions as having an inherent potential for significant environmental effect. Although education technical assistance or training programs are often excluded from the environment assessment

requirement, once the programs include activities directly affecting the environment (such as construction of facilities, etc) then they may be required to undertake an EA.

USAID Standards and Requirements that apply to this project

- 22 CFR 216 Agency Environmental Procedures
- USAID Sector Environmental Guidelines: Construction
- USAID Sector Environmental Guidelines on Small-Scale Energy
- USAID Sector Environmental Guidelines: Rural Roads
- USAID Sector Environmental Guidelines: Solid Waste
- USAID Sector Environmental Guidelines: Water Supply and Sanitation
- USAID Sector Environmental Guidelines: Healthcare Waste

USAID standards and requirements that apply to this project are attached in the Appendix 2.

4.2 OTHER INTERNATIONAL BEST PRACTICE

4.2.1 World Bank Environmental and Social Safeguards

The World Bank has in place a number of operational and safeguards policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. The Ugandan Environment Act and the World Bank safeguard policies are similar; designed to help ensure that projects proposed for Bank financing are environmentally and socially sustainable, and thus improve decision-making. The Bank has twelve safeguards policies and these are:

Environmental:

- OP 4.01 Environmental Assessment;
- OP 4.04 Natural Habitats;
- OP 4.36 Forests;
- OP 4.09 Pest Management;
- OP 4.11 Physical Cultural Resources

Social:

- OP 4.12 Involuntary Resettlement;
- OP 4.10 Indigenous People;

Legal:

- OP 7.50 Projects on International Waterways;
- OP 7.60 Projects in Disputed Areas

Others:

- Access to Information Policy

The triggered safeguard policies for this project are discussed below.

Environmental Assessment (OP 4.01)

Environmental Assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental and social impacts associated with Bank's lending operations early on in the project cycle. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted

and their concerns addressed. This policy is triggered if a project is likely to have potential adverse environmental and social risks and impacts in its area of influence. The EA has various tools that can be used, including amongst others Environmental & Social Impact Assessment (ESIA) or Environmental and Social Management Plan (ESMP). Effort has been made to identify the potential adverse environmental and social impact associated with the construction of Empower International Academy.

Pest Management (OP 4.09)
This policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country's regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.

A Pest Management Plan has been developed by the Project and will be adapted for during the project implementation.

4.2.2 Equator principles
The Equator principles are a credit risk management framework for determining, assessing and managing environmental and social risk in Project Finance transactions. Project Finance is often used to fund the development and construction of major infrastructure and industrial projects. The Equator Principles are based on the International Finance Corporation Performance Standards on social and environmental sustainability and on the World Bank Group Environmental, Health, and Safety Guidelines (EHS Guidelines) (EPA, 2011).

A summary of equator principles is attached in this report as Appendix 2

4.2.3 IFC Environmental, Health and Safety General Guidelines
The General EHS Guidelines are designed to be used together with the relevant industry sector EHS Guidelines which provide guidance to users on EHS issues in specific industry sectors. They are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP).

4.2.4 IFC guidelines: Occupational Health and Safety
Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Although the focus is placed on the operational phase of projects, much of the guidance also applies to construction and decommissioning activities. Companies should hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements. Preventive and protective measures should also be introduced on the onsite to be used by the workers.

4.2.5 IFC guidelines on Waste management
These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of industry sectors. Facilities that generate and store wastes should practice the following:

- Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences.
- Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes.
- Avoiding or minimizing the generation waste materials, as far as practicable.
- Where waste generation cannot be avoided but has been minimized, recovering and reusing waste.
- Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner

4.2.6 IFC guidelines: Construction and Decommissioning

These provide specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life-cycle, or due to expansion or modification of existing project facilities.

4.2.7 IFC Environmental, Health and Safety Guidelines for Water Quality

Groundwater and surface water represent essential sources of drinking and irrigation water in developing countries, particularly in rural areas where piped water supply may be limited or unavailable and where available resources are collected by the consumer with little or no treatment. Project activities involving wastewater discharges, water extraction, diversion or impoundment should prevent adverse impacts to the quality and availability of groundwater and surface water resources.

4.2.8 IFC Environmental Health and Safety Guidelines for Health Care Facilities, 2007

According to the guidelines, EHS issues associated with health care facilities (HCF) include a diverse range of facilities and activities involving general hospitals and small inpatient primary care hospitals, as well as outpatient, assisted living, and hospice facilities. Ancillary facilities may include medical laboratories and research facilities, mortuary centers, and blood banks and collection services.

The design and functional layout of an HCF should ensure the following: separation of clean / sterilized and dirty /contaminated materials and people flows; development and inclusion of adequate disinfection / sterilization procedures and facilities; adequate space for the storage of recyclable materials (e.g. cardboard and plastic) for pickup; selection of heating, ventilation, and air conditioning (HVAC) systems that provide isolation and protection from airborne infections; design of water systems to provide adequate supplies of potable water to reduce risks of exposure to waterborne pathogens; provision of hazardous material and waste storage and handling areas; treatment and exhaust systems for hazardous and infectious agents; and selection of easily cleaned building materials that do not support microbiological growth, are slip-resistant, nontoxic, and non-allergenic, and do not include volatile organic compound (VOC)-emitting paints and sealants. The guidelines will aid in assessing best practices at the facility.

4.2.9 IFC Disaster and Emergency Preparedness; Guidance for Schools, 2010

According to the guidelines, School Disaster Management is the process of assessment and planning, physical protection and response capacity development designed to:

- Protect students and the staff from physical harm;
- Minimize disruption and ensure the continuity of education for all children;
- Develop and maintain a culture of safety

School disaster management involves the cycle of steps found in all project management: assess hazards, vulnerabilities, capacities and resources; plan and implement for physical risk reduction, maintenance of safe facilities, standard operating procedures and training for disaster response; test mitigation and preparedness plans and skills regularly, with realistic simulation drills; and revise your plan based on your experience.The guidelines will aid in assessing best practices at the facility.

Other guidelines considered include;

- IFC guidelines on noise management;
- IFC guidelines on Hazardous Materials Management; and
- IFC guidelines on Energy Conservation.

4.2.10 World Health Organization (WHO) Guidelines for Community Noise, 1999

The WHO guideline values are organized according to specific environments. When multiple adverse health effects are identified for a given environment, the guideline values are set at the level of the lowest adverse health effect (the critical health effect). An adverse health effect of noise refers to any temporary or long-term deterioration in physical, psychological or social functioning that is associated with noise exposure. The guideline values represent the sound pressure levels that affect the most exposed receiver in the listed environment.

The time base for LAeq for “daytime” and “night-time” is 16 and 8 hours respectively. No separate time base is given for evenings alone, but typically, guideline value should be 5 – 10 dB lower than for 12 hours daytime period. Other time bases are recommended for schools, preschools and playgrounds, depending on activity. The available knowledge of the adverse effects of noise on health was sufficient to propose guideline values for community noise for the following:

a) Annoyance
b) Speech intelligibility and communication interference
c) Disturbance of information extraction
d) Sleep disturbance
e) Hearing impairment

The different critical health effects are relevant to specific environments and guideline values for community noise are proposed for each environment. These are:

a) Dwellings, including bedrooms and outdoor living areas
b) Schools and preschools, including rooms for sleeping and outdoor playgrounds
c) Hospitals, including ward and treatment rooms
d) Industrial, commercial shopping and traffic areas, including public addresses, indoors and outdoors
e) Ceremonies, festivals and entertainment events, indoors and outdoors
f) Music and other sounds through headphones
g) Impulse sounds from toys, fireworks and firearms
h) Outdoors in parkland and conservation areas

It was not enough to characterize the noise environment in terms of noise measures or indices based only on energy summation such as LAeq because different critical health effects require different descriptions. Therefore, it was important to display the maximum values of the noise fluctuations preferably combined with a measure of the number of noise events.

The provisions of these guidelines are essential in maintenance of ambient area noise levels particularly during musical performances or other activities that generate large volumes of noise

that could easily be propagated over a wide area. Table 4.1 details the WHO Community Health Noise Guidelines.

Table 4.1: Guideline values for community noise in specific environments

Specific environment	**Critical health effect(s)**	**LAeq [dB]**	**Time base [hours]**	**LAmax, fast [dB]**
Outdoor living area	Serious annoyance, daytime and evening Moderate annoyance, daytime and evening	55 50	16 16	- -
Dwelling, indoors Inside bedrooms	Speech intelligibility and moderate annoyance, daytime and evening Sleep disturbance, night-time	35 30	16 8	 45
Outside bedrooms	Sleep disturbance, window open (outdoor values)	45	8	60
School class rooms and pre-schools, indoors	Speech intelligibility, disturbance of information extraction, message communication	35	during class	-
Pre-school Bedrooms, indoors	Sleep disturbance	30	sleeping -time	45
School, playground outdoor	Annoyance (external source)	55	during play	-
Hospital, ward rooms, indoors	Sleep disturbance, night-time Sleep disturbance, daytime and evenings	30 30	8 16	40 -
Hospitals, treatment rooms, indoors	Interference with rest and recovery	#1		
Industrial, commercial, shopping and traffic areas, indoors and Outdoors	Hearing impairment	70	24	110
Ceremonies, festivals and entertainment events	Hearing impairment (patrons:<5 times/year)	100	4	110
Public addresses, indoors and outdoors	Hearing impairment	85	1	110
Music through headphones/ Earphones	Hearing impairment (free-field value)	85 #4	1	110
Impulse sounds from toys, fireworks and firearms	Hearing impairment (adults) Hearing impairment (children)	- -	- -	140 #2 120 #2
Outdoors in parkland and conservation areas	Disruption of tranquillity	#3		

#1: as low as possible;
#2: peak sound pressure (not LAmax, fast), measured 100 mm from the ear;
#3: existing quiet outdoor areas should be preserved and the ratio of intruding noise to natural background sound should be kept low;
#4: under headphones, adapted to free-field values

Source: WHO

4.3 INSTITUTIONAL FRAMEWORK

Table 4.2: Key institutions that have an interest in the project – in charge of issuance of permits

Institution	Role
Ministry of Education and Sports	The Ministry is responsible for providing policy direction, national standards and coordination of all matters concerning national educational institutions. It is also responsible for putting in place policies and initiating laws that ensure sustainable management of all educational institutions in the country. All these institutions prepare annual reports and detailed self evaluation reports on operations and objectives of establishment and are required to ensure compliance to standards and seek clarification on steps to take to ensure the same. The Institutional Standards Regulations provide for standards for the design and relevance of an institutional library, curricula, functionality and design of other physical infrastructure and the requirement of a master plan for each institution. Permits: The academy must acquire all the relevant permits from the Ministry for regular operation of the school programs.
Ministry of Gender Labour and Social Development	The Ministry through its Directorate of Labour (which is responsible for administering the Occupational Safety and Health Act, 2006) carries out regular statutory inspections to ensure health and safety in the work place including educational institutions. Its functions include: ensuring that employment policies are in line with the country's labour policies and guidelines; monitoring compensation for occupational injuries and diseases; monitoring compliance with labour standards; and ensuring that equipment and technologies brought into the country comply with the desired safety and health standards. Permits: The Department of Occupational Health & Safety issues occupation permits for all new / reconstructed structures
National Environment Management Authority	NEMA is the principal agency in Uganda for the management of the environment, mandated to coordinate, monitor and supervise all activities in the field of the environment. In accordance with its functions stipulated under section 6, subsection (1) of the National Act Cap 153, the Authority will ultimately decide whether or not to approve the proposed project based on the assessment of its potential environmental and social impacts. NEMA also supervises the implementation of the project ESMP both during the construction and operation

	phases together with the district local government authorities. NEMA works with District Environment Officers and local environment committees at local government levels who also undertake inspection, monitoring and enforce compliance on its behalf. In Government ministries, NEMA works with Environmental Liaison Units to ensure that they effectively incorporate environmental issues in their activities, policies and programs. Permits: EIA Certificate, Hazardous Waste Transportation and Disposal licence (medical waste)
Mpigi District Local Government	The local government is mandated to provide services that enable residents, businesses and institutions operating in the district to function in an environment that supports development. The district is mandated to offer the following functions: medical and health facilities, water, roads and other decentralized facilities. Services offered at district level include environmental sanitation, water supply, storm water runoff, district planning, physical planning and land administration. At Sub County level, functions include environmental protection, road drains and water courses, houses and latrines and water resources. Services at this level include environmental degradation prevention, construction and maintenance of road drains and water courses, enforcement of standards for housing and latrines and protection of local water resources. It is also responsible for planning the development of functional rural and urban design, infrastructure and administration of land management within the district. Enforce planning regulations. It is also the lead agency for the initiation and implementation of the project ESMP. Permits: Structural development plans; Occupational permits for new / renovated structures.
Directorate of Water Development / Directorate of Water Resources National Water and Sewerage Corporation	The Directorates of Water Development and Water Resources Management under the Ministry of Water and Environment have a mandate are in charge of management of water resources and provision of water supply and sewerage services nationally. This is done through the NWSC and

	various other projects like the Eastern Small Towns Project (in case of the project area) to operate and provide water and sewerage services in given areas on a sound, commercial and viable basis. Permits: Waste water discharge; Water abstraction
UMEME	UMEME is the principal power distribution company in Uganda. The company is mandated to: – Operate, maintain, upgrade and expand the distribution network; – Retail electricity to its customers, and; – Improve efficiency within the electricity distribution system.
Uganda Land Commission / District Land Board	Responsible for land development in respective jurisdictional areas. Hold and manage land vested in or acquired by the government in accordance with the constitution. Responsible for land issues at the local government level. Land title
NGOs and CBOs	In addition to the various government agencies involved in providing education and water facilities, several Non-Government Organizations and Community Based Organizations are also active. In 1997 it was recognized that although NGOs and CBOs were making an important contribution to the provision of education and environment protection, there was need to improve coordination and collaboration amongst stakeholders. The National NGO Forum has offices in all districts and provides a link between members, line ministries and development partners in performance of various activities.

CHAPTER 5.0: ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE CONDITIONS

This chapter describes the baseline conditions in the study area and provides a summary of information on the physical and biological environment. The purpose of this section is to facilitate the identification of impacts on the affected environment during the environmental assessment. The description considers in greatest detail the resources that are likely to be affected by the proposed project activities.

5.1 Physical Environment

Mpigi is one of the districts of Uganda situated in the Central Region of the country, often referred to as Buganda Region. It boarders districts of Wakiso to the North East and East, Mityana to the North, Mubende to the North West, Kalangala and Lake Victoria to the South. Masaka is to the south West and Ssembabule to the West. The District lies on the shores of Lake Victoria, the largest fresh water lake on the Continent of Africa. The Equator, a natural spectacular phenomenon traverses the district at Kayabwe in Nkozi sub-county. The district covers an area of 3,714.9 square km which is about 0.16% of the country size. Out of the total area, 719sq.km is occupied by water and wetlands. Land area is approximately 2995.94 square kilometers.

The proposed project site is located within Nswanjere-Ntula village, Muduuma Sub County in Mpigi district. It is a rectangular-shaped site with an acreage of approximately 10 acres and it is geographically referenced within the following coordinates: 0°21'44.64"N 32°19'35.51"E; 0°21'47.99"N 32°19'33.78"E; 0°21'49.14"N 32°19'36.05"E; 0°21'47.84"N 32°19'42.02"E; 0°21'51.30"N 32°19'41.12"E.

5.1.1 Topography and Altitude

Most of Uganda forms part of the interior plateau of the African continent. Uganda is characterized by flat-topped hills in the central, western and eastern parts of the country. The rise of the plateau in the eastern and western parts y is represented by spectacular mountain topography located along the borders. For example, the Rwenzori Mountains and Mufumbira volcanoes in the west and Mt. Elgon, Mt. Moroto, Mt. Murungole and Mt. Timu in the east. Mt. Otce in Moyo District is the highest point from the Uganda border up to Cairo, Egypt.

Mpigi district on all the three (3) fronts of Masaka Road, Mityana Road and Hoima Road, is part of a plateau characterized by broken flat-topped mesa-like hills in central and western Buganda. These flat topped hills, owing their distinctive form in part to a duricrust capping rise to much the same height along the immediate Lake Victoria watershed. Generally at an altitude of 1280 – 1341 metres above sea level (a.s.l) the hills are separated from each other by broad to uniform valley slopes which descend to extensive papyrus swamps. This regular undulating hill top valley bottom and back is typical of the old Mengo District.

The project site is located on Ntula hill overlooking Nkwata hill to the northeast, Nswanjere hill to the north and Lulumba hill to the southeast. It has an elevation of about 1,248 meters above sea level.

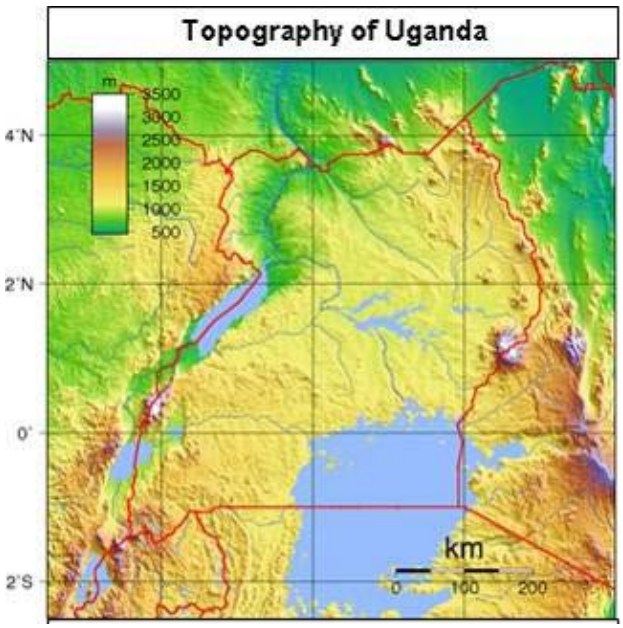


Figure 23: Topography for Uganda

5.1.2 Geology

The district principle rock types are granitic gneisses and granites with an overlying series of metasediments which include schists, phyllites, quartizites and amphibolites. The gneisses and granites are said to be generally fairly uniform and thus give rise to little variation in resistance to erosion other than along-joints and fracture planes. Under humid conditions, graintic rocks are very liable to chemical decomposition (Pallister, 1957).

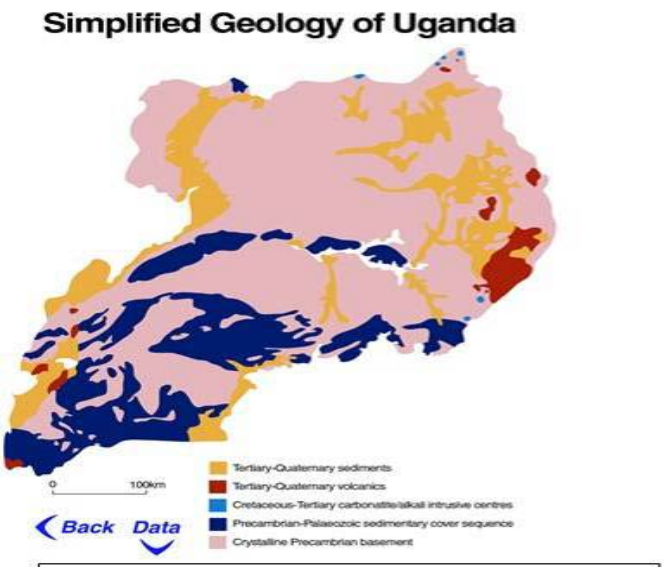


Figure 24: Geology of Uganda

5.1.3 Soils

Mpigi district lies within the Buganda catena that comprises of red laterite soils on the slopes and black silicate clays in the valley bottoms. There are four (4) principal soil types of this catena viewed from the highest altitude to the lowest (Chenery and Pallister, 1959).

(a) **Shallow lithosols** on the highest ridge crests, consisting of grey and grey-brown sandy loams, overlying brushy yellowish or reddish-brown loam with laterite or quartzite fragments and boulders. Laterite murram and ironstones (sheets) are common.

(b) **Red Earths (Red Latosols)** – occurring on most of the land surface. A soil profile would depict up to 30cm of brown sandy or clay loam overlying uniform orange red clay to a depth of 3m or more. Below this lies yellowish brown or pure white clay. The red-clay loam results from the kaolinite it contains and the ferruginous coatings of the crumbs which prevent compacting. The clay sub-soil has tiny holes resulting from activities of micro-fauna (ants, termites, etc.) or the type of clay material.
These red soils are extremely fertile due to both the inherent richness in mineral ingredients and favorable climate conditions.

(c) **Grey Sandy Soils** – normally at the base of slopes of the catena; these are possibly derived from hill-wash or river alluvium. Underlying the sandy top soils are fine sandy clays of a pale grey mottled orange brown colour.

(d) **Grey Clay** – usually waterlogged and occupied by a papyrus stand occurs at the base of the catena. Although such soils are under water most of the year, surface peat accumulation is rarely more than five (5) centimeters thick.

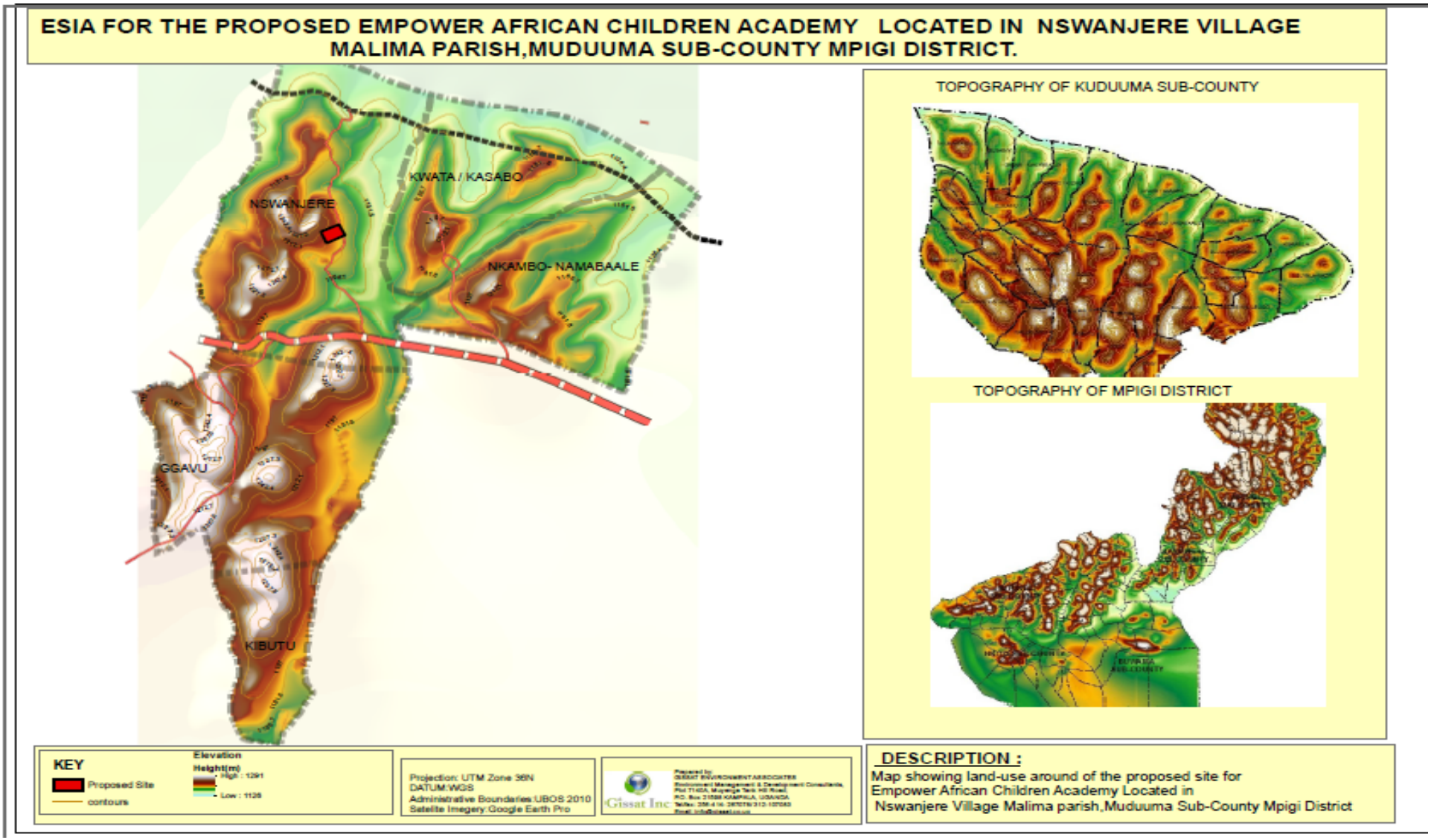


Figure 25: Topography of Project Area

5.1.4 Climate

The climate of Uganda is generally tropical. Rainfall is fairly reliable varying from 750 mm in dry areas of the northeast to 1500 mm in the high rainfall areas on the shores of Lake Victoria, in the highlands around Mt. Elgon in the East, the Rwenzori Mountains in the South-west.

Mpigi district climate is tropical in nature and modified by relief, existence of wetlands, traversing River Mayanja to the north and proximity to Lake Victoria to the south.

5.1.4.1 Rainfall

The rainfall pattern of Mpigi district is bimodal having two seasons with dry spells between July to August, and January to March. The months of March, April and May receive very heavy and well distributed rains of up to 1,200mm. The second season occurs in the months of September to December with the exception of a few years of declining trend in precipitation, the annual average rainfall received is between 1,100mm – 1,200mm with 100 – 110 rainy days, therefore, favorable for agricultural production.

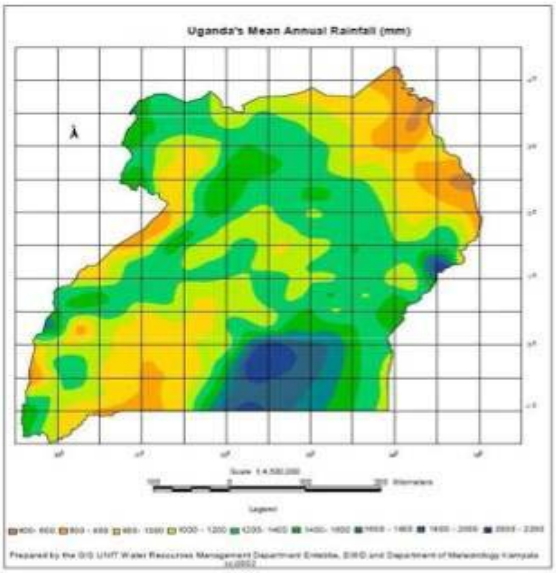


Figure 26: Rainfall Pattern for Uganda

5.1.4.2 Temperature

Temperature – is generally mild. Dry periods are experienced from mid-November to mid-March and mid-June to August. The first dry season is the most severe. The district's mean annual temperature is around 20.7^{o}C while the mean minimum and maximum are around 15.1^{o}C and 26.3^{o}C respectively. The average maximum temperature does not exceed 30^{0}C and the minimum not below 10^{0}C with almost equal length of day and night throughout the year.

5.1.4.3 Humidity

The humidity level is generally low throughout the district with the exception of lakeshore areas where it tends to rise.

5.1.5 Drainage and Hydrology

Uganda is endowed with a great number of rivers and lakes. The major lakes include: Victoria, Kyoga, Albert, George and Edward. The major rivers include: Nile, Aswa, Kafu, Katonga and Kagera. The largest of all lakes is L. Victoria with a total distance of 67,900 km and the longest river is R. Nile, which is also the longest in the world (6,695km) (Kirumira, 1999).

Due to the terrain, Mpigi district to the south is drained by Lake Victoria and to the north by River Mayanja towards Kalangala district and Mityana district respectively. The district is characterized with a number of wetlands and the project area – Muduuma, in particular is drained by numerous wetlands and the nearest to the proposed site is approximately 2km to the east locally known as Ntula wetland. The wetland regulates water levels within the project and surrounding areas especially after heavy rains.

5.2 Biological Environment

5.2.1 Vegetation and fauna

The vegetation cover of Mpigi district is very varied. It ranges from medium altitude evergreen forest, through medium altitude moist semi-deciduous forests, savannas, and swamps. Mpigi district has over nineteen (19) government forest reserves with a total area of 6,773 ha. All the reserve forests have experienced illegal forest activities such as charcoal burning, encroachment, pit sawying and cutting trees for firewood. The pressure on the forest reserves is due to high population density around the forest, abject poverty and the place being very near to the main market outlet (Kampala).

The Forest mosaic is found in medium altitude. Lwamunda Forest Reserve is the nearest forest with its extensions (sectors) being approximately 4km to the south of the proposed site. The forest is classified as tropical medium altitude moist (TMF) semi-decidous forests (Lange-dale Brown and Osmaston, 1960). Lwamunda occupies valleys and lower hill - slopes where cultivation and grazing were or are still difficult.

At the time of assessment, a variety of flora/vegetation was observed onsite and in the immediate neighborhood. Generally, onsite vegetation is dominated by short tree shrubs intermingled with patches of grass. Tree species that were observed and recorded at the site included *Albizia coriaria, Ficus natelensis, Erythroxylem fischeri, Ficus exasperate*. Other plant species recorded include; *Khaya grandifolia, Terminalia glaucesceus, Acacia hockii, Asparangus africanus*. One of the invasive species *Lantana camara* was observed within the site. Grass that was identified includes Couch grass, Star grass, Spear grass, Nut grass, Elephant grass and Guinea grass. A comprehensive biodiversity assessment report will be presented in the EA.

Plate 18: Overgrazing (shown by yellow arrow) on existing site with potential to cause soil erosion

Plate 19: A termite mound at the project site.

Tourist and Cultural Sites: Mpigi district has some sites of tourist and cultural attraction such as the The Equator – at Nabusanke in Nkozi Sub County, Mpanga Forest, Katebo Crocodile sites and beaches on Lake Victoria, *Kibuuka Omumbaale* in Mpigi Town Council, Mbule in Bulo Sub county and Namirembe in Nkozi Sub county. All of these sites are located far off from the academy site in Ntula. Hence issues of interference with site of significance interest will not be impacted during project implementation.

Ecological Problems: Like most districts in the central parts of the country, Mpigi district suffers from environmental degradation arising from indiscriminate felling of trees for fuel wood. In addition to these, there is the problem of erosion as well as occasional floods - when heavy rains occur and rivers and streams over flow their banks.

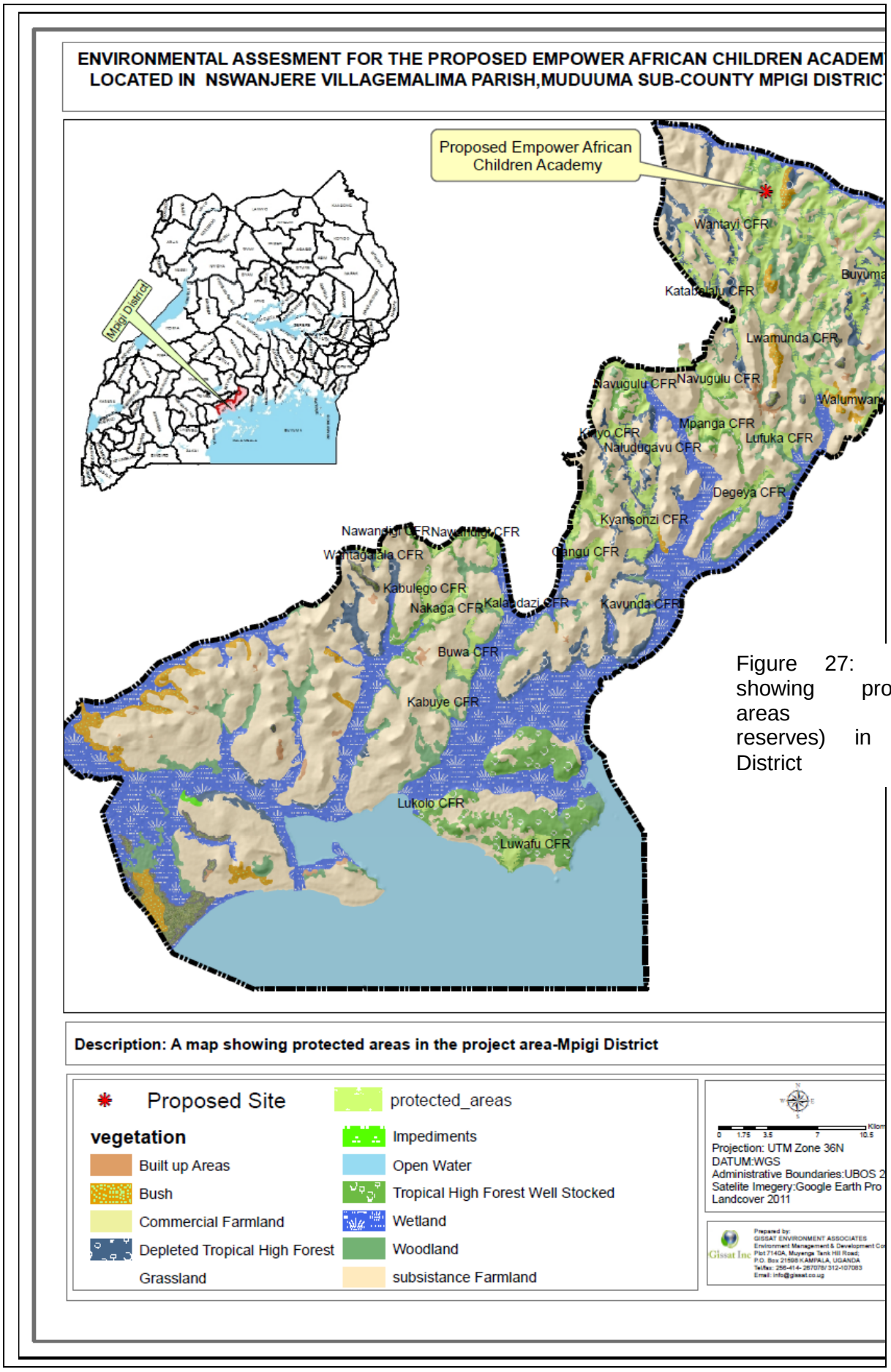


Figure 27: Map showing protected areas (forest reserves) in Mpigi District

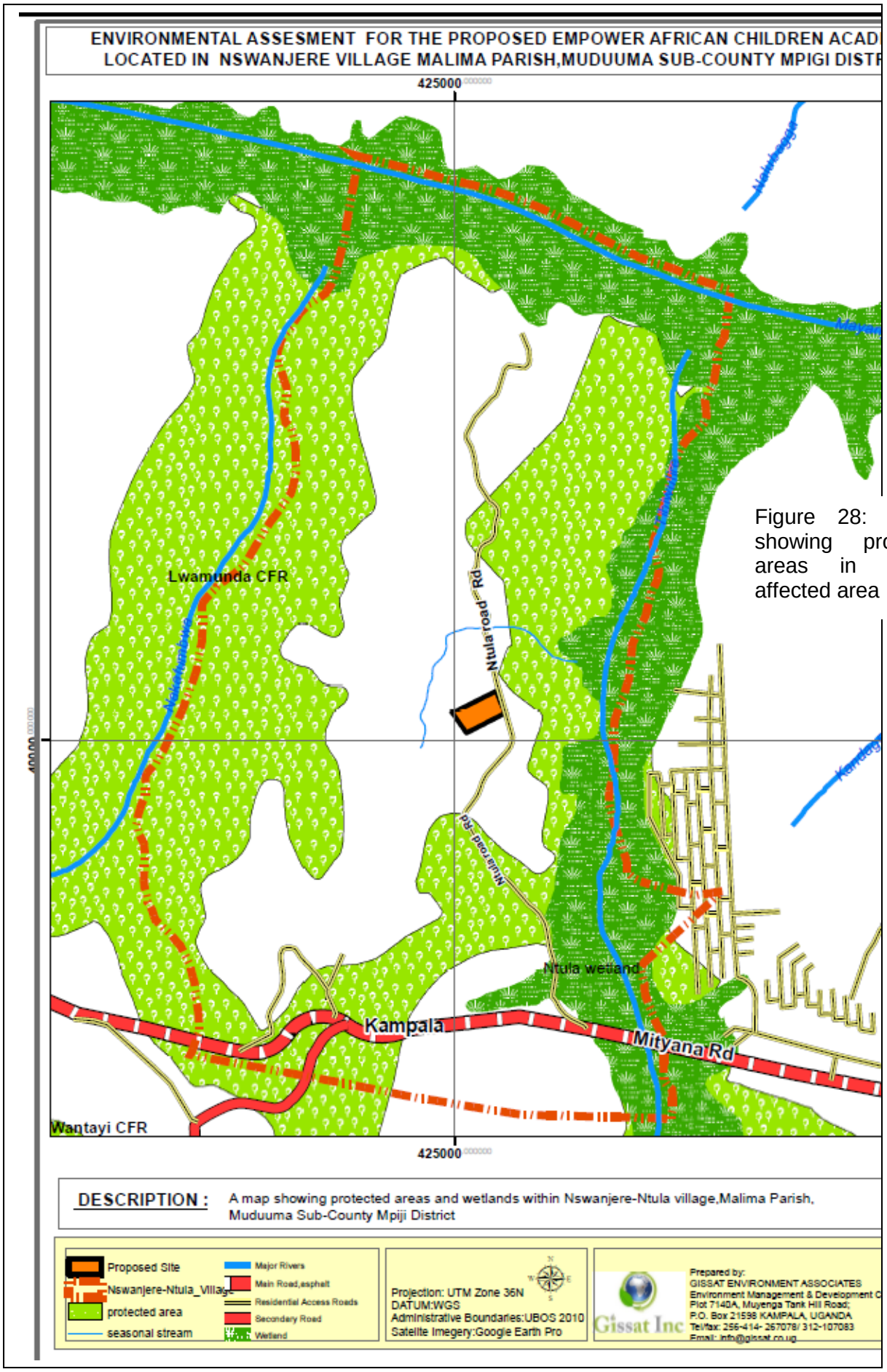


Figure 28: Map showing protected areas in project affected area

Subsistence farming mainly for sweet potatoes, sugarcanes, maize, beans, cassava, coffee and cowpeas among others is a major activity in the project area.

Plate 20: A section of a privately planted forest lot within the project area

Plate 21: A section of the grassland within the project area (Ntula)

Plate 22: Vegetation within the Ntula wetland stretch from Lulumba

Plate 23: A section of the Lwamunda CFR in the middleground

5.2.2 Lwamunda Central Forest Reserve

The project site location is near Lwamunda Central Forest Reserve which totals 4,696Ha according to statutory instrument No. 63 of 1998. It has a boundary length (cut line) of 139.3km. It is a riverine forest i.e largely occupying valleys and lower hill-slopes. The CFR has rivers and wetlands which could be impacted negatively owing to project activities which needs to be put into consideration by the implementors of the project. Lwamunda is categorized as Class "B" forest i.e Tropical Moist Forest which is severely degraded by agricultural encroachment.

To counter this, NFA has developed a management plan for the sector which includes:

a) A private tree planting programme that involves individuals and companies getting licenses to establish private woodlots to restore the forest reserve.
b) 10 – 15% of the forest is under collaborative forest management (CFM) where there are over 45 community groups under CFM. These participate in forest restoration activities through private tree planting and plantation work.

The Lwamunda Sector Management Plan's vision is to efficiently and sustainably manage forest resources, contributing to stabilization of the environment, economically prosperous communities and promoting national development. It also aims to promote improved management standards to raise economic value of the natural forest and private plantations and restore the integrity of the Forest Reserve.

5.2.2.1 Objectives of Sector Management Plan

Immediate Objective (3-5 years)

- To improve management of the Tropical Moist Forest (TMF).
- To increase protection of all Forest Reserves.
- To encourage and promote optimum (prudent) utilization of forest produce by all forest users.
- To promote sound establishment and management of plantations by the (private) tree growers.
- To integrate surrounding communities in Participatory Forest Management.
- To research into forest management dynamics of TMF, including restoration of partially degraded areas.

Medium-term objectives (6-10 years)

- To increase productivity of the TMF
- To diversify supply of forest produce including non-timber forest products.
- To supply quality forest products from (private) tree growers' plantations.
- To manage a forest estate that is secure from illegal (human) interference.

5.2.2.2 Partnerships in Management of Lwamunda Forest Sector

NFA works and coordinates forest management activities with many lead agencies in the environment and biodiversity conservation sectors such as National Environment Management Authority (NEMA), and Uganda Wildlife Authority (UWA) among others. UWA has the responsibility to work in close collaboration with the NFA in management of FRs requiring dual management according to FRs declaration (SI 1998 No. 63). NFA also involves other organizations including Local Councils (LC 1 – 5), Non-Government Organizations (NGOs) and Community Based Organizations (CBOs) for community and district forestry programmes.

As part of corporate social responsibility, several organizations have shown interest in restoration of degraded Forest Reserves together with NFA by committing resources required in the restoration process e.g MTN-Uganda, which has committed 30 million Uganda shillings in the restoration of CFRs within Lwamunda MPA and Kyewaga CFR.

Other corporate partners with similar interest include Uganda Revenue Authority, Standard Chartered Bank, KCB-Uganda, Uganda Telecom, Uganda Breweries among others.

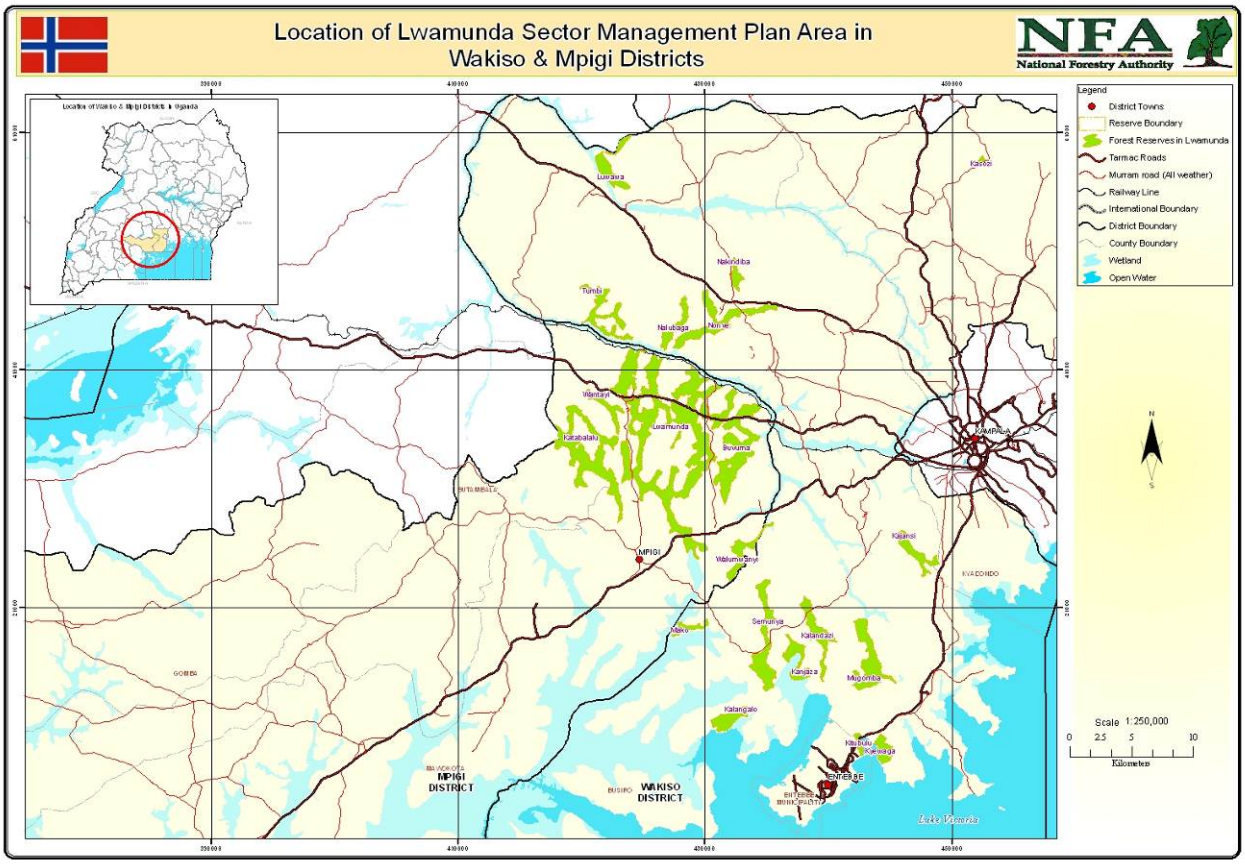


Figure 29: Map showing location of Lwamunda Forest Sector

5.2.2.3 Threats and Conflicts affecting the Forest Sector

There are rampant unauthorized (illegal) activities in all the FRs of Lwamunda sector forest which threaten future existence of these forests. Such illegal operations include pitsawying, encroachment, grazing, erection of temporary and permanent buildings, etc. contrary to Section 32(1) of the National Forestry and Tree Planting Act, 2003.

This situation is aggravated by a general lack of political will to support forest conservation for instance forestry is given a second priority to other development activities and land use alternatives when allocating national resources and a general laxity to provide man-power from the police when called upon to counteract illegal activities.

<u>Biodiversity status</u>

According to the biodiversity inventory in February and October 1994, and January/February 1995, Lwamunda CFRs are moderately diverse but for species diversity they are in the top 10% of sites for trees shrubs and large moths. The Lwamunda CFRs support 2 species unique to the area, i.e. *Brucea antidysenterica* and *Psychotria succulenta* and *1 species (Rhytigynia beniensis)* endemic to the Albertine Rift.

Table 5.1: Land use and implications to biodiversity

Receptor	Importance	Existing/future threat	Proposed mitigation/ recommendations
Plants	Forage and habitat uses such as nesting and breeding for wildlife especially birds	Loss of habitat due to clearance for infrastructure introduction and further spread of invasive and alien species such as *Lantana camara* Exacerbated soil erosion along gentle and steep slopes	Were applicable, retain some of the vegetation especially mature trees Harvest roof rain water to reduce run-off
Mammals e.g. Monkeys	Part of food chain and control habitat characteristics	Reduced habitat leading to migrations Deaths of burrowing mammals	Use a phased approach in case of vegetation clearance and moving of earth to allow for migrations
Birds	Dispersal, part of food chain, aesthetic values etc.	Loss of feeding, roosting, breeding and nesting sites	Were applicable, retain some of the vegetation especially mature trees Plan to create a wildlife friendly environment by investing in a green environment e.g. planting of fruit trees
Amphibians	Ecosystem and food chain functions e.g. feeding on mosquitoes	Destruction of the little available habitat during earth movement	Plan to create a friendly environment where any surface water is maintained clean and covered
Insects	Regulation of nutrient turnover and concentration	Total clearance of epigeal and hypogeal nesting sites during movement of earth Possible use of chemicals where termites persist in environment	Phased approach during construction and earth movement to allow for any possible migrations

5.3 SOCIO-ECONOMIC ENVIRONMENT

5.3.1 Overview

This section describes the social and cultural issues, which (in combination with technical, economic and environmental aspects) may affect or influence the implementation of the project. It includes information about the type of communities, demographic characteristics, economy and livelihood, land tenure and natural resource control, social organization, factors affecting access to power and resources, values and perceptions. The social cultural profile will facilitate the determination of how the people will affect and be affected by the development.

5.3.2 Demography

The 2014 population census findings for Uganda show that the distribution of population by district is uneven with Wakiso the immediate neighboring district to Mpigi district (project area) having the largest population (more than 2 million persons). Mpigi district has an average of 4% population growth rate with a total population of 251,512 people from the 2014 census. The highest population proportion of Mpigi lives in rural areas (rural population is 207,238 people and urban areas is 44,274 people). Table 5.2 below shows the population distribution and households within Mpigi sub counties.

Table 5.2: 2014 Population and Household Totals

Mpigi District		**Households**		**Population**		
County	**Sub County**	**Number**	**Average size**	**Male**	**Female**	**Total**
Mawokota	Buwama	12,406	4.0	25,228	25,045	50,273
Mawokota	Kammengo	8,863	4.2	19,456	18,834	38,290
Mawokota	Kiringente	5,532	3.7	11,309	11,378	22,687
Mawokota	Kituntu	4,993	4.5	11,318	11,159	22,477
Mawokota	Mpigi Town Council	10,567	4.1	21,991	22,283	44,274
Mawokota	Muduuma	7,616	3.9	15,462	14,941	30,403
Mawokota	Nkozi	10,279	4.1	20,550	22,558	43,108

Source: Uganda Bureau of Statistics, 2014

According to UBOS population in Muduuma (2009 – 2012) was about 24,200 persons of whom 12,400 were males and 11,800 females as shown in table 5.3 below.

Table 5.3: Estimated population of Muduuma Sub County and Malima parish (project area)

Year	**2009**			**2010**			**2011**			**2012**		
Sex	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Mpigi district	222,600	224,400	447,000	227,300	227,500	454,800	231,100	230,200	461,300	234,900	232,900	467,800
Muduma Sub County	11,800	11,400	23,200	12,000	11,500	23,500	12,200	11,700	23,900	12,400	11,800	24,200
Bulerejje	1,100	1,000	2,100	1,100	1,000	2,100	1,100	1,000	2,100	1,100	1,000	2,100
Jeza	1,600	1,600	3,200	1,700	1,600	3,300	1,700	1,700	3,400	1,700	1,700	3,400
Lugyo	2,900	2,900	5,800	2,900	2,900	5,800	3,000	2,900	5,900	3,000	3,000	6,000
Musaale-magala	700	600	1,300	700	600	1,300	700	700	1,400	800	700	1,500
Malima	1,800	1,700	3,500	1,900	1,700	3,600	1,900	1,700	3,600	1,900	1,700	3,600

Mbazzi	1,400	1,200	2,600	1,400	1,300	2,700	1,500	1,300	2,800	1,500	1,300	2,800
Tiribogo	2,300	2,400	4,700	2,300	2,400	4,700	2,300	2,400	4,700	2,400	2,400	4,800

Source: UBOS

5.3.3 Ethnicity

Uganda is mainly occupied by Africans speaking languages of three families of Bantu, Nilotic, and Central Sudanic (99%). The Bantu are the most numerous. They include the Baganda in the central region (17%), Basoga in the south-eastern area (8%), Banyankole in the south-western area (8%), Bakiga in the most south-western area (8%), Banyoro in the mid-western area (3%), Batooro in the mid-western area (3%), Bagisu in the eastern area, Bahima in the south-western area (2%) and Bafumbira in the south-western area (6%). The Nilotics, mainly in the north, are the next largest, including the Langi (6%) and the Acholi (4%). In the northwest are the Lugbara (4%). The Karamojong (2%), occupy the considerably drier, largely pastoral territory in the northeast.

Mpigi district is dominated by the Baganda. The project area - Muduma in particular accommodates many people with Baganda being the dominant tribe followed by a few Banyoro and Banyakole.

5.3.4 Sources of Income and Employment

There are three occupations identified within the Project area. They are farming, trading and civil service employment. The socio-economic survey shows that the predominant occupation of the people of the project area is farming (engaged by about 90 percent) which includes livestock rearing. About 8 percent of the communities are into trading while only 2 percent are civil servants. Although some women are involved in farming, majority of them are satisfied with home activities.

Figure 29 shows the general classification of land uses around the proposed site and in the rest of the district. The major classes that are described include residential, subsistence and commercial agricultural farming. Other major activities include brick making, forestry and trade. People especially the youth have engaged in such activities to improve their standards of living. Trading takes a number of forms including shop-keeping in trading centres and roadside food vending. Trading centres in the project area (e.g Lulumba and Ntula) have a few retail outlets which mainly deal in general merchandise.

5.3.5 Land Tenure

Uganda has four types of land tenure systems, namely: customary, mailo, freehold and leasehold. Customary land tenure is the most dominant in Uganda where land is owned and disposed of in accordance with customary norms. Mailo land tenure was introduced as a result of the 1900 Buganda Agreement when land was divided between the Kabaka (King) of Buganda, other notables and the Protectorate Government. In the freehold tenure system, ownership is in perpetuity.

The tenure systems in Mpigi and the neighboring districts of Mityana to the north and Butambala to the south are customary, freehold and leasehold. The proposed project site is held under leasehold tenure by EAC – the proponent.

5.3.6 Roads and Transport

The project area (Mawokota north) – Muduuma, has about 97.5 km of tarmac, 364.7 km of murram roads (all weather) and 131 community access roads. The district however has no rail service and no operating airstrip (Mpigi District Statistical Abstract 2009).

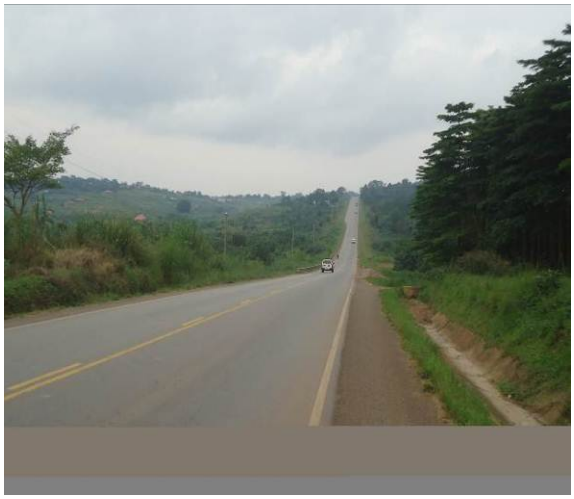


Plate 24: View of Kampala-Mityana highway

5.3.7 Settlement and Housing

The settlement patterns in the project area consist of clustered settlements in the rural areas and linear settlements in the urban and semi-urban areas. Housing types range from traditional thatched mud houses, to mud-brick houses with corrugated roof, to modern cement block houses. Modern housing features mostly in the urban and semi-urban centers and partly in the rural areas.

Development of settlements (including trading centres) is generally not planned. This has had a negative effect on the provision of social services and improved environment management for instance sanitation.

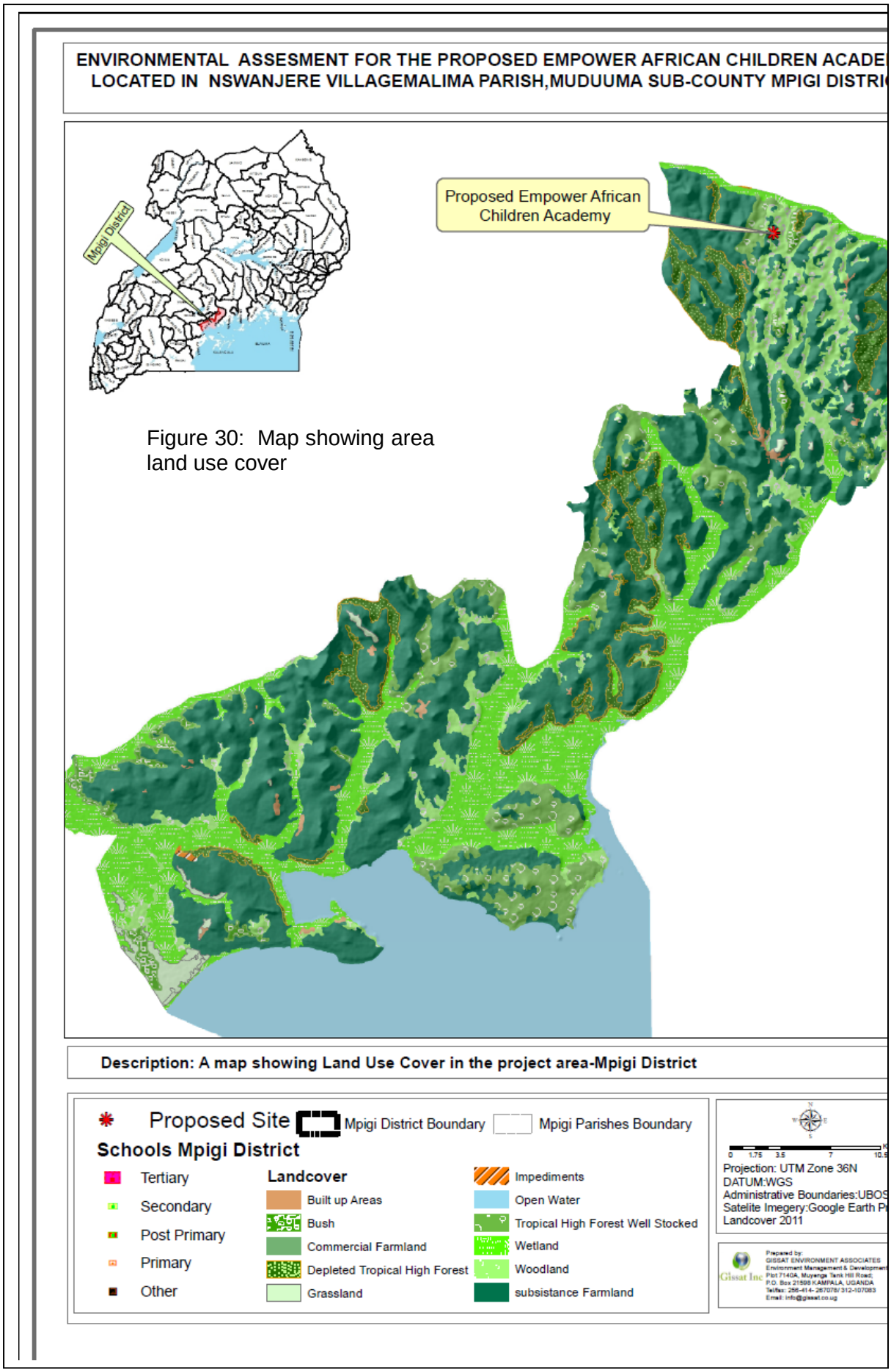


Figure 30: Map showing area land use cover

Plate 25: One of the houses in the project are.

Plate 26: View of the commercial units in Lulumba trading as viewed along Kampala-Mityana highway

5.3.8 Energy supply

The project area is connected to the national electricity grid at Lulumba. About 10% of respondents are satisfied with power supply in the area. This group said that on the average they are serviced with electric power supply for an average of 10 hours in a day. However, 70% of the respondents are not satisfied with the electric power supply, stating that the power supply to the area is not enough to support sustainable businesses.

At the time of assessment, the project site (Ntula-Nswanjere) had no access to power supply. Plans are already underway by the proponent to extend electricity supply to the site from Lulumba which is approximately 1.5km. Through consultations with the area local chairman, the proponent was advised to install an electricity transformer to service the entire community.

5.3.9 Domestic Water Facilities and supply

Potable water supply continues to be a chronic problem in the project area. Socio-economic survey administered to households as a part of this EA reveals that all the respondents consider lack of water as a major problem affecting both productivity and household welfare in the area.

Access to safe water in the rest of the district varies between 55 % in Buwama Sub-County to 95 % in Budde, Bulo, Kalamba, Ngando, Mpenja, Kamengo, Kiringente, Kituntu, Mpigi and Muduma Sub-Counties. The functionality rate in urban and rural areas is 88 % and 79 % respectively. Mpigi district has 2,033 domestic water points of which 72 have been non-functional for over 5 years and are considered abandoned. The main water supply technology is the shallow well. There is one surface water well and four groundwater-based pumped piped water supply systems serving approximately 12% of the population having access to safe water while 88 % of the population is served by point water sources.

The project site has two boreholes with one serving the community members.

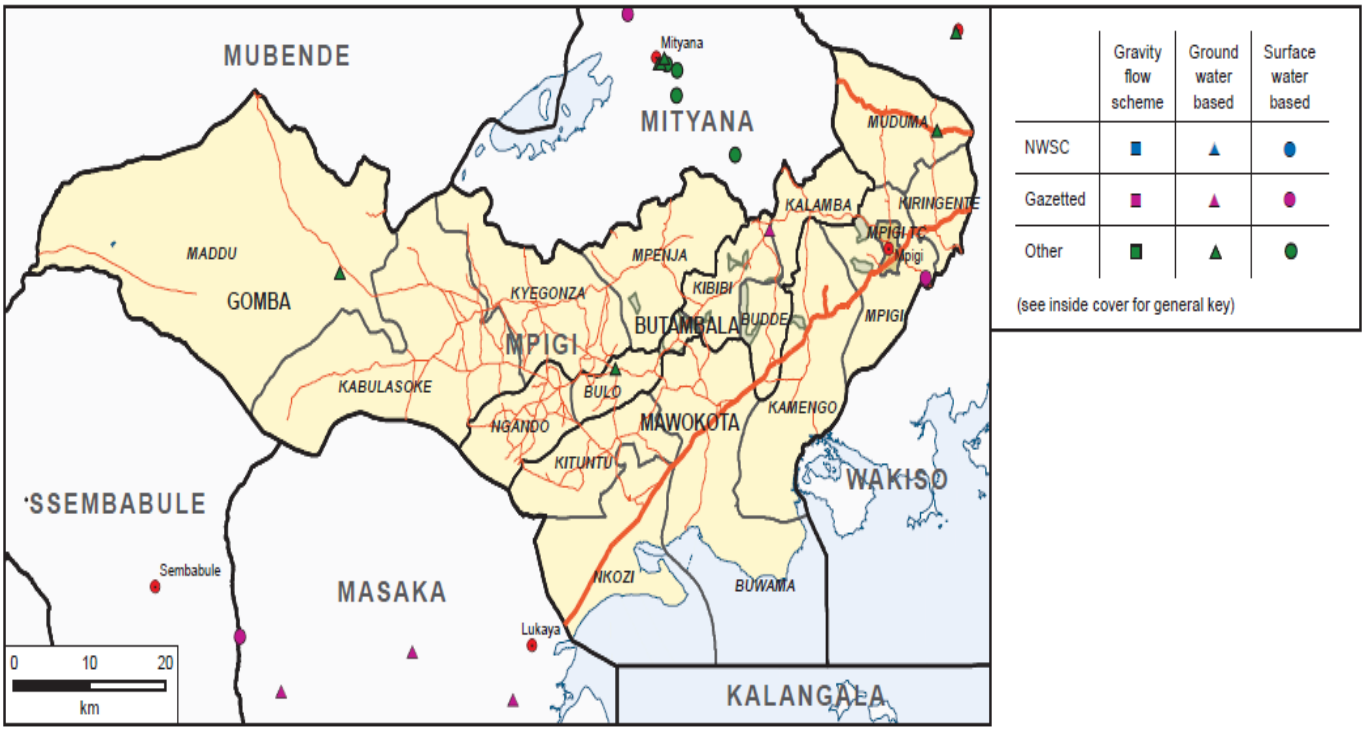


Figure 31: showing water sources distribution for the proposed area Source: Directorate of Water Development, Ministry of Water & Environment, 2010

Plate 27: A borehole within the project site at Ntula

Table 5.4: Distribution water points per sub-county in Mpigi district

Sub county	No of water source by type												Total
	PS			SW			DBH			TAPS			
	F	NF	TT	F	NF	TT	F	NF	TT	F	NF	TT	
BULO	43	11	54	24	17	41	1	3	4	6	0	6	11,250
BUDDE	33	2	35	25	2	27	2	1	3	0	0	0	9,300
KALAMBA	79	4	83	26	4	30	2	2	4	0	0	0	16,350
KIBIBI	71	4	75	57	6	63	3	4	7	16	0	16	22,500
NGANDO	4	3	7	16	8	24	19	4	23	0	0	0	8,700
MUDUUMA	26	3	29	20	5	25	12	4	16	0	0	0	10,500
KIRINGENTE	41	6	47	20	2	22	4	1	5	0	0	0	10,350
KAMMENGO	48	12	60	65	22	87	10	2	12	0	0	0	19,950
BUWAMA	23	6	29	92	10	102	4	2	6	0	0	0	18,450
KITUNTU	12	1	13	55	11	66	3	1	4	0	0	0	10,950
NKOZI	0	0	0	32	24	56	8	5	13	0	0	0	7,200
KABULASOKE	9	9	18	16	9	25	37	13	50	0	0	0	14,850
KYEGONZA	14	31	45	33	11	44	16	6	22	0	0	0	11,850
MADDU	0	0	0	4	1	5	24	7	31	7	0	7	8,850
MPENJA	22	23	25	50	19	69	15	6	21	o	0	0	15,300
Total	425	115	540	535		686	160	61	221	29	0	29	19,6350

Source: District Water Officer
SW – Shallow Wells, PS – Protected Strings, DBH – deep Boreholes, F – Functional,
NF– Non Functional

Table 5.5: Health facilities by type and location.

Sub County	Population	Referral Hospital		Referral HC IV		Referral HC III		Health Centre II	
		Public	NGO	Public	NGO	Public	NGO	Public	NGO
Mawokota N	100,683	-	-	1	-	5	2	6	5
Mawokota S	92,179	-	1	-	-	4	1	8	-
Gomba	134,567	-	-	1	-	3	1	7	1
Butambala	87,308	1	-	-	-	5	3	6	3
Total		1	1	2	-	17	7	27	9

Source: Health Report Mpigi FY 2009/10

5.3.10 Health Facilities

The district is sub-divided into health sub-districts namely Mawokota North and Mawokota South. Health infrastructure within the district and Muduuma Sub County in particular is categorized by ownership i.e. government, NGOs and private.

The project area has access to health facilities (Nswanjere Health Centre III and Muduuma Heath Centre III at 2 and 3 miles approximately from the site respectively.

5.3.11 Education and Literacy

Literacy levels in district and the project area (Muduuma Sub County) are still low; the lowest literacy level is being associated with females and rural areas. Household distance to nearest primary school by County, Sub county and Parish is approximately 3km.

Consultations held with the Community Area Chairman and Mpigi District Records Officer indicated that the schools found in Muduuma Sub County include Nkambo, Ndibulungi, Tiribogo, Nswanjere Seminary Primary School, St. Michael Day and Boarding Primary and Muduuma which is both a Secondary and Primary School. The chairman further indicated that most drop outs are girls who often end up in early marriages. This is mostly as a result of parental negligence and low incomes to keep children in schools.

5.3.12 Social Organization

The study area is generally a rural setting and life in the local communities is still based on informal ties such as kinship or extended family system. In turn, these ties determine the day-to-day socio-economic and cultural activities including land use and land tenure systems, division of labour, conflict resolution and decision making at family and community levels.

Most people in the project area, with the exception of a few non-indigenous and formally employed, migrated to neighboring urbanized areas in Wakiso, Kampala and some in Mityana town. Other indigenous people stay in their villages / ancestral homes and only visit trading centers on specific missions (transactions) after which they return to their villages.

Views of the household head takes precedence in most cases pertaining to family issues and those that cannot be handled within the family are normally discussed with family elders before being taken elsewhere. The Local Council System may be referred to as the last resort.

5.3.13 Areas of Socio-cultural importance

Preliminary investigations show that this project will not directly affect any known sites of archeological or cultural importance. As a general principle, the construction phase activities should try to avoid religious and cultural sites such as graveyards and family shrines. The proposed project area has no known historical or cultural site. Nswanjere Catholic Seminary is located at approximately 5 miles from the site.

5.3.14 Civil societies

Mpigi district has a number of civil societies that work in partnership with the local government to provide different services to the district as highlighted in chapter 4. Table 5.6 gives the NGOs and CBOs with active participation in the district.

Table5.6: Civil Societies registered in Mpigi district

No.	Civil Organization	Area of Operation	Activities undertaken
1	Help the Sick(HESI)	Mpigi Town Council, Muduuma	❖ Put in place nutritional projects. ❖ Conduct Awareness creation in schools on HIV/AIDS and environmental conservation.
2	Katabalalu Environment Conservation & Development Alert(KECDA)	Muduuma	❖ Environmental conservation through afforestation and re afforestation. ❖ Build capacity of the community in various activities like agriculture
3	Mpigi District Farmers' Association (MPIFA)	District wide	❖ Capacity building for farmers ❖ Distribution of tree seeds in schools.
4	Mpigi NGO Forum	District wide	❖ Monitors the CBO's and NGO'S programs in the district.

5	World Vision	Kituntu, Buwama, Nkozi & Kamengo	❖ Construction of water sources, schools etc. ❖ Awareness creation on HIV/AIDS
6	Action for Rural women empowerment	District wide	❖ Reproductive health and HIV/AID. ❖ Promotion of environmental protection

Source: Three year development plan F/Y 2009/2010

Plate 28: Brick making is a major activity in Ntula area.

Plate 29: Animal rearing is a major activity in Ntula area.

Plate 30: Trading in firewood is also an economic activity in Ntula .

Plate 31: Subsistence farming is the dominant activity in the area.

CHAPTER 6.0: ANALYSIS OF ALTERNATIVES

The discussion and analysis of alternatives in Environmental Assessments considers other practicable strategies that will promote the elimination of negative environmental impacts identified. This section is a requirement under the national EIA Guidelines (1997) and the USAID EA requirements and is critical in consideration of the ideal development with minimal environmental disturbance.

A number of alternatives were considered for this project. The purpose was to ensure that the best option which could achieve the project intended objectives with feasible costing while protecting the environment is selected. The consideration was based on options chosen by the design team in consultation with stakeholders (Ministry of Education and Sports, Ministry of Health, NEMA, Mpigi District Local Government and the communities of Ntula-Nswanjere). The alternatives included a number of key design alternatives. The alternative of not carrying out the proposed project was also considered in order to demonstrate environmental conditions without the project.

The following project alternatives have been identified and are discussed in further detail below:

1. Alternative 1: No Project Alternative
2. Alternative 2: Project as Proposed
3. Alternative 3: Building design alternative

6.1 The "No-Project" Alternative

Under the No-Project Alternative, the land will remain as highly disturbed vegetation dominated by shrubs and saplings. Additionally, the area will continue to be used as an informal dump and grazing area. There will thus continue to be a shortage of schools to supplement the parish capacity.

Not implementing the project would mean an opportunity foregone for access by students to quality international standard education.

The construction would have a capital outlay of more than USD 750,000 (or approximately Uganda Shillings 2.5 Billion). Without the project getting implemented, this injection into the national and local economy would be foregone.

The School if developed would be a stimulus of development in the area, attracting secondary businesses such as suppliers of food / produce, housing, utilities, transport, construction etc.

There is currently no health care facility in the local community, yet the project plans to give local people access to the clinic. This opportunity would not exist if the project was not implemented.

There are physical, biological and socio-economic implications of this alternative. Physically, the site is unlikely to undergo any major changes from its present condition. Biologically, the vegetation present on the site is unlikely to be severely affected, other than the potential for uncontrolled growth of weeds, bushes and trees introduced by avifauna, wind or other means. The "No Action" Alternative is likely to have the greatest implications on the socio-economic environment of the area and surrounding communities. Due to the proposed quality of the

development it is anticipated that it would provide a major opportunity for employment, benefits associated with the construction industry and potentially significant business opportunities for existing and new support businesses.

This option was then not preferred.

6.2 Alternative 2: The Proposed Project

The project as proposed is located in Ntula at approximately 16.4km from Mpigi district headquarters and about 1.5km off Mityana highway. The proponent had an alternative of three sites to choose from for the development of the school. The current project site has been identified as very suitable for a school construction among the other options taking into consideration the critical need for a secondary school in the area, the serene rural setting that allows for no interference and the option of provision of medical services from the clinic to the local community.

The alternative will have the following advantages:

a) Increased number of schools to supplement the parish of Nswanjere and County of Muduma.
b) Jobs will be created both during the construction and operation phases.
c) Preventing the area to be used as an informal dumping ground and grazing site (which could easily lead to erosion of soils from overgrazing impacts).
d) Increase area property values

Main consideration in site selection includes:

- The site is owned by the proponents.
- The site is easily accessible.
- There were no major issues related to environmental sustainability; and
- The development would not breach any future area planning provisions.

Disadvantages include;

- Land use change impacts - Habitat loss for flora and fauna
- Loss of income for persons whose livelihoods depend on the proposed project site for animal husbandry.
- Potential contaminants affecting groundwater quality.

The multiplier effects to the construction and support industries during this period are likely to affect a much larger number of persons. The proposed project will also make a positive contribution to overall commercial development and improve on area infrastructural components in addition to the two boreholes already provided for the community e.g road improvement, extension of electricity supply to project area which are all added benefits.

6.3 Alternative 3: Building Design Alternative

This alternative has several options that were considered:

Economic option:
The school will provide employment and over 70 people including teaching and various non-teaching staff. This has an economic multiplier effect in the community leading to general improvement in local economy.

Environmental option:
Disposal of medical waste by burial could utilize better alternatives such as :

Use of a NEMA licensed waste contractor.

ii) Procurement and installation of an incinerator suited to the nature of waste and emissions control / treatment.

iii) The use of pit latrines was an option considered due to the simplicity of constructing a pit latrine. The disadvantages of a pit latrine involve seepage of pollutants into ground water, unpleasant odours, and failure to serve a big population. In order to reduce the environmental footprint of the project this option will not be used. A new technology of double-vault ventilated improved pit latrines will be used. Each latrine unit has two pits below it with a single squat hole for each pit. Only one hole and one pit will be in use at a given time. When the first pit is full, the hole is sealed and the second pit and hole are used. The first pit is allowed to remain for 2 years, minimum, when the material is rendered harmless. The pits are sized basing on the population who will be using them to assure that the sealed pit is allowed to remain for at least 2 years. After 2 years, the material is degraded and may be cleaned out and disposed of or used for soil amendment. A urine diversion can be added to reduce odours. A ventilation pipe keeps the aerobic system active, which is essential for composting. This kind of latrine can be built anywhere, since the vaults are watertight and there is no risk of polluting the surroundings.

iv) Water is a necessity in life and an important factor in sanitation. Therefore, the proponent looked into methods of providing safe water for consumption. The project design team specified a point of use treatment system for drinking water which uses UV disinfection after filtration. The system will be wired to a critical circuit which is on the backup generator. This will solve turbidity issues and treat the water to WHO standards. This unit will be installed in the kitchen and students can come with their containers to get drinking water. This eliminates the alternative of the need for boiling, conserving energy and reducing firewood consumption.

v In developing countries like Uganda, most people including schools cook using wood or charcoal which is considered to be cheaper compared to using other sources of energy like gas, fuel and hydroelectricity among others. It is the cheapest stove to produce, requiring only three suitable stones of the same height on which a cooking pot can be balanced over a fire. This cooking alternative will not be considered by the project due to the many problems associated with it such as smoke emitted into the environment causing health problems, and burning a lot of firewood. The school kitchen will be fitted with energy efficient wood-burning stoves reducing the demand for firewood fuel. Initially the trees removed from the site for construction will be used for firewood. Once this source runs out, firewood will be purchased locally from the community. This will not only eliminate competition for resources but improve local economy and support the community.

These in the long term promote green energy practices at the facility.

Technology alternatives

Typically, for economic reasons, buildings would be constructed with lower roofs (which means a saving when walls are shorter). The project plans to construct all buildings to have higher roofs to enhance natural draft (air flow) and therefore minimize / avoid necessity for forced ventilation (air conditioning). This is environmentally friendly in the sense of reduced long term energy demand.

Additionally, the buildings have been designed to maximize utility of natural light, again reducing the project overall energy footprint over the long term.

Both the foregoing are climate-change friendly design attributes of the project.

6.4 Comparison of Alternatives

The preferred alternative is Alternative 2 – The Project as proposed, because of the need for increased educational and medical services in the area. The proposed site is also easily accessible, is owned by the proponent and is in keeping with the criteria in the area development plan for Nswanjere Parish.

CHAPTER 7.0 : PUBLIC CONSULTATION AND DISCLOSURE

7.1 Introduction

The environment assessment procedure included project disclosure and public participation as required by the National Environment Act and EIA regulations of 1998 as well as triggered by section 216.8 of the CFR 216.8, "public hearings," – that emphasizes individuals, groups and institutions that are considered to possess vested interest in the proposed development of the project to be involved in the assessment.
The aim of these consultations was to identify and take note of the views and concerns of the public at an early stage so that appropriate mitigations/changes are incorporated I the project design and the implementation plan of the project.

To ensure in-depth explorations and insight into the feeling and thought of the various interest groups, a purely qualitative methodology was employed. Formal and informal conversational interviews, focus group discussion and naturalistic observations were the key information collection methods applied. Formal meetings held with central and local government officials whereas informal meetings were held with the area local leadership and the surrounding community members.

The public consultation and participation process was guided through use of EIA guidelines for Uganda and guidelines established by USAID, the World Bank Group and the International Finance Corporation (IFC).

7.2 Stakeholder identification

Stakeholders were defined as individuals or groups potentially affected by or having an interest in the project. Stakeholders were identified through initial consultations that may be directly or indirectly affected by the project or may have an influence on the project. The key categories of stakeholders identified are shown below:

a) **National/Government**: National Environment Management Authority, National Forestry Authority, Ministry of Gender, Labour and Social Development, Ministry of Education and Sports, Mpigi District Local Government, Central Police Station (Mpigi) among others.

b) **Local Authorities**: Mpigi District Local Government (District Environment Officer, Chief Administrative Officer, District Engineer, Physical Planner), among others.

c) **Directly affected communities**: Communities at local level that will directly be impacted (positive or negative) by the project. This category also includes traditional leadership in the directly affected communities – Ntula/ Nswanjere, Muduma County and Mpigi district.

d) **Community Based Organizations and groups:** These are civil society non-profit groups that operate within the district that may have an interest in the project. Those in Mpigi District Local Government include; Mpigi District NGO FORUM, Mpigi District Farmers' Association (MDFA)and Katabalalu Environment Conservation & Development Alert (KECDA).

7.3 Key issues raised during consultation

During the consultative meetings, the economic and education trends and their resulting consequences on educational activities and subsequent construction of the institution were

clearly highlighted. Both positive and negative perceptions and fears of the stakeholders on how the proposed plan for construction of the institution is likely to affect the lives of the existing and future beneficiary students were captured. In addition, the issue of land acquisition and structural modification or improvement catering for all their needs and interests were discussed.

Need assessment meetings were held with government officials from the Ministry of Education and Sports, Mpigi district, NEMA among others and revealed key specific needs as outlined below:

a) Adequate sanitary facilities should be provided and should be gender sensitive.
b) Rain water harvesting should be considered through use of water tanks and rain gutters to reduce storm water erosion.
c) Ensure environmental restoration after project life span.
d) The institution should have adequate solid waste management facilities and also contract a registered and licensed waste collector.
e) Noise standards and regulations should be considered and complied with where construction and rehabilitation noise levels should be low.
f) Construction and rehabilitation designs and material should be well examined to enhance strong structures.
g) Proper drainage and sanitation should be put in place.
h) The construction site should be fenced for security reasons.
i) Guidelines on how to handle and manage hazardous wastes (medical waste) should be followed.
j) The guidelines on statutory secondary institutions should be complied with.
k) Provide workers with personal protective equipment (PPE) during construction and operation phases of the institution.
l) Institution activities should be line with the academy's polices and principles.
m) Institution activities or programs should be in line with laws and regulations provided by the ministry.
n) Sufficient structures for expected students should be constructed to avoid overcrowding.
o) Comprehensive consultations should be conducted at all phases of the project.
p) Adherence on environment, social and economic aspects of the project area should be considered.
q) The institution should ensure resource or energy efficiency to promote environmental sustainability.
r) Create awareness to workers and students about the effect of HIV/AIDS.
s) Fire-fighting systems should be provided

Table 7.1: Strategic focus areas

Objective	Potential areas for action
Education: To improve the education standards in the district	– Skills training – Teaching and learning materials
Health: To promote and foster wellbeing of the impacted communities.	– Endemic and communicable diseases, prevention – HIV/AIDs sensitization – Air quality improvement e.g. noise, dust, particulate matter
Waste management: To ensure proper management of waste	– Development of an Integrated Waste Management Plan for proper handling of

	waste
Employment: To encourage diverse programs and initiatives that will create jobs, skills and enterprises	– Promotion of livelihood projects – Diversification of economic base
Natural Resource Governance: To maintain efficient resource governance to ensure sustainability of the limited resources at the community level	– Prevention of pollution and impacts on species – Conservation of the natural resources
Occupational Health and Safety: To ensure people are protected from any dangers that may arise during construction and implementation of the project.	– Provision of protective gear to the employees. – Ensuring first aid is available on site

Plate 32: Consultation meeting between the chairperson - Ntula and the consultants at the chairperson's residence

Plate 33: Consultative meeting with the LCI secretary for information, USAID representative, project coordinator and consultants.

8.0 ANALYSIS OF POTENTIAL IMPACTS & MITIGATION MEASURES

8.1 Introduction

The proposed project will lead to several impacts on the environmental, occupational health and safety, and socio-economic status of the project area. Whilst this development will bring about a good number of beneficial impacts, especially improved performance in the education sector, there is need to prevent unfavorable impacts so as to enhance the sustainability of the project. Construction related projects have the potential to generate a wide range of physical, biological and socio-economic changes to the project area with possible consequences to the environment. This chapter presents a summary of the identified potential beneficial and adverse impacts associated with the proposed development of the school project.

8.2 Methodology for Impact Assessment

8.2.1 Methods and Materials used for identifying project impacts

- ✓ Through formal and informal stakeholder consultations especially from lead agencies, issues, comments and opinions raised were looked at keenly and reorganized them into impacts. These issues ranged from health, safety, environmental and socio-economic aspects. Issues to do with solid waste and effluent management, water quality control, aesthetics, noise generation, and opportunity for the government to benefit from the project were raised through stakeholder consultations. These were incorporated in the report and analyzed along as major impacts.
- ✓ Professional judgment from technical team of environmental specialists on the EIA team was used to identify impacts basing on the location, magnitude of the project, extent to which the project may affect the environment, possibility of the occurrence of the impact, duration of the impact and nature of the impact, that is whether negative or positive.
- ✓ Literature review was also done to ascertain the impacts of the same project on environment. It is important to note that even though the reviewed literature was of the same or related project but the receiving environment was different. Documents reviewed included; impact assessments done for similar projects, impact assessments done in the project area, and regulatory criteria governing aspects of the environment likely to be impacted on.
- ✓ Through taking measurements, such as noise and soil laboratory tests, the sensitivity of valued environmental components (VECs) likely to be impacted were identified.

8.2.2 Impact Identification, Prediction, Evaluation and Mitigation

Project activities were linked with environmental baseline conditions in the study area to identify the potential impacts. A rating criterion (based on nature, extent, duration, magnitude and probability of occurrence of an impact) was then developed and used to evaluate the significance of the impacts so that relative comparisons between the impacts could be done.

This included:

a) **Nature:** a description of what causes the effect, what will be affected, and how it will be affected; whether the impact will be; negative (a ‘cost’ to the environment), or positive (a ‘benefit’ to the environment).

b) **Extent:** wherein it is indicated whether the impact will be local (limited to the immediate area or project site, regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low and a score of 5 being high) thus if

the impact is limited to the site (1) (within the boundaries of the site), (2) local (the area within a 5-km radius of the project site), (3) District, (4) Regional, (5) National, or (6) International.

c) **Duration of the Impact**

The duration of each impact was rated as being one of the following:

- (1) Immediate (> 1 year – the lifetime of the impact will be of a very short duration)
- (2) Short term (1 – 5 years – the lifetime of the impact will be of a short duration)
- (3) Medium term (6 – 15 years)
- (4) Long term (> 15 years - the impact will cease when the operation stops)
- (5) Permanent (no mitigation measure of natural process will reduce the impact after construction.

d) **Magnitude of the Impact**

The intensity of severity of each impact was rated on a scale from 0 - 10 as being one of the following:

- (0) None (where the aspect is small and will have no impact on the environment),
- (2) Minor where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),
- (4) Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected,
- (6) Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
- (8) High (where natural, cultural or social functions or processes are altered to the extent that they will temporarily cease), or
- (10) Very high (where natural, cultural and social functions or processes are altered to the extent that they will permanently cease).

e) **Probability of Occurrence**

The likelihood of the impact actually occurring was indicated as either:

- (0) None (the impact will not occur),
- (1) Improbable (the possibility of the impact materializing is very low as a result of design, historic experience, or implementation of adequate corrective actions),
- (2) Low probability (there is a possibility that the impact will occur),
- (3) Medium probability (the impact may occur),
- (4) High probability (it is most likely that the impact will occur), or
- (5) Definite (the impact will occur regardless of the implementation of any prevention or corrective actions).

f) **Significance of the Impact**

Based on the information contained in the sections above, the potential impacts were assigned a significance weighting (S). This weighting was formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact as follows: $S = (E+D+M)P$. The derived significance weighting scale is given below:

- (<30): Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- (30-60): Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated.

- (>60): High (i.e. where the impact must have an influence on the decision process to develop in the area.

Cumulative impacts and reversibility have also been identified and assessed.

Table 8.1 provides a description of the colour coding adopted in impact analysis.

Table 8.1: Colour coding description of adopted impact analysis

Impact Significance	Colour coding - Result
Low	
Medium	
High	

Expected impacts were determined based on anticipated interactions between project activities and major environmental and social sensitivities. The environmental and social sensitivities likely to be affected by project activities are given in table 8.2.

Table 8.2: Environmental and social sensitivities likely to be affected by project activities

Environmental components	Social components
Terrestrial habitats	Community affairs and grievance redress
Topography and landscape	Air (odour)
Climate change	Land use
Soil	Economic activities
Air (physical and chemical properties)	Property rights
Noise	Transport and traffic
Surface water	Power (electricity)
Ground water and hydro-geology	Education
	Employment
	Energy use
	Noise – nuisance
	Visual sensitivity
	Public health
	Occupational health and safety

Appropriate mitigation measures were then designed to avoid, minimize or compensate for the adverse environmental and social impacts and inform the Environment and Social Management Plan. After the rating of each impact, the determination of mitigation measures followed (*refer to section on ESMP*). Only moderate and major impacts were considered for impact mitigation. Continuous improvement practices will address low impacts. The positive impacts shall be monitored and enhanced when expedient.

8.2.3 Cumulative Impacts

Cumulative impacts and reversibility was also identified and assessed. Cumulative adverse are defined as adverse environmental impacts that arise from several activities impacting the same environmental receptor. The causes of these impacts may be from various project activities or partly from project-related activities (internal aggregations) and pre-existing conditions (external

factors). External activities form part of the baseline condition, and are taken into account in the examination of the baseline, as well as divergence from the baseline that might be expected to arise from project implementation. In this way the impact of the project on the surrounding area especially as it relates to the cumulative impacts of this project with any existing developments will be included. All cumulative impacts have been assessed just like other impacts.

8.2.4 Beneficial Impacts

The implementation of the school project is envisaged to largely impact positively to the people of the community and the stakeholders at large. The potential positive impacts will depend on the proper implementation of the project components and sub-components. Table 8.3 gives a summary of the anticipated project beneficial impacts.

Table 8.3: Summary of Beneficial Environmental and Social Impacts

Beneficial impact	Beneficial impact
Provision and improved access to educational and medical services	It will serve as a positive benchmark for future developments in the area and the district at large.
School will ensure sustainability of education, health and water supply provision in the long term, meeting the needs of present population in Ntula.	Increased opportunity to develop agriculture, livestock farming and other businesses in project area and surrounding communities because of guaranteed market.
Increase opportunities for job creation and employment.	During the construction phase, some construction materials will be sourced from local businesses and stores. This will inject income into the local economy benefitting local businesses.
The improvement of the Ntula road will ultimately lead to opening up of the farms to markets. There are challenges that arise out of the dilapidated road especially in transportation of farm produce; with the rehabilitation of the road, accessibility shall be made easy. Consequently, the improved revenue growth will precipitate the development of other social amenities.	Reduce health risks.
Improved market access for agricultural goods and services	Improved physical development of the area through infrastructural upgrade and investments (boreholes, school, clinic, road, electricity, etc)

Table 8.4 shows identified impacts for the pre-construction phase of the project.

Table 8.4: Identified impacts for the pre-construction phase of the project

Environmental Impacts	Social impacts	Occupational health and Safety impacts
Positive		
Prior to the commencement of construction works, a feasibility study and environmental assessment are required to describe the proposed project needs, aid project design, and ensure environmental and socio-economic sustainability of the project and the project community.	The project will undertake a stakeholders / public consultation exercise to sensitize stakeholders in the project command area and beyond on the social safeguards to ensure project sustainability. The public consultation process is seen to be a positive impact, as it will form a basis for project concept decision making and implementation.	During the pre-construction phase, Occupational Health and Safety (OHS) awareness programs will be conducted. Awareness programs and interactive sessions will benefit primarily the contractors' personnel, Academy staff, residents and businesses. Guidelines on safe practices and safe behaviours will be made available to these groups in order to minimize the occurrence of occupational incidents or accidents in the course of implementing project activities.
The project will undertake a stakeholders/public consultation exercise to sensitize the stakeholders in the project command area and beyond on the environmental safeguards components of the project. The public consultation process is seen to be a positive impact, as it will form a basis for project design and implementation decisions making.	The implementing agency may also help establish project supervision committees at the Local Government and community levels to enable participation, monitoring and evaluation when construction works commence.	
Negative		
Air Quality The pre-construction phase will give rise to fugitive dusts and frequent exhaust emissions into the atmosphere as equipment is delivered to the Ntula site and along access roads where the proposed construction works will take place.	Movement Possible disruptions of movement of inhabitants to farmlands, as a result of movement of equipment and materials along access roads, resulting in loss of man-hours and negative perception of the project amongst road users and residents. Properties particularly farmlands may be accidentally damaged or destroyed during the movement of heavy-duty vehicles and equipment. Accidents involving vehicles or	During the pre-construction phase air pollution from exhaust fumes of vehicles and equipment moving to the work areas may occur. This will pose an occupational health risk (*respiratory infections and diseases*), especially for people living in and carrying out activities around the project construction areas and also, contractor personnel, and personnel conveying equipment.

Environmental Impacts	Social impacts	Occupational health and Safety impacts
	pedestrians may occur during vehicle and equipment movements to school site.	
Soil Leakages may occur from stacked equipment containing oil such as engine oil. This could result in the seeping-through of oil into the soil, thereby leading to possible contamination of soil, surface water and ground water. Soil compaction and soil structure changes may occur due to influx and stationary positioning of heavy-duty equipment and vehicles.	Noise Noise from heavy-duty project vehicles and equipment may exceed the WHO / NEMA acceptable noise level limits, resulting in nuisance.	Exposure to noise pollution, injuries and accidents during movement of equipment to the work areas. Visual impacts will also occur.
Noise The project area is within an expanse of farmlands and few settlements. During the pre-construction activities the WHO/ NEMA permissible noise level (90dB) may be exceeded due to mobilization of heavy machinery to the rehabilitation areas.		
Vegetation During the pre-construction phase there will be increased de-vegetation activities.		

8.3 Impacts arising from construction phase

8.3.1 Impacts on Standard of Living and Employment

Construction of the proposed school will create short-term jobs for skilled, semi-skilled and casual workers; and a portion of these jobs can be filled by members of the local community. Given the relatively small number of jobs created by construction, the positive impacts will be minor. Additionally, the sale of goods and services to support the construction activities will offer local business opportunities through the provision of food and construction materials. Employment will offer higher income potential, which can help alleviate economic stress and improve the quality of life for families and children. Improvement of the access road to the site / project area will improve access to the surrounding farmlands as well thereby improving access to markets for farm produce.

Considering the fact that construction will be done in phases that are proposed to take a short time, the significance of this impact is anticipated to be **MEDIUM POSITIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Job Creation	No	Positive	5	1	2	5	40	Medium
	Yes	Positive	5	1	4	5	50	Medium
Enhancement Measures	• The contractor should offer employment to the local community members and encourage purchase of locally derived goods and services. • Before construction begins, the local community should be informed of the available job opportunities, and the requirements for goods and services. • The type of skilled workers should be communicated early (pre-construction phase), and in coordination with local authorities so they can compile a list of qualified local individuals from their communities. • If possible, worker training should be provided in order to maximize local employment. • Ensure payment of wages commensurate with skills and living standards. • Ensure that workers have contracts that adhere to national and international labour laws.							
Reversibility	No							

8.3.2 Impacts arising from road construction/ improvement

The feeder road to the project site (Ntula) needs routine maintenance and also upgrading. Although these roles are for the district local government (Mpigi) through the sub county (see section 4), there will be impacts arising as a result of these activities which may impact on project development.

Implementation of some aspects of the project will include major earthworks such as excavation with the movement of excavators, tippers and other equipment, cut and fill works during the grading among others. This will affect the surface natural flow regime of water especially when the sub-soils have been destabilized by construction activities.

Oil and chemical leakages from work vehicles and equipment may lead to soil contamination and death of beneficial soil flora and fauna, particularly farm crops.

During the rehabilitation works, there may be potential for sediment/contaminant laden water runoff to impact on water quality. The contaminants in water runoff may have the potential to enter existing drainage channels and into local watercourses, affecting downstream users and aquatic life.

Accidental spillage of chemicals and fuels from the operation and maintenance of construction vehicles and equipment will pose negative impacts to surface and future groundwater quality. Soil contamination from construction wastes such as oil (fuel, lubricants), cement, and paint may occur. This impact will be localized, minor and short term.

The road rehabilitation works and the project construction activities will involve the use of heavy machinery for land clearing, leveling and excavation of soil for construction of structures. The

noise level may be high, probably exceeding WHO/NEMA (90 dB) permissible limits and may cause hearing impairment to workers and the public.

Construction activities will lead to the production of solid wastes - soil excavated debris, metal scraps, plastics, wood, waste concrete, papers and cartons, etc.

During the construction phase, loss of economical trees/fauna may occur. There will also be loss and exposure of topsoil (soil erosion) during de-vegetation activities. Civil work activities during this phase may disrupt the fauna and flora within the project areas, including aquatic life (if surface water is contaminated by contaminant sources from rehabilitation activities).

Employment of skilled and unskilled labour will be promoted. Artisans and professionals from the surrounding communities of Nswanjere, Ntula, Muduma and other areas within the district and other areas will be provided contractual employment (even if only temporary) during this phase. This will help promote community goodwill.

This phase will encourage economic activities within and around work areas. Petty traders, food vendors and other small businesses will benefit immensely from the demands at work sites.

There may be occurrences of traffic congestion on access roads as a result of intermittent movement of equipment and materials into the site and other rehabilitation workstations along the road. This will impact on travel time, and may result in negative perception about the project amongst road users, residents and commercial establishments.

There will be increase in fugitive dust and vehicular emissions during operation of vehicles. Civil works will cause changes in the air and atmospheric conditions of the project area and surrounding environment. Fugitive dust, machinery exhaust fumes [nitrogen oxides (NOX), carbon monoxide (CO), sulphur oxides (SOx), hydrocarbons and suspended particulates], and dust from rehabilitation/construction activities will impact negatively on air quality. Air pollution from machinery will be short term, moderate and localized. Incidences of respiratory conditions and respiratory diseases (silicosis, asthma, bronchitis, upper respiratory infections may occur due to air contamination by exhaust fumes and dust resulting from civil works.

This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Impacts Arising from road construction	No	Negative	3	1	8	4	48	Medium
	Yes	Negative	2	2	6	2	20	Low

Mitigation Measures	To reduce the environmental impact of road construction, appropriate preventive measures are available for all three stages of the process, i.e. planning, construction and maintenance. These include the following: - The effective control of noise from vehicles and equipment during this phase may be achieved by considering several techniques (alternative design options; mitigation at the source; mitigation along the path; and mitigation at the receiver. For minimal disturbance it will be advised that equipment is transported in the evening or night hours when traffic is less. Work should be performed during normal working hours (suggested 6am to 6pm). - Skips and bins should be strategically placed within the campsite and construction site to ensure proper waste management. Excess fill material should be used to fill the pits that may be dug onsite. Used oil and other hazardous solid wastes should be stored appropriately and then transported offsite for proper final disposal by licensed waste handler. Overburden (from site excavation) should be carried away and disposed of responsibly (landscaping and plant nursery operators often need this soil, presenting a beneficial disposal option). Special attention should be given to minimizing and reducing quantities of waste generated. - Provide portable sanitary conveniences for the construction workers for control of sewage waste. A ratio of approximately 25 workers per ecosan toilet should be used. - Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. Fine-grained materials (sand, murram, etc.) should be stockpiled away from heavy runoff areas. - Limits on the speed of construction vehicles should be established and enforced to reduce on the generated dust. - Where unavoidable, construction crew working in dusty areas should be provided and fitted with respirators. - Equipment to be used on the site should be well serviced and in sound mechanical condition to prevent cases of oil and fuel spillage. - Care should be taken not to dispose of debris in the existing drains. - Temporary drains inclusive of adequate silt basins must be installed to prevent flooding. - Phased construction will minimize the impacts arising from erosion from clearance of large tracts of land. - Areas with exposed soils should be monitored during periods of heavy rainfall throughout the construction phase of the project. - Care should be taken not to deposit earth material and any other demolition wastes into the area underground drainage channels. - A well planned drainage system should be developed along the road to direct runoff to the neighboring channel so as to minimize the possibility of flooding as a result of maintenance / rehabilitation civil works. - Excavated soil should be stockpiled away from storm water runoff paths. - The proponent should develop a project excavation plan - There should be examination of geomorphic features / classified landforms and elevations at the site. - Stripped top soil should be carried away and disposed of responsibly. - Periodic inspections should be conducted by the supervisor from Mpigi district.

Residual Impact	Due to construction of the project, there is likelihood of minor residue negative impacts even after implementation of the proposed mitigation measures.
Reversibility	Yes

8.3.3 Impacts arising from improper waste management

During the construction phase of the proposed project, solid waste generation may occur mainly from:

i) From the construction campsite.
ii) From construction activities such as site clearance and excavation (vegetative debris).
iii) Construction materials packaging (cardboard, plastics, fencing material, wooden pallets, containers etc.)
iv) Earth materials from grading, roadway construction etc.

There could be improper material storage and irresponsible construction waste disposal. Construction phase activities could generate waste (both hazardous and non-hazardous). Non-hazardous wastes likely to be generated include excess fill material from excavation activities, vegetative debris from site clearance, scrap metal and small concrete spills. Hazardous wastes include machinery maintenance materials (e.g oily rags, used oil containers and spill cleanup materials). Oil and chemical leakages from work vehicles and equipment may lead to soil contamination and death of beneficial soil flora and fauna, particularly farm crops. The construction phase will lead to increase in on and off site quantities of generated construction wastes. Improper storage and disposal of overburden during site preparation would create an erosion challenge to the area storm water drains. Improper siting of stockpiles of construction material at the site could lead to the fine materials getting washed into drainage channels.

With every construction campsite comes the need to provide construction workers with showers and sanitary conveniences. The disposal of the wastewater generated at the construction campsite has the potential to have a minor negative impact on groundwater.

With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Improper waste management	No	Negative	3	1	8	5	60	Medium
	Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	• Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule. • Excess fill material should be used to fill the pits that may be dug onsite. • Skips and bins should be strategically placed within the campsite and construction site. • The skips and bins at the construction campsite should be adequately designed and covered to prevent access by vermin and minimize odour. • The skips and bins at both the construction campsite should be emptied regularly to prevent overfilling.							

	• Disposal of the contents of the skips and bins should be done at an approved disposal site. • Used oil and other hazardous solid wastes should be stored appropriately and then transported offsite for proper final disposal by licensed waste handler. • Equipment to be used on the site should be well serviced and in sound mechanical condition to prevent cases of oil and fuel spillage. • Fine-grained materials (sand, murram, etc.) should be stockpiled away from heavy runoff areas. • Overburden (from site excavation) should be carried away and disposed of responsibly (landscaping and plant nursery operators often need this soil, presenting a beneficial disposal option). • Special attention should be given to minimizing and reducing quantities of waste generated. • Provide portable sanitary conveniences for the construction workers for control of sewage waste. A ratio of approximately 25 workers per ecosan toilet should be used. • Showers should be provided for the workers.
Reversibility	Yes

8.3.4 Drainage modification

The establishment of structures at the proposed project site will create impervious surfaces on the site as roofed structured and paved surfaces will be set up. This makes it apparent that the site could generate considerable volumes of runoff during periods of prolonged rainfall. The high run off could result into the flooding of plots to the south of the site if proper measures are not put in place. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Drainage Modification	**No**	**Negative**	2	4	6	4	48	Medium
	Yes	**Negative**	1	4	2	1	7	Low
Mitigation Measures	• A well planned drainage system should be developed around the site to direct runoff to the neighboring channel so as to minimize the possibility of flooding on the site or its neighborhoods. • The runoff from the roofs shall be reduced by installing rain water harvesting system that will be used for cleaning and landscaping onsite.							
Reversibility	Yes							

8.3.5 Excavation impacts

A number of accidents occur on construction sites owing to excavation related impacts. Excavations are defined generally as “operations where contact with soil is expected, such as trenching, removing soil to install foundation footings, or exposing underground pipes for repair / replacement. The most common hazards associated with excavations, in addition to those posed by working with heavy and mechanical equipment include:

a) Unidentified or misidentified utilities where workers may be exposed to hazards such as electric shock, suffocation or explosions if they unexpectedly come in contact with utility lines.
b) Cave-ins are also common accidents on construction sites. Worker injury or structural damage may result from sidewalls of excavations caving in.
c) Structural instability arising from structures becoming unstable if excavation occurs below the base of building or equipment pad foundations, or below retaining wall footings.
d) Water accumulation is also another common excavation related hazard where accumulated water in excavations can cause sloughing of excavation sidewalls, resulting in unsafe conditions for those entering the excavation, particularly if the use of electrical equipment is required.
e) Lack of egress: workers may become injured while exiting an excavation if egress is not adequate, particularly if an emergency evacuation is required.
f) Workers may accidentally fall into an open, unprotected excavation, or vehicles may accidentally be driven into an uncovered or inadequately barricaded pit.

To ensure safety during excavation at the proposed project site, a detailed excavation plan was designed for the project. This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Excavation Impacts	All Alternatives	No	Negative	3	1	8	4	48	Medium
		Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	• Stripped top soil should be ferried off the site and disposed of responsibly (landscaping and plant nursery operators often need this soil, presenting a beneficial disposal option). • Excavated soil should be stockpiled away from storm water runoff paths. • The proponent should develop a project excavation plan • There should be examination of geomorphic features / classified landforms and elevations at the site.								
Reversibility	Yes								

8.3.6 Impacts arising from soil erosion

The clearing of the site will reduce the natural infiltration in the soil and promote erosion especially in the upper layers of the soil during extreme rainfall events. Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities. The mobilization and transport of soil particles may, in turn, result in sedimentation of surface drainage networks, which may result in impacts to the quality of natural water systems and ultimately the biological systems that use these waters. Erosion would increase sediment load in runoff from the site discharging into the neighbouring drainage channels leading to siltation. The storm water channels will be modified during the clearing of the site and this could cause localized flooding on the site and possibly to the communities adjacent to the site.

Proper runoff of storm water plays a vital part in the natural hydrological process of an area. Of concern is the fact that it usually contains numerous pollutants such as sediment, nutrients, bacteria, oil and grease, metals, plastics and miscellaneous waste that are being transported off the points of generation. During construction activities, oil contamination may arise from hydraulic leakages from construction equipment, improper handling of petroleum products and fuel spillage. Contamination may also occur from the improper disposal of used oils, hydraulic fluids, toxic and empty containers.

This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Impacts arising from soil erosion	No	Negative	3	1	8	3	36	Medium
	Yes	Negative	1	1	4	2	12	Low
Mitigation Measures	- The proponent is advised to prepare a storm water pollution prevention plan (SWPPP) to mitigate storm runoff and soil erosion throughout the site. - Care should be taken not to dispose of debris in the existing drains. - Temporary drains inclusive of adequate silt basins must be installed to prevent flooding. - Phased construction will minimize the impacts arising from erosion from clearance of large tracts of land. - Areas with exposed soils should be monitored during periods of heavy rainfall throughout the construction phase of the project. - Care should be taken not to deposit earth material and any other demolition wastes into the area underground drainage channels.							
Residual Impact	Full implementation of the proposed mitigation measures should leave no room residual impacts.							
Reversibility	Yes							

8.3.7 Occupational health and safety impacts

Due to the nature of development there is a relatively high risk of occurrence of accidents. These may occur for all stages of the development. Accidents often happen unexpectedly and unintentionally and can result in the loss of life and injuries, as well as damage to property. In addition it is very important that the proponent considers the health and safety of its workers and occupants (staff, students & visitors) as operation of the academy will require the use of a significant amount of equipment, petroleum products and a host of raw materials in its functional phase and maintenance. The probability of an accident occurring at the project site during these phases of the development is high. This is due to the intense use of machinery and other heavy-duty equipment. The levels of dust in the area are also likely to increase, which may cause respiratory illnesses in humans. It is therefore important that the mitigation measures outlined below are implemented to ensure the safety of workers / occupants during the various phases of the development.

Major injuries at the site may result from falling objectives, contact with hazardous substances, handling steel bars, being struck by an object, exposure to electrically powered machinery or hand tools and transportation accidents. These injuries can range from minor ones to possible loss of life. However, if caution and personal protection gear is provided to workers, these injuries and accidents would be avoided. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Occupational Hazards	No	Negative	2	5	6	3	39	Medium
	Yes	Negative	1	1	2	2	8	Low
Mitigation Measures	• Education and training of project affected persons about the project and accident occurrence . • Contractor(s) education and training on pedestrian safety Install safety signage. Conduct safety and First Aid training • Personnel should be provided with special footwear, clothing, gloves, helmets and other necessary protective gear for use. • Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities. • Occupation health and safety should be ensured on site by appointing an officer to be in charge of implementing all health and safety rules and guidelines and provide appropriate safety/warning signs • Designate the roles and responsibilities of employees, which will enable a clear chain of command in the event of an accident and allows persons to be aware of their responsibilities in the event of such occurrences. • Place a fully equipped first aid kit on the project site. Ensure that a crew member is trained in basic first aid practices. • Place information/warning signs around the project site, which indicates where hazardous and flammable material will be stored. Signs must also be placed around the construction site displaying the numbers of the person responsible for handling emergencies on the site, the Police Fire Department, and the nearest medical facility.							
	• Keep an emergency log to document any occurrences of any accidents that may occur on the site. This log must also contain emergency contact information for all employees. • Ensure that all machinery operating at the project is regularly serviced and maintained.							
Cumulative Impact	No							
Reversibility	Yes							

8.3.8 Sanitation and spread of diseases.

Increased incidence of communicable and vector borne diseases attributable to construction activities represents a potentially serious health threat to project personnel and residents of local communities.

Construction activities will require a well-established labour force. The workmanship required may not necessarily be available from the local communities and result in workers being sourced from other communities. In addition there may be a likelihood of migrant workers (including unskilled labourers) moving into the area in search of employment. These workers could have an impact on the social structures present in the local communities due to the lengthy period of construction. Diseases like HIV/AIDS and other STDs may also have an impact on the local community resulting from an influx of migrant labourers to the areas surrounding the project site.

Inadequate or lack of established sanitary facilities could lead to severe unsanitary conditions onsite which may cause disease outbreaks in the area such as cholera, dysentry and diarrhoea. With the implementation of the suggested mitigation measures the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Sanitation and spread of diseases	All Alternatives	No	Negative	3	1	6	4	40	Medium
		Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	• Provide sanitary facilities for workers and maintain the sanitary facilities in good conditions including good hygiene practices i.e. hand washing and proper disposal of waste. • The proponent should prepare and implement a Health and Safety Plan (HASP) to ensure health and safety during construction of the school. The plan should include the provision of training on best practices for school workers in order to minimize risks, and sensitization on STDs and HIV/AIDS. Workers who fail to comply with safety guidelines should be terminated after repeated warnings are issued.								
Reversibility	Yes								

8.3.9 Air Quality and Climate Change Impacts

Site preparation has the potential to have a two-folded direct negative impact on air quality of the surrounding residential area. The first impact is air pollution generated from the construction equipment and transportation. The second is from fugitive dust from the proposed construction areas and raw materials stored on site. Fugitive dust has the potential to affect the health of construction workers, the resident population and the surrounding vegetation.

Mobile emissions from mechanical equipment such as graders and compactors could also lead to an increase in ambient levels of pollutants such as carbon monoxide, nitrogen oxides and particle emissions especially soot. These are known to cause nausea and headaches in humans when inhaled in large quantities.

Climate change impacts were assessed from two perspectives. Firstly the impact of the project on climate change and secondly the impact of climatic change on the project and its infrastructure.

Green House Gas (GHG) emissions from vehicular and construction equipment would be generated during the pre-construction, construction and subsequently, operational phases of the project. These emissions would be the primary impact of the project on climate change. GHG emissions are considered based on three "scopes" – Scope 1 (direct emissions), Scope 2 (indirect emissions) from the consumption of purchased energy [Purified Motor Spirit {PMS}, diesel] and Scope 3 (other indirect emissions).

This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

ANTICIPATED DUST SOURCES AT PROPOSED FACILITY SITE		
Vehicle and Equipment Use	**Wind Exposures**	**Contractor Activities**
• Sediment tracking off-site • On-site construction traffic • Vehicle and equipment entering and leaving the project site • Vehicle, equipment movement and use within the project site	• Bare ground areas • Spilled materials • Construction stockpiles • Soil and debris piles • Cleared and dug up areas • Excavated, filled, compacted or graded areas • Construction staging areas • Equipment service areas	• Materials handling including material stockpiling • Land clearing and grubbing • Earthwork including soil excavation, filling, soil compaction, rough grading and final grading

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Air Emissions	All Alternatives	No	Negative	2	1	6	4	36	Medium
		Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	• Minimize cleared areas to those that are needed to be used. • Whenever necessary, access road and exposed ground should be regularly dampened (every 4 – 6 hours) or within reason in a manner that effectively suppresses dust to prevent a dust nuisance and on hotter days, this frequency should be increased. • Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. • Oversaturated conditions which would cause outgoing trucks to track mud onto site approach roads should be avoided. Watering would not be necessary on days when there is high rainfall. • Limits on the speed of construction vehicles should be established and enforced to reduce on the generated dust. • Where unavoidable, construction crew working in dusty areas should be provided and fitted with respirators. • To ensure energy efficiency, machines e.g generator plants could be turned off when not in use, in order to reduce carbon emissions. • Effort should also be made to reduce on multiple trips during project implementation. Reduction in vehicular movement would also lower carbon emissions. • Hiring vehicles, plants and equipment that are in good condition (current models)								

	would also lead to reduced carbon emissions.
Reversibility	Yes

8.3.10 Traffic disruption

The transportation and use of heavy equipment and trucks is required during construction. Trucks will transport raw materials and heavy equipment. This has the potential to directly impact traffic flow along local roads (Mityana to Kampala Highway and Ntula Road). Construction process may necessitate the re-routing of some vehicular and pedestrian traffic and introducing traffic delays thereby increasing in travel time. Any re-routing of vehicular traffic has the potential to lead to increase fares. Increased accident potential from additional trucks traversing the main roads is also a possibility. Disruptions in traffic and reduced level of service due to increased large/construction vehicle on the roads may occur during this phase of project development.

Movement of heavy equipment and construction materials increases the risk of traffic-related accidents and injuries to workers and local communities. Dusting and spillages occur on the roadways between source and site during transportation. Dusting degrades local air quality and material spillages worsen road driving conditions and increase the risk of road accidents. Wear and tear on roads from loaded trucks transporting material and/or construction debris is also a cause for concern.

These occurrences represent indirect, short-term, reversible, negative impacts on public health and safety related to the project. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Traffic Disruption	All Alternatives	No	Negative	3	1	6	4	40	Medium
		Yes	Negative	1	1	4	3	18	Low

Mitigation Measures	• Inform and sensitize the community in advance of the anticipated impacts on traffic and roadways during construction. • Transport of construction materials should be scheduled for off-peak traffic hours. This will reduce risk of traffic flow disruptions on site approach road. • Appropriate traffic warning signs should be placed near the turn off to the site informing road users of construction trucks turning ahead and instructing them to reduce speed. • Loading of trucks for transportation of construction materials to the site must be within the permissible limits (guidelines) for Uganda National Roads Authority (UNRA) axel loads for the targeted roads. • Raw materials should be properly covered during transportation to the site to prevent spillage along the roadway. • The trucks should be parked on the proposed site until they are off loaded. • Heavy equipment should be transported early morning (12 am – 5 am) with proper pilotage. • The use of flagmen should be employed to regulate traffic flow. • Training and sensitization of personnel (drivers) in road safety and traffic regulations should also be done by the road contractors.
Residual Impact	No
Reversibility	Yes

8.3.11 Runoff

During the study, the EA team assessed how the project will affect the hydrology of the site and the surrounding areas, including water resources and other environmental sensitive areas. The assessment has identified the key hydrological aspects likely to be affected by the project construction activities. Preparation of the site for construction including clearance, grading, levelling and excavation works could expose soil to erosion by storm water. There could be increase in sediment load in runoff from the site to area drainage channels causing siltation. This could affect surface and subsurface hydrology if provisions to avoid impeding subsurface drainage are not provided. For example due to sedimentation the depth of drainage channels may be reduced leading to localised flooding.

Clearance of vegetation and levelling reduces the surface area for storm water infiltration hence increasing the extent of impervious areas. Therefore grading of the existing natural surface depressions or storm water paths which direct runoff to the area drainage channel will in the long run increase in volume, flow rates and velocities significantly. This increases the rate of soil erosion and sedimentation in the receiving drainage system.

Proper runoff of storm water plays a vital part in the natural hydrologic process of an area. Of concern is the fact that it usually contains numerous pollutants such as sediment, nutrients, bacteria, oil and grease, metals, plastics and miscellaneous waste that are being transported off the points of generation. The construction of the proposed school will have the potential to increase storm water pollutants particularly with soil thereby contaminating water channels.

This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Hydrological Impacts	No	Negative	3	1	8	3	36	Medium
	Yes	Negative	1	1	4	2	12	Low
Mitigation Measures	- The proposed project will maintain the existing natural drainage conditions. Hardscape areas such as roads and parking lot will capture surface water via curbs and channels and deposit in soak wells or sinkholes. Care should be taken not to deposit earth material and any other construction wastes into the area underground drainage channel as it may contain chemicals which will contaminate the water. - Site clearance for construction should be phased so as to minimize the area of exposed soil at any given time. - Temporarily bund exposed soil and redirecting flow from heavy runoff areas that threaten to erode or result in substantial surface runoff to area drainage channel. - Areas with exposed soils should be monitored during periods of heavy rainfall throughout the construction phase of the project.							
Residual Impact	Implementation of the proposed mitigation measures should leave no residual impacts.							
Reversibility	Yes							

8.3.12 Generation of revenue

Utility companies like UMEME (after the extension of electricity) will benefit from bills paid for electricity utilised during the construction phase (especially during welding). This is a **MEDIUM** positive impact that will continue into the operation phase of the project.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of Revenue	No	Positive	5	1	4	4	40	Medium
	Yes	Positive	5	1	4	5	50	Medium
Enhancement Measures	• The proponent should ensure that the utility company is promptly paid. • The local planning authority must play an important role in ensuring that the development slated for the area is monitored and implemented in an orderly and sustainable manner.							
Reversibility	No							

8.3.13 Aesthetics

Solid waste generation during the construction period can have a potential negative impact on visual aesthetics if improperly collected and stored on site. There is also the potential for vermin infestation if discarded food and food containers are present.

The significance of this impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE** once the recommended mitigation measures are implemented.

Impact	Alternative	Enhance-ment	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Aesthetics	All Alternatives		Negative	3	1	8	3	36	Medium
			Negative	1	1	4	2	12	Low
Mitigation	• Skips and bins should be strategically placed within the campsite and construction site. • The skips and bins at the construction campsite should be adequately designed and covered to prevent access by vermin and minimize odour.								
Reversibility	No								

8.3.14 Loss of biodiversity

The implications of the proposed development will be the removal of most of the vegetation onsite, habitat loss for fauna and soil exposure. Based on the classification from the floristic assessment, most species were either common or very common. No species was classified as endangered or protected. All species were checked against the International Union for Conservation of Nature (IUCN) red list.

The floristic assessment concluded that the study area is of little vegetative conservation significance for the following reasons:

- Most species listed as common/ very common
- No species appear to be threatened or vulnerable (one possible exception)
- The area is highly disturbed and under continuously threat from anthropogenic sources; it will remain this way unless there is some intervention.

Clearance of natural vegetation sometimes leads to introduction of some invasive species, thus affecting local ecosystems and reducing species diversity. Soil compaction (caused by erosion, water and nutrient loss) may also affect plant growth and the age structure of vegetation.

For the fauna, the most direct impact is loss of habitat for observed species. The area is subject to continued high level of human activity; hence it is harsh and highly disturbed. Not surprisingly it supported only a very limited number of invertebrates, lizards and bird species; the species here are very tolerant of anthropogenic impacts and it is expected that these will continue to thrive in other suitable habitats. With implementation of the suggested mitigation measures the significance will be reduced from **MEDIUM NEGATIVE TO LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Loss of biodiversity	**No**	**Negative**	**3**	**1**	**6**	**5**	**50**	**Medium**
	Yes	**Negative**	**1**	**1**	**4**	**4**	**24**	**Low**
Mitigation Measures	• Site clearance should be done in phases to minimize the size of bare land exposed to agents of erosion; • The exposed soils should be monitored during periods of heavy rainfall to prevent and control the possibility of soil erosion. • After construction, the proponent should re-vegetate and landscape site areas that would have been affected by construction activities. • On site drainage system must be constructed properly to reduce on the running water onsite hence reducing the impact of soil erosion.							
Residual impacts	Due to construction of the project, there is likelihood of minor residue negative impacts even after implementation of the proposed mitigation measures.							
Reversibility	Yes							

8.3.15 Impacts arising from increase in ambient noise levels

Site clearance for the proposed academy necessitates the use of heavy equipment to carry out the job. These equipment include bulldozers, backhoes, excavators etc. These possess the potential to have a direct negative impact on the noise climate. Noise directly attributable to site clearance activity should not result in noise levels in the residential areas to exceed 55dBA during day time (7am – 10 pm) and 50dBA during night time (10 pm – 7 am). Where the baseline levels are above the stated levels then it should not result in an increase of the baseline levels by more than 3dBA. Construction noise can result in short-term impacts of varying duration and magnitude. The construction noise levels are a function of the scale of the project, the phase of the construction, the condition of the equipment and its operating cycles, the number of pieces of construction equipment operating concurrently. To gain a general insight into potential construction noise impacts that may result from the project, the typical noise levels associated with various types of construction equipment are identified in Table 8-5.

Table 8-5: Typical construction equipment noise levels

Type of Equipment	Typical Sound Level at 50ft. (dBA Leg)
Dump truck	88
Portable Air Compressor	81
Concrete mixer (truck)	85
Jackhammer	88
Scraper	88
Bulldozer	87
Paver	89
Generator	76
Piledriver	101
Rock drill	98
Pump	76
Pneumatic tools	85
Backhoe	85
Source: Adapted from – Widening and Improvements of Route 101!: McFarland-Johnson, Inc, May 30, 2007	

This impact will be a nuisance to the surrounding population and environment. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Increases in Ambient Noise Levels	All Alternatives	No	Negative	3	1	10	5	70	High
		Yes	Negative	2	1	6	3	27	Low
Mitigation Measures	- Construction should utilize machinery that has low noise emissions as stated by the manufacturers. - Construction activities that will generate disturbing sounds should be restricted to day-time working hours. - Use equipment that is properly fitted with noise reduction devices such as mufflers. To ensure that the neighbours get accurate information on the planned construction works and schedule, a pre- construction meeting shall be set up by the contractors. - Workers operating equipment that generate noise should be equipped with noise protection gear. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs. - Taking advantage of the natural topography as a noise buffer during facility design especially planting or not cutting trees on site as trees can buffer noise. - Workers who fail to comply with safety guidelines should be terminated after repeated warnings are issued.								
Residual Impact	Though the impact will be reduced to low by the proposed mitigation measures, It is recognized that there may be some increases in noise levels locally during parts of the construction period due to cumulative activities.								
Reversibility	Yes								

8.4 Impacts arising from operation phase

8.4.1 Provision of school and medical facility in project area

The planned EAC academy will not only be the first secondary school in Ntula, but it is also the only one of its kind in the entire district. The school will offer students access to quality international standard education, increased number of teachers and improved training facilities within the project area and the district at large. Building a school can also produce many socio-economic benefits for the residents of the area where it will be located. These could range from job creation, market for farm produce and other goods and services, decreasing the daily transport time to schools in distant locations among others. The planned school (unlike many other traditional schools in the district) will have extra facilities (e.g health clinic, sports / events grounds, multi-purpose halls etc which will be open for community use – albeit at a nominal fee.

The project will positively impact health of Ugandans and the project communities through easing access to medical and other diagnostic services. It will help to enhance access to diagnostic services for vulnerable groups; improve capacity to provide specialized medical

services and conduct drug resistance monitoring; and strengthen laboratory based disease surveillance to provide early warning of public health events within the project area.

The significance of this impact is expected to be **HIGH POSITIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Quality Education	No	Positive	5	4	6	5	75	High
	None	Positive	5	4	8	5	85	High
Enhancement Measures	Appropriate staffing with technical/ medical personnel adequately trained in use of medical equipment.							
Cumulative Impact	No							
Reversibility	No							

8.4.2 Increase in ambient noise levels

Throughout the scholastic year, noise resulting from the school may be a disturbance to the residents in the surrounding areas. This will be mainly felt during the arrival and departure times and the recesses between classes. Mitigating this impact could prove to be highly difficult as students are interacting with each other outdoors. Fortunately, the noise will only be heard during short periods throughout the day and after school closes in the evening, there will be little or no noise from the facility. Noise from vehicles to and from the school may have negative impact on the surrounding residential community. Also, there is a tendency for schools to play loud music during competition events. Additionally, maintenance of school grounds may include the use of lawn mowers, which may cause a noise nuisance to residents. The use of a backup generator might also trigger an increase in area ambient noise levels whenever in use. However, maintenance will vary in locations on the property so any noise generated from lawnmowers will not be persistent. This is also true for generator use.

With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Increases in Ambient Noise Levels	All Alternatives	No	Negative	2	4	6	4	48	Medium
		Yes	Negative	1	4	4	3	27	Low

Mitigation Measures	• The proponent should use equipment in good working condition that emits low sound. Ensuring that equipment used are properly fitted with noise reduction devices such as mufflers. • Reduce unnecessary revving of vehicular engines. • No unnecessary honking of horns. • Institute guidelines as it relates to noise levels from loud speakers associated with school events.
Residual Impact	Though the impact will be reduced to low by the proposed mitigation measures, It is recognized that there may be some increases in noise levels locally during parts of the operation period due to cumulative activities.
Reversibility	Yes

8.4.3 Infrastructure and Services at the Facility

The facility will provide education and medical services and participate whenever feasible in community upgrade infrastructural projects e.g road, water supply etc. This is a long-term beneficial impact.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Infrastructure and Services at the Facility	**No**	**Positive**	**3**	**3**	**6**	**3**	36	**Medium**
	Yes	**Positive**	**6**	**4**	**8**	**4**	**72**	**High**
Enhancement Measures	▪ Ensure prompt payment of workers; and ▪ Employ the local people wherever possible. ▪ Provide quality services and promote use of natural products for construction.							
Cumulative Impact	No							
Reversibility	No							

8.4.4 Tax Revenue to Government

Operation of the school directly means improved tax revenue contribution to government. This will further facilitate the projected national economic growth indices. This is a long term **HIGH POSITIVE** impact.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Tax Revenue to Government	**No**	**Positive**	**5**	**4**	**4**	**2**	26	**High**
	Yes	**Positive**	**5**	**4**	**6**	**4**	**60**	**High**
Enhancement Measures	▪ Ensure prompt payment of taxes both to the central and local governments where appropriate.							
Cumulative Impact	No							
Reversibility	No							

8.4.5 Improved Site Aesthetics and Land Value

Development of the proposed project will improve visual impression of the project site - currently a Greenfield and uninhabited. The development will enhance land value on and around the site. This is a positive long-term and irreversible socio-economic impact.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Improved Site Aesthetics and Land Value	No	Positive	2	4	6	3	36	Medium
	Yes	Positive	4	5	8	4	68	High
Enhancement Measures	▪ Ensure that the area is left as natural as possible							
Cumulative Impact	No							
Reversibility	No							

8.4.6 Contamination from Oil Drippings

Engine oil drippings from parked vehicles would contaminate sweepings in the parking lots and would have the potential to pollute the nearby surface water stream when carried in storm water runoff. Improper disposal of the sweepings has potential to contaminate receiving areas. However since cleaning the parking lots would not be by hosing water down the drains *(wet cleaning)*, rather by sweeping *(dry cleaning)* and whenever a sizeable patch of dripped oil is encountered during cleaning, saw dust would be sprinkled over it before sweeping it away. This would be a negative impact with a **MEDIUM** significance.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Contamination from Oil Drippings	All Alternatives	No	Negative	2	4	10	4	48	Medium
		Yes	Negative	2	4	8	3	42	Medium
Mitigation Measures	• Sawdust used to contain oil drippings should be collected in marked bins and incinerated or disposed of as per NEMA recommendations on hazardous waste management.								
Cumulative Impact	No								
Reversibility	Yes								

8.4.7 Impact from Generator Servicing

The proposed academy will maintain power invertors and a stand-by generator for backup power supply onsite. Operating the generator will pose a waste oil challenge in addition to the

noise discussed in the earlier section, which would be generated from regular servicing to ensure efficient operation. This would be a negative impact with a **MEDIUM** significance.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Generator and Servicing Noise	All Alternatives	No	Negative	2	4	10	4	48	Medium
		Yes	Negative	2	4	8	3	42	Medium
Mitigation Measures	**Waste Oil:** • Servicing standby electricity generator should be undertaken by a firm with capacity to dispose of waste oil in an environmentally acceptable manner. • Oil spills should be contained with saw dust. • Sawdust used to contain oil drippings should be collected in marked bins and incinerated or disposed of as per NEMA recommendations on hazardous waste management.								
Cumulative Impact	No								
Reversibility	Yes								

8.4.8 Hazardous Substances and Effects from Pestcide Use

Operation activities at the academy will require the use of hazardous substances as identified in table 8-6. The school plans to implement a vermin control program on quarterly basis (every after three months) a week before the school opens for a term to ensure that the school is free from pests when school opens. Termites are controlled at construction stage by treatment of foundation of a new structure /building before construction starts. This avoids building damage by termites in the future. Vermin control will be carried out by a private fumigation company (see details in condition 6).

Table 8-6: Potential Impacts from Use of Hazardous Substances

Activity	Potential impact
Multi operations	Discharge of contaminants
Gardening / laboratories	Nutrient and chemical discharge to the aquatic environment
Use of pesticides	Impact on health and environment
Fuel handling	Discharge of contaminants
Clinic	Hazardous medical waste

The significance of this impact is anticipated to be **MEDIUM NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Hazardous Substances	No	Negative	4	4	6	3	42	Medium

	Yes	**Negative**	**1**	**4**	**4**	**2**	**18**	**Low**
Mitigation Measures	- All hazardous substances identified for disposal onsite should be collected in a sealable container and properly marked for transportation and eventual final disposal to a licensed hazardous waste disposal facility recognised and recommended by NEMA, the district and relevant lead agencies. - All vermin control staff will wear appropriate protective gear. - USAID guidelines on safer pest management also advise against use of outdated/ expired pesticides for any purpose and in compliance with above advice requirement, no expired chemicals will be used at the school for purposes of vermin control. - Utilizing advice of botanical experts, mosquito repelling plants will be identified and planted on the school campus. This may also apply to snake-repelling plants. Smell of the Pink Agapanthus and tobacco plant are also known to repel snakes. - Window screens and bed nets can be used in school buildings to keep out mosquitoes. - Mice can be trapped by baiting and trapping. Mice can also be prevented by keeping a clean indoor environment free from food crumbs/ waste that would attract mice.							
Cumulative Impact	No							
Reversibility	Yes							

8.4.9 Solid Waste Generation

Operation of the academy is likely to generate significant quantities of solid waste. These include food waste, plastic, papers and wrapping materials like polythene papers. If these wastes are improperly managed, they may cause unsanitary conditions with associated diseases or even end up in the neighboring channels therefore blocking the area drainage system. Leachate from decomposing (un cleared) dumpsters is a major source of pollution both for ground and surface water sources.

Operation of a medical clinic may lead to generation of medical waste which is often *hazardous waste.* Laboratory activities involve certain medical examinations and also there will be a need for usage of different sorts of chemicals or reagents, it can be concluded that different types of hazardous wastes shall be generated. Therefore, improper waste decontamination and disposal can cause public health risks due to environmental pollution: impaired air quality, stormwater contamination of water courses and infections when people or children rummage through improperly dumped infectious waste or raw waste stockpiles can be life-threatening.

The World Health Organization (WHO) classifies as infectious waste: sharps (needles, scalpels, etc.), laboratory cultures and stocks, blood and blood products, pathological wastes, and wastes generated from patients in isolation because they are known to have infectious diseases. Medical wastes can also include chemicals and other hazardous materials used in patient diagnosis and treatment. These constitute a grave risk, if they are not properly treated or disposed or are allowed to get mixed with other municipal waste. Examples of the types of bio-medical waste expected to be generated from the clinic during the operational stage are indicated in Table 8-7.

Table 8-7: Expected waste from the clinic

Type of waste	Waste description
Infectious solid waste	Items contaminated with blood and body fluids including cotton, pathological wastes, infected blood, patient samples and specimens
Microbiology waste	Culture; stocks and micro-organisms, containers and devices used for culture
Sharps	Needles; syringes, scalpels, blades, glass, etc
Disposables	Disposables other than sharps, e.g gloves, valves, add any other infected plastics
Liquid waste	Waste generated in the clinic / lab
Chemical waste	Chemicals used in the production of biological, laboratory reagents, film developer, disinfectants that are expired or no longer needed, solvents; outdated, contaminated and discarded chemicals
Incineration Ash	Ash from the incineration of any biomedical waste

Likelihood of the impact occurring is high once there are no proper hazardous waste management systems in place. It is a long-term impact, local and cumulative in nature hence the ***intensity*** of the impact will also be ***high.*** The ***sensitivity*** of receptors (for example, T.B and other chest-infection patients) due to improper medical waste management is ***high***, thereby giving a ***major*** impact significance. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Solid Waste Generation	No	Negative	4	4	8	4	64	High
	Yes	Negative	1	4	2	1	27	Low

Mitigation Measures	• A waste management plan has been developed and should be implemented during the operation phase of the project. It includes waste collection, storage, removal and disposal schedules. • Wastewater discharged from the clinic and laboratories shall be aggregated and eventually pre-treated prior being discharged into the sewerage system. • Appropriate waste bins will be provided for the different types of waste generated in the clinic and laboratory to allow segregation and collection at the point of generation. • Waste shall be collected from site at regular frequency (at least twice weekly), and it shall be done in such a way to minimize nuisance odours, vermin and dust • Clinic/ Laboratory staff shall be trained or educated on the importance and means of waste management and handling during operation. • The school administration shall work together with private refuse handlers and the district local government to facilitate sound waste handling and disposal from the site noting that hazardous waste must not be mixed with municipal waste. • Adequate waste collection containers or skips should be provided all around the academy. • Disposal of waste generated at the site should be contracted to a licensed contractor. • Organic waste can be carried away for use as manure in the farm or dumped in a pit in a secluded corner on the property. Inorganic waste should be collected and recycled or reused. • Minimize waste generation by promoting recycling where possible.
Cumulative Impact	No
Reversibility	Yes

8.4.10 Sewage Management

Sewage is expected to be generated during the operation of the academy. The number of visitors, users of facilities and service providers to the academy all will cumulatively lead to the large amounts of sewage. Improper storage and disposal of sewage generated at the facility would lead to unsanitary conditions onsite, polluting ground and neighboring surface water. This may even cause diseases such as cholera and dysentery. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Sewage Generation	**No**	**Negative**	**2**	**4**	**6**	**4**	**48**	**Medium**
	Yes	**Negative**	**1**	**4**	**2**	**1**	**27**	**Low**

Mitigation Measures	• Construction of good and sufficient sanitary facilities at the academy. Effort should be put in place to ensure that the toilets are always clean. • Waterborne toilets should be connected to septic tanks for proper management of generated onsite sewage. The tanks should be emptied periodically to ensure proper sanitation and hygiene onsite.
Cumulative Impact	No
Reversibility	Yes

8.4.11 Fire Risk

Inadequate fire safety precautions, equipment or awareness during operation of the facility could cause extensive damage in case of a fire outbreak. Fires can start from ignitable materials in kitchen, laundries, cigarette smoking in non-designated places or poor electrical connections. The damage could be loss of property or human life. Whereas damage to property is a reversible adverse impact, loss of human life is irreversible. It might not always be possible to avoid all potential sources of fire accidents hence the need to take precautions. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Fire Risk	**No**	**Negative**	**2**	**4**	**10**	**4**	**64**	**High**
	Yes	**Negative**	**1**	**4**	**4**	**2**	**18**	**Low**
Mitigation Measures	• A fire emergency management plan should be developed. • Fire escape routes should be provided and clearly marked with lit signals. • Install fire detectors, fire alarms and fire suppression system at all levels of the facility. • Install a hydrant system of adequate capacity to handle emergencies involving large fires. All buildings should have at least two extinguishers and possible accessibility to every part of the academy by the fire fighters in time of danger. • Undertake fire drills at the academy, at a minimum once a year. • Electrical installation on the facility shall conform to acceptable national safety standards.							
Cumulative Impact	No							
Reversibility	Yes/No							

8.4.12 Traffic Disruption

School operation will definitely increase the number of vehicles in the area. This is because there will be more vehicles to and from the academy. If proper measures are not put in place, there would be an increase in traffic in the area and even an increase in the risk of accidents. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

		Impact	Significance

Impact	Mitigation	Nature	Extent	Duration	Magnitude	Probability		
Traffic Disruption	No	Negative	2	4	8	4	56	Medium
	Yes	Negative	1	4	2	2	14	Low
Mitigation Measures	• Consultation should be done with Mpigi district when selecting access points to the academy. • Consultation should also be done with the district so that rumble strips (speed control humps) could be put at specified intervals along the access road to ensure safety.							
Cumulative Impact	No							
Reversibility	Yes							

8.4.13 Security

The academy may attract wrong doers, especially thieves, who may cause violent crimes resulting into loss of money, property and even human life. There may also be drunkenness or alcohol related crimes leading to assault or fighting. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Security	No	Negative	1	4	10	4	60	Medium
	Yes	Negative	1	4	2	2	14	Low
Mitigation Measures	• Better security measures such as lockable gates at every entry and exit; adequate lighting systems and lockable lockups should also be in place. • There should be full time security guards.							
Cumulative Impact	No							
Reversibility	No							

8.4.14 Resource consumption

Without adequate investment in conservation practices, the proposed facility may consume significant quantities of resources, especially firewood, electricity and water. For instance designing facility without ability to harness sun light for lighting, especially during the day, could lead to immense wastage of electricity. The school will rely on woodfuel for their cooking needs. Use of rudimentary cooking methods could lead to consumption of large volumes of firewood and carbon emissions. This is not only environmentally undesirable but it is also financially burdensome.

Impact	Mitigation	Impact					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Resource consumption	**No**	**Negative**	**3**	**4**	**6**	**4**	**52**	**Medium**
	Yes	**Negative**	**1**	**4**	**2**	**2**	**14**	**Low**
Mitigation Measures	- Employ energy conservation technologies during the operation of the facility. Some of these could include use of low-wattage fluorescent bulbs, finishing the interior walls in white reflective paint to enhance lighting and save energy and maximizing use of natural sunlight within the plant to the greatest extent possible. - The school kitchen will be fitted with energy efficient wood-burning stoves reducing the demand for firewood fuel and reduced carbon emissions. Initially the trees removed from the site for construction will be used for firewood. Once this source runs out, firewood will be purchased locally from the community. This will not only eliminate competition for resources but improve local economy and support the community. - Employ water conservation technologies like use of low water discharge (press down) taps that cannot be left running.							
Cumulative Impact	No							
Reversibility	No							

8.4.15 Occupational Health and Safety impacts

Some activities at the proposed school may pose occupational health and safety risks to students and staff. Therefore, in order to assess the effects of the proposed development in terms of health and safety aspects, occupational health and safety analysis was undertaken considering the possible sources, risks involved, how to prevent and control them.

Since no activity is taking place onsite, all impacts were predicted by identifying all possible sources, machinery to be used, working on heights or closed spaces, exposure to chemicals, then a risk assessment was undertaken with estimation of the magnitude, duration and possibility of occurrence of the expected impact.

An essential requirement for building any school is to provide a safe and healthy environment for the students, teachers, and all workers at the school. The following sections address public health and safety issues/ occupational health and safety issues associated with the proposed new school during operation phase.

Communicable disease

Communicable disease can be easily spread among students as they spend much of their time in contact with each other. The most common diseases at schools are measles, Hepatitis A, the common cold (flu), lice, and chicken pox.

Sanitary facilities

The characteristics and location of sanitary facilities has a significant impact on the hygiene and ultimately the health of students. For example, odors emitted from the facilities can be an intolerable nuisance on the students. It is therefore preferable that the school toilets be located on the southern side of the school (as the wind is northerly) and be at a distance from the

classrooms. Ventilation is a necessity in all toilets. The sanitary facilities should be positioned in an area where they can be constantly monitored and all floors should be non-slip.

Protection from intruders
Intruders to the school premise are always a possibility of threat. The only feasible ways to prevent these intruders is to build a fence around the school and provide security personnel. If possible, installing surveillance cameras may also serve to improve security.

Safety in classrooms, dormitories, offices and laboratories
Laboratories, classrooms, dormitories and office areas present more specific health and safety concerns than the other school facilities. These contain students at any time of the day, so they will entail exposure of the students to sharp tools, heavy material, electric wires and appliances, etc. All of these are hazardous if not handled properly and under careful supervision by staff and student heads.

Chalk dust
Chalk dust is a natural by-product of writing with a piece of chalk on a blackboard made mainly from calcium carbonate; this dust is non-toxic and is ventilated outside or settles to the ground. However, some of it is inhaled by the teachers and students, and usually gets trapped in the mucus layers of the throats and upper lungs. Although it is not considered harmful, it may trigger a reaction in people with chronic breathing problems such as asthma. In order to minimize this problem, teachers are encouraged to move students who suffer from respiratory problems away from the blackboard area. In addition, the board, trays, and erasers filled with chalk dust should be regularly cleaned.

Provisions for students with special needs
Children with special needs require not only specialized facilities that would make their school stress-free; they should also feel that they are the same as all other students. It is therefore highly advisable that they be designated specific locations. Students who are physically challenged should be made to feel welcome in every part of the school that their fellow students have access to special desks, and other provisions for the optically challenged and hearing impaired need to be available at the schools, in addition to handicapped toilets with wide doors and side railings.

With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Occupational and Health Safety Impacts	All Alternatives	No	Negative	3	4	8	4	60	Medium
		Yes	Negative	1	4	4	3	27	Low

Mitigation Measures	• There are several ways to reduce the risk of epidemics at the school. The most important is the general cleanliness of the building especially sanitary facilities. Another is the availability of a medical examination room, where a student suspected with a disease can be quarantined until a physician can examine them. • The school toilets should be located on the southern side of the school (as the wind is northerly) and be at a distance from the classrooms. • Adequate ventilation is a necessity in all toilets. • The sanitary facilities should be positioned in an area where they can be constantly monitored. In addition, the structure of the facility should not have any openings in the ground or on the walls in order to avoid any venomous animals such as scorpions or snakes to hide there. The tiles in the sanitary facilities should be non-slip while the type of paint easily maintained and cleaned. • Corners in rooms where dirt can accumulate should be avoided or kept clean as this can be a breeding place for vectors. • Stairs should have a railing and be accessible to handicapped and special needs students. It is preferable to have two sets of stairs at each end of the hallway. • Material coating for the walls and desks should be harmless, with no sharp edges. • The location, height, and type of electricity sockets should take into account safety of the students and employees at the school. • There should be a drainage system for each room to ensure dry floors, as well as tilting of the floors to ensure proper drainage especially in the laboratory. • Install fire escapes, emergency exits, as well as fire alarm and firefighting systems. Emergency exits signs should be distributed appropriately throughout the buildings at the school. • Flood mitigation measures should be taken into consideration when designing the school. • Some of the feasible ways to prevent intruders is to build a high fence around the school and provide a guardhouse with a security personnel near the entrance. If possible, installing surveillance cameras may also serve to improve control of the entrances and exits. • Chemicals in laboratories should be stored and disposed of in a safe manner. There should be Material Safety Data Sheets (MSDS) regarding all chemicals found in the laboratories accessible to all students.
Residual Impact	No
Reversibility	Yes

CHAPTER 9.0: CUMULATIVE IMPACTS

Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that is the focus of the cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time. Thus the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource. Cumulative impacts are also assessed in terms of the incremental effect that acts cumulatively with the effects of other actions, either past, existing or future. The existing populations at Ntula along with the new developments in the area from Nswanjere, Lulumba to Muduma are considered in the cumulative impact assessment of this project.

9.1 Noise and Vibration Effects

Cumulative noise impacts are assessed in terms of traffic-related noise and a general increase in urbanization in the Ntula area. The commercial area at Lulumba will also add to this urbanization of the area particularly the proposed clinic which will generate much traffic due to the long distance of both east and west of other existing medical centres. It is expected that the existing residents of Ntula will no longer enjoy the levels of peace and tranquility currently that they have experienced for years. The cumulative impact can hence be both positive and negative.

9.2 Air Quality and Dust Effects

Implementation of the proposed project would result in short-term impacts to air quality associated with construction and long-term impacts associated with increased vehicle traffic. These will be most felt by the existing residents along the existing feeder road. Implementation of appropriate mitigation measures will reduce potential short-term impacts related to construction, however these will not completely mitigate for them.

9.3 Traffic and Transport Effects

The development will include only one entrance from the feeder road. This is likely to result in a cumulative impact of traffic over time as increasingly more residents move into the area. Development of other projects in the project area also calls for improvements in the public transport system which will experience an overall increase in demand.

9.4 Fire and Police

The proposed project is expected to increase demand on police protection and fire and emergency services. The local government will need to examine and address the need for additional police services and recommend methods to maintain acceptable service levels.

9.5 Education

The proposed project, as well as foreseeable future projects, will contribute to the cumulative need for additional school facilities. This is particularly related to secondary level education which is already limited in Nswanjere to Muduma area. Provision of additional primary and secondary educational facilities should be taken under consideration in the long term development plan of this area as it is projected to develop even further.

9.6 Vegetation and Wildlife

Development of this project, combined with other developments close to Lwamunda CFR within the immediate Ntula vicinity, will contribute to the loss of forests through land clearing and an increase in human presence in the area. Continued development in the area surrounding Ntula/Nswanjere would extend bare areas once characterized by natural habitats and utilized by some endemic plant and wildlife species into housing and commercial developments. Although the development plan for the project allows for the retention of some existing vegetation, the construction of structures means loss, sensory alienation and fragmentation of habitat and direct mortality due to increased traffic.

9.7 Visual Impact and Aesthetics

The proposed project will contribute to the change in visual character of the area. While the project site presently represents a Greenfield in a mostly undeveloped area the proposed school project would incrementally contribute to the development of Ntula from a rural growth area to that of suburban nature. These visual changes will be most evident to the existing residents of Ntula. In conjunction with other existing, developing or planned developments, the project's contribution to the loss of a vegetated area would represent a cumulative impact.

9.8 Rainfall Runoff

The flash flooding that sometimes characterizes the downslope areas close to the boundaries of Lwamunda CFR could have a long term impact within the project area. The development of the hillsides (e.g the proposed academy) as well as more intense rainfall events will increase runoff coming unto the site in the future. Due consideration should be given to improving existing area drainage systems.

CHAPTER 10.0: RESIDUAL IMPACTS

Impacts that would occur as a result of different phases of the project and how the proposed mitigation measures would contribute to minimizing or eliminating the impacts are described under chapter 8. Not all impacts can be fully mitigated and therefore residual impacts will be experienced by the environmental and social receptors affected by the project. These are discussed below.

10.1 SITE PREPARATION AND CONSTRUCTION

10.1.1 Air Quality

Fugitive dust and emissions from machinery and equipment have the potential to affect the health of construction workers and the resident population. Both types of impacts will be of low intensity and of relatively short duration.

10.1.2 Traffic

Project construction activities may introduce traffic delays thereby increasing the travel time. Negative impacts on traffic are expected during the construction stages, including reduced level of service in the areas around the proposed site due to increased large/construction vehicles on the roads (Mityana to Kampala Highway and Ntula Road).

10.1.3 Heritage and Cultural

The proposed project area has dense vegetation cover. When this vegetation is removed from the proposed site, there is the probability of finding historic and cultural material. There is the possibility that they may be destroyed by heavy machinery and equipment during the site clearance process.

10.2 OPERATION

10.2.1 Noise

The proposed project has the potential to be a noise nuisance during both the construction and the operation phases. Even with the proper mitigative steps, short-term noise impacts of varying duration (such as mowing of lawns) will be a nuisance to surrounding residential communities.

10.2.2 Unmet Employment Expectations

Because of the high unemployment rate in the area and in the country in general, residents in directly affected communities who are unsuccessful in securing a job are likely to become frustrated when they do not gain employment on the proposed project. This could create resentment and possibly hostility towards those who are successful in getting jobs, and even towards the proponent. The possibility also exists that there will be resentment towards the proponent arising from perceptions of bias in the recruitment process.

10.2.3 Accidents involving community members

The possibility exists that accidents involving community members will occur at some stage during project construction. This could be traffic-related, or other accidents. A residual impact is created in terms of diminishing the standard of living for a person, negatively impacting his or her household.

CHAPTER 11.0: MONITORING PLAN

This section of the report presents a Monitoring Plan for the development of EAC Academy. This monitoring plan has been developed to ensure that the environmental and socio-economic mitigation measures that have been recommended are implemented and are effective, as well as to identify any unanticipated impacts that might arise as a result of the project. The proposed implementation schedule for this monitoring plan is incorporated in the environmental and social management plan given in section 12 of this report. Monitoring and mitigation of impacts during the implementation of the project will require coordinated scheduling of activities between Environment Inspectors and the consultants who will be identified for that role by the proponent, as well as regular reports required by USAID / NEMA. Water quality and ecological parameters that may be affected by construction and operation of the development will be monitored with the necessary fieldwork component to provide the data as needed. Field observations and measurements will be correlated simultaneously with weather prevailing conditions, so that any change in weather can be compensated for, and unwanted impacts can be avoided. Random photographs (and aerial surveys where possible) will also be taken at regular intervals.

In order to abide by the terms of the environmental conditions and standards set by the authorities, and certify satisfactory completion of the project, it will be necessary to perform monitoring activities on among others water quality, specifically Turbidity, Total Suspended Solids (TSS), and Dissolved Oxygen (DO) during the implementation and post construction phases of the project. Samples will be collected at various locations (approved by the Environment Inspectors) twice during the first week of operation, weekly and then at fortnightly, depending on the nature of the activities being carried out at the time. Monitoring will be carried out more frequently as required if the results of initial monitoring suggest that there is a potential threat to the environment.

The information from the monitoring exercise will be used by the consultant to guide EAC regarding the efficacy of the mitigation measures being implemented. Any changes required to enhance the effectiveness of existing mitigation actions would then be recommended. Monitoring reports will contain the results of water quality and ecological examinations, as well as photographic monitoring carried out, in the period preceding the report, as well as recommendations for action, if required, for improving the construction process from an Environmental perspective.

11. 1 Environmental Parameters

11.1.1 Air Quality

The development may have a negative impact on the air quality in the area during the site preparation, construction and to a greater extent in the operation Phase of the development. The main impacts to air quality during the site preparation construction phases will be due to the increase in dust and the increase in the vehicular traffic. It is therefore necessary to monitor the PM_{10}, No_x and So_x levels in the area at different intervals during these phases to ensure that the levels of these pollutants remain within the parameters being proposed in the Draft National Ambient Air Quality Standards. The values recorded can also be compared with the World Health Organization's (WHO) air quality standards as well, shown in Table 11-1 below. The operation phase is also expected to have a major impact on air quality and it will be necessary to intermittently monitor the air quality of the area to ensure that the levels of pollutants in the area are within the air quality standards.

Table 11-1: The World Health Organization's (WHO) Air Quality Guidelines

Pollutant	Averaging Time	Standard (g/m^3)
PM_{10}	Annual	20
	24-hour	50
NO_2	Annual	40
	1-hour	200
SO_2	24-hour	20
	10-minute	500

Source: World Health Organization (2007)

11.1.2 Noise and Vibration

Noise and vibration levels will have to be monitored especially during the construction and operation phases due to the use of heavy-duty construction machinery as well as the increased traffic to the area. It is therefore imperative that the noise and vibration of the area is monitored to ensure that the standard ambient noise levels are not exceeded. The World Health Organization (WHO) has released various guidelines for community noise. One such figure is 50dB LA_{eq} for outdoor living areas, although it suggests that this value can be up to 55dB LA_{eq} in some circumstances. The national noise standards which may be used in the monitoring activities are given in section 4 of this report.

11.1.3 Water

11.1.3.1 Water Quality – Terrestrial (Surface and Groundwater)

The development in both the construction and operation phases may have a major long term negative impact on the water quality (surface, groundwater and terrestrial) in the areas. It is critical that the water quality in all these areas be monitored consistently to ensure that they are in keeping with the required standards as stipulated by the Water Act and the Standards for Discharge of Effluent. In order to maintain the water quality in the surrounding water sources that could be impacted by project activities (e.g surface stream), it is imperative that the effluent must be monitored to ensure that the effluent is meeting the required effluent discharge standards as stipulated by the NEMA Regulations.

11.1.3.2 Water Quantity

A significant amount of water will be used in the daily operation of the school and its auxiliary activities. It is important therefore to ensure that the residents of the surrounding communities are not affected by this daily use of water and that adequate water is being supplied to these residents.

11.1.4 Soils and Geology

The soil quality and quantity at the development site has to be monitored especially during the construction phase of the development to determine the levels of soil erosion and the change in soil quality and chemistry. During the operation phase, soil chemistry has to be monitored periodically to determine the change in the baseline parameters which may be indicators of contamination owing to operation and maintenance activities the during the functional phase of the school.

11.1.5 Ecology

It will be important to ensure that the all mature trees, where possible are retained during the site clearance and construction phase of the development and that any protected species once encountered or observed are captured and released or handed over to the authorities. It will

also be critical to ensure that where ‘green-belts’ are included in the masterplan design, that these are sufficient to maintain the populations of animals that will exist in the area during the development. Where fencing has been put in place for the delineation of these areas, it will be necessary to monitor these areas to ensure that there is not secondary encroachment into these areas. Ecological surveys should be undertaken to effectively assess the changes to the ecology of the area during the various stages of the development.

11.2 Socio - Economic Parameters

The socio-economic parameters pertaining to the project will also have to be monitored to ensure that the mitigation measures recommended are offsetting any negative impact identified or enhancing positive socio- economic impacts. The implementation schedule for the monitoring of these parameters is shown in the ESMP in section 12.

11.3 Hazards

The hazards that may be associated with the project also need to be monitored consistently to ensure that all recommendations have been implemented to reduce the impact of these hazards. The implementation schedule for the monitoring of these hazards is shown in ESMP in section 12.

CHAPTER 12: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

12.1 Introduction

This environmental-socio management plan (ESMP Table 12-1) for proposed construction works and operation of the academy (school), identifies potential environmental and social aspects that should be monitored. It identifies parties responsible for monitoring actions, associated costs, indicators and training or capacity building needs and reporting. Various aspects of the ESMP are detailed in sections below.

12.2 INSTITUTIONAL ARRANGEMENTS

a) Institutional structure and responsibilities

Institutional responsibility of implementing this ESMP will rest with the Project Coordination Unit, PCU (or Task Team) at EAC. A key role of the unit would be among others, to review consultants' reports for compliance with the ESMP. Other roles will be:

a) Monitoring implementation of mitigation actions by contractors
b) Coordinating training and capacity building where planned
c) Periodically report to NEMA about implementation of the ESMP

The Project Coordination Unit is led by a Project Coordinator (PC), assisted by a Deputy Project Coordinator (DPC) under whom will be Component Coordinators (CC) each for areas such as Human Resource, Health Infrastructure, Leadership & Management, etc. Under CCs are Focal Persons (FP) who have supervisory roles and are responsible for collecting information about respective components. Supervision of implementing this ESMP will be under the school management. EAC should ensure that all its personnel to be involved in implementation of this ESMP are adequately qualified and are appointed based on their qualification and suitability for respective roles. Training (whenever needed) should be offered for respective staff.

Oversight to ensure mitigation actions are implemented will rest with the Project Coordination Unit. EAC shall require contractors to comply with this ESMP and where a contractor has an Environmental Officer she/he will undertake environmental supervision during construction. However, since construction duration is short (1 year) where a contactor does not have an Environmental Officer the supervising engineer or site manager/ contract manager should be given environmental orientation relevant to this ESMP so as to execute required environmental supervision roles. This might not be necessary if the supervising engineer has working environmental knowledge (most civil engineers do). Additionally a staff member should be nominated to represent client's environmental objectives and interests during construction phase. As a hiring criterion, such a person should have a background in environmental issues, particularly associated with construction projects.

In each District is found a District Environment Officer (DEO) responsible for overseeing environmental protection on behalf of NEMA. However in town councils and municipalities, this role is undertaken by Town- and Municipal Environmental Officers respectively. These will have implementation and monitoring roles during execution of this ESMP. Usually, these officials lack adequate facilitation so the project will need to provide auxiliary financial assistance for them to have effective participation in this project. This has been provided in the ESMP.

b) Monitoring and reporting arrangements

Monitoring will verify if predicted impacts have actually occurred and check that mitigation actions recommended in the EA are implemented and their effectiveness. Monitoring will also identify any unforeseen impacts that might arise from project implementation.

Who monitors and how: Monitoring will be undertaken by EAC (PCU) and Environmental Officers who represent NEMA at local government administration. Monitoring by NEMA in this case can be considered "third party monitoring" but this is its regulatory mandate according to Sections 6 and 7 of the National Environment Act (Cap 135). USAID as the donor may also monitor project implementation. Another government agency that may undertake "third party monitoring" is the Occupational Health & Safety Department in Ministry of Gender, Labour & Social Development (MGLSD). This unit has authority to inspect any facility for compliance with national requirements on safety in workplaces. The project shall make no funding to MGLSD since this is provided for in its annual budget.
Monitoring will be done through site inspection, review of grievances logged by stakeholders and *ad hoc* discussions with potentially affected persons (construction workers, residents near the school, students, teaching, healthcare and other general staff). At each monitoring, a discussion with a chairperson of environment committee of the area's local council (LC) could provide insight into views and grievances community has about the project.

Frequency: Monitoring will be undertaken monthly over the 1 year construction period.

Audits: Audits will be necessary both during construction and project operation. While construction audits will aim to verify compliance to impact mitigation requirements, post-construction audits are a regulatory requirement within 12 months and not more than 36 months after completion of construction, according to national EIA Regulations, 1998 Section 31(2).

Since construction duration is estimated to be 1 year, this ESMP has included a budget for **1 year's** construction audit and a separate provision so that from year 2 to 5th (4 audits) audits done are a full environmental audits as per Uganda requirements. Both construction and post-construction audits can be conducted internally (by EAC) or by a consultant hired by EAC. If undertaken by a hired consultant, a budget has been proposed for both in this ESMP.

Reporting: Concise monthly/quarterly monitoring reports should be compiled by EAC's Project Coordination Unit (PCU) and shared with interested stakeholders. Construction- and post-construction phase auditing should culminate in reports that EAC shall share with NEMA or other interested stakeholders. Note that while EAC is under no obligation to disclose construction phase audits, annual post-construction audits must be submitted to NEMA as a regulatory requirement as per Section 31(2) of National EIA Regulations, 1998.

12.3 GRIEVANCE MECHANISM

This section describes avenues for affected persons to lodge a complaint or express a grievance against the project, its staff or contractors during project implementation. It also describes the procedures, roles and responsibilities for addressing grievances and resolving disputes. Every aggrieved person shall be able to trigger this mechanism to quickly resolve their complaints.
The objectives of the grievance process are:

a) Ensure that appropriate and mutually acceptable corrective actions are identified and implemented to address complaints;
b) Verify that complaints are satisfied with outcomes of corrective actions;
c) Avoid the need to resort to judicial proceedings.

The grievance mechanism will be fed from three main sources:

a) Community residents, students or staff.
b) Supervising engineer, PCU or contractor.
c) Monitoring team who will forward issues/concerns identified in the field.

Steps of the grievance process are described below. A flow chart outlining the main actions and decision points is shown in Figure 30.

Step 1: Receipt of complaint

A verbal or in written complaint from a complainant will be received by the PCU and recorded in a complaints log s(he) keeps on site. The log will indicate grievances, date lodged, action taken to address complaint or reasons the grievance was not acted on; information provided to complainant and date the grievance was closed. Grievances should be lodged at any time, either directly to the PCU or through the Local Council Chairperson. The process for lodging a complaint is outlined below:

- PCU receives complaint(s) from complainant and records it in log (in English).
- PCU reads the recorded complaint translating it into local language for the complainant to confirm correct detail of complaint has been documented.
- Complainant signs the log to confirm grievance was accurately recorded.

Step 2: Determination of corrective action

If in its view, a grievance can be solved at this stage, the PCU will determine a corrective action in consultation with the aggrieved person. Remedial action(s) and timeframe within which they must be accomplished has been described and the party responsible for implementing them will be recorded in the complaint log.

Grievances will be resolved and status reported back to complainants within 5 days. If more time is required this will be communicated clearly and in advance to the aggrieved person. For cases that are not resolved within the stipulated time, detailed investigations will be undertaken and results discussed not more than 1 month from lodging a grievance.

Step 3: Meeting with the complainant

The proposed corrective action and the timeframe in which it is to be implemented will be discussed with the complainant within 5 days of receipt of the grievance. Consent to proceed with the corrective action will be sought from the complainant and witnessed by a local council chairperson (LC Chairman).

Step 4: Implementation of corrective action
Agreed corrective action will be undertaken by the project or its contractor within the agreed timeframe. The date of the completed action will be recorded in the log against the complainant's grievance.

Step 5: Verification of corrective action
To verify satisfaction, the aggrieved person will be asked to return if not satisfied with the corrective action.

Step 6: Action by EAC and project contractors
If the PCU cannot solve the grievance, it will refer it to EAC top management (and contractor) through the Supervising Engineer. It is believed all possible grievances can be solved at this level.
The grievance process to be followed is depicted in Figure 30.

Figure 32: Suggested Project Grievance Mechanism

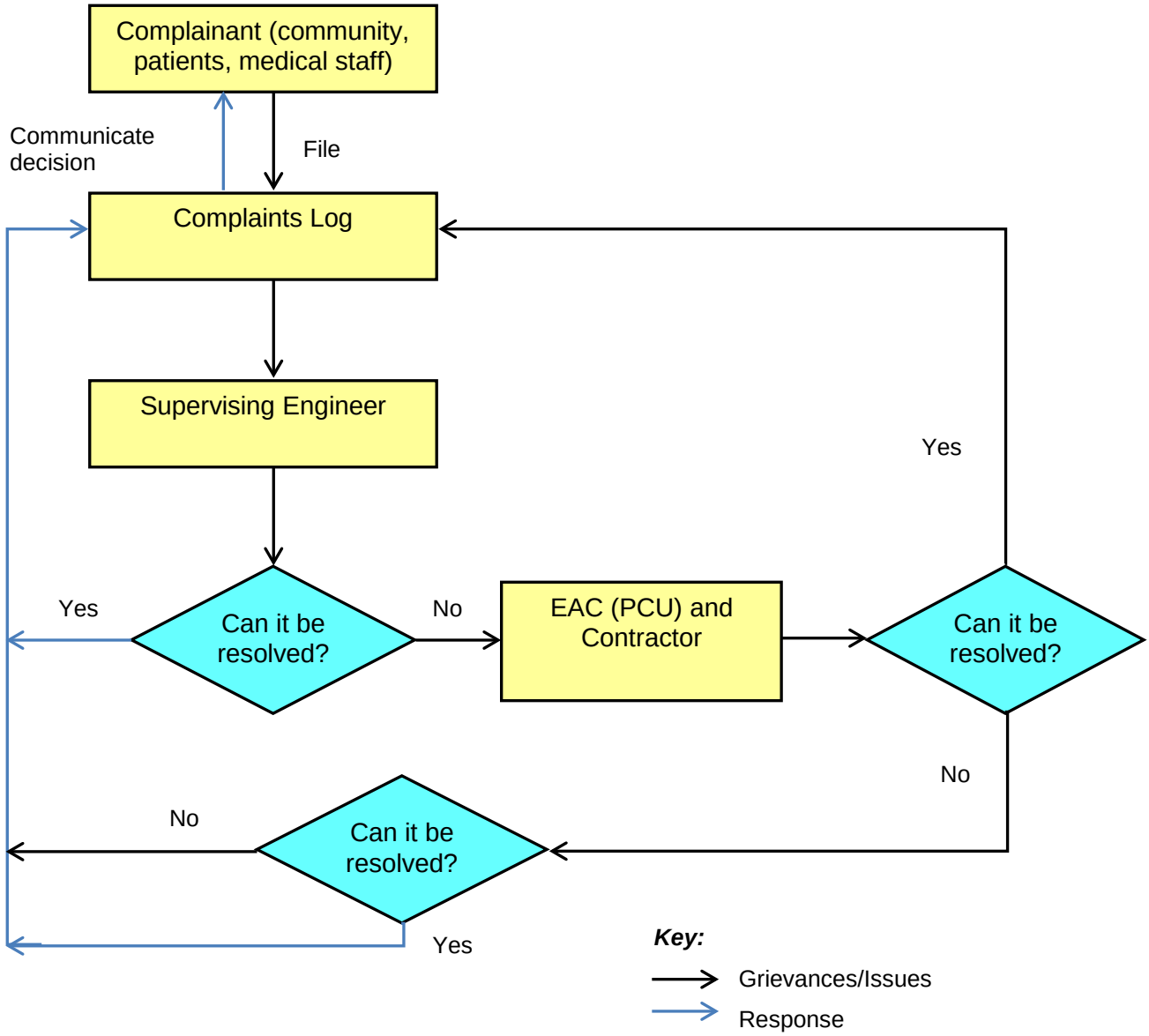


Table 12-1: Environment and Social Management Plan

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Construction Phase						
Sanitation	- Site workers to be provided with proper sanitary facilities - Ample number of ecosan toilets to be strategically located onsite throughout the construction period for site workers	Proper onsite sanitation	Waste material onsite	Throughout the construction period	Contractor	None
Water pollution	- Prevent pollution during construction at all cost. - Minimize planned construction duration to avoid rainy season. - No cement mixing to take place on sloppy terrain or storm water paths.	Prevent pollution of watercourses from onsite construction activities	Water quality onsite	Throughout the construction period	Contractor	None
Drainage Modification	- Development of a well planned drainage system to ensure that water flows freely without being cut off	Prevention of onsite flooding	Velocity of run off	Throughout the construction period	Contractor,	None
Construction equipment and vehicle maintenance	- Use of properly serviced equipment onsite. - Vehicle maintenance to be carried out in a bunded area to prevent pollution of soil and watercourses	Prevention of pollution	Water and soil quality	Construction period	Contractor / Project Engineer	Staff training

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Loss of vegetation and habitat	Site clearance should only be limited to areas where project components or structures are going to be set up. After construction, the developer should re-vegetate and landscape site areas that would have been affected by construction activities.	No loss of vegetation	Vegetation onsite and surrounding area	During site preparation and construction	Contractor	None

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Contamination of adjacent surface water sources	Install and regularly empty sediment traps in surface drains before joining adjacent and natural storm water drains; Develop and implement a site construction waste and wastewater management plan; Safe and proper storage, handling, use, cleanup, and disposal of oils, fuels and other chemicals; Develop spill response plan including equipment and training; Install wastewater treatment facilities to treat wastewater from workers` camp.	Prevention of water contamination	Change in water color Increases in temperature Increased Suspended Solids	During site preparation and construction	Contractor DWRM MDLG NEMA	Training of workforce on sanitation, safety and environment matters
Creation of quarries and borrow pits	Use existing borrow pits and quarries, wherever possible. Ensure progressive rehabilitation of all excavated / spoil areas	Restoration of affected areas	Visual observation	Throughout the construction period	Contractor / Project Management through suppliers	

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Occupational hazards	Personnel should be provided with special PPE for use, A first aider and first aid boxes should be available on site to handle minor accidents, Ensure that at all times there are quick means of ambulating victims to the nearest health facilities	Safe working environment	Record of injuries	Throughout the construction period	Contractor	Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities.
Soil erosion and sedimentation	Place retaining structures to control and manage the stockpiled earth materials. Monitor the quality of the water visually on a daily basis during the construction period.	No water pollution	Amount of erosion and sediments being released particularly into water courses Color of water	Throughout the construction period	Contractor	Train workers to observe surface velocity of storm water runoff and amount of sediment release.
Pressure on social infrastructure	Provide services like sanitary facilities and health care to workers so as not to cause pressure on local services. Whenever possible priority should be given to local people when hiring workers.	No strain on social infrastructure	Number of workers coming from other areas	Throughout the construction period	Contractor	
Increase of disease rate incidences	Develop a strict code of conduct for workers to regulate their behaviour, Develop and implement an HIV/AIDS or generally STDs prevention programme for the construction workers.	No infections	Record of diseases cases	Throughout the construction period	Contractor	Improve of workforce OHS and sanitation
Generation of	Use well-conditioned	Desired /	Record of	Throughout	Contractor	

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
noise	equipment.	regulated ambient noise levels	complaints Amount of noise being created during construction hours and days Frequency of disturbance to area occupants	the construction period		
Use of hazardous material	Collection and proper storage in preparation for final disposal at zoned dumping site by a licensed waste handler Consider use of alternatives (e.g preservatives	No use of hazardous material	List of hazardous materials	Throughout the construction period	Contractor	
Climate change impacts (GHG emissions)	Fuel switching or transition to renewable energy sources where applicable. Energy efficiency Multiple trip reduction Hire of vehicles / equipment in good condition	No carbon emissions	Compliance to proferred mitigation measures	Weekly (throughout construction period)	Contractor EAC	
Generation of solid waste	Designate appropriate waste storage areas, collection and removal schedule	No litter	Waste collection facilities	Throughout the construction period	Contractor	
Dust and other air emissions	Trucks used for ferrying construction materials should be fitted with tailgates that close properly and covered with tarpaulins Use properly serviced machinery	Permissible emission levels	Record of complaints	Throughout the construction period	Contractor	
Loss of topsoil and soil compaction due to movement of vehicles to site	Limit zone of vehicle and equipment weight impacts (designate an area for parking and stacking equipment).	No soil compaction and loss	Visible demarcation of vehicles and equipment limit zone	Throughout the construction period	Contractor	

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Traffic accidents	Drivers must be trained to appreciate the likely social behaviour of rural inhabitants towards vehicles	No accidents	Record of accidents	Throughout the construction period	Contractor	Drivers` code of conduct
Waste generation	Develop a waste management plan	No litter	Available of waste collection facilities	Throughout the operation period	Proponent, NEMA, MDLG	Waste management practices
Occupational hazards	Provide employees with protective gear	No accident, injury and disease	Cases of accidents, injuries and diseases	Throughout the operation period	Project management, NEMA, MDLG and Occupational Health Department.	Occupational health and safety practices training
Risk of fire	A fire management plan will be put in place with fire extinguishers available around the entire academy	No fire outbreak	Record of fire outbreaks	Throughout the operation period	Proponent, NEMA, MDLG and Uganda Fire Brigade Police	Adequate training about Fire safety, prevention and control
Traffic Disruption	Develop a code of conduct with drivers to ensure safety of other road users	No accidents	Record of accidents	Throughout the operation period	Project Management and MDLG	Training traffic laws and guidelines
Air emissions	A speed limit for drivers should be introduced and enforced to reduce dust generated by over speeding	Controlled emissions	Record of complaints	Throughout the operation period	Project management	None
Fire Risk	Areas with risks of fire outbreaks should have fire extinguishers; Project workers should have basic training in fire control. Electrical installation on the plant shall conform to acceptable national safety standards Develop a fire prevention and response plan	No fire outbreak	Number of fire outbreaks	Throughout the operation period	Project management. Uganda Fire Brigade Police, DEO.	Fire prevention and control measures
Air emissions	A speed limit for drivers	Controlled	Record of	Throughout	Project	None

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
	should be introduced and enforced to reduce dust generated by over speeding	emissions	complaints	the operation period	management	
Occupational health and safety	Maintain walking and working surfaces clean and dry Provide employees with the necessary personal protective gear and equipment, Install appropriate fire fighting equipment	Good and safe working environment	Record of injuries and complaints	Throughout the operation period	Project management DEO, MoGLSD, NEMA	Occupational health and safety measures
Waste generation	Develop a waste management plan	Proper sanitation and good waste management	Availability of waste collection facilities	Throughout the operation phase	Project management	None
Traffic disruption	Transportation shall be scheduled for off-peak traffic hours, as far as possible.	No traffic disruption and accidents	Record of traffic accidents Record of complaints	Throughout the operation phase	Project management	Driver's code of conduct
Resource consumption	Practice resource conservation techniques	Reduction in utility bills	Increasing utility bills	Throughout the operation period	Project management	Resource Conservation Skills
Improper Sewage Disposal	Construct onsite Septic tanks	Proper sanitation and housekeeping	Over flow of septic tanks	Throughout the operation period	Project management	None
Water quality **Sub total**	Prevention of pollution of water courses (as indicated above)	Prevent pollution / contamination of water resources	Parameters: pH, BOD, COD, coliforms, dissolved oxygen, temperature, etc	Throughout the operation period	Project management NEMA, District Environment Officer.	Waste handling practices, sanitation, safety

12.4 Estimated Cost

The cost estimates for implementing the ESMP will be determined and integrated into the project overall cost. The intervention costs incurred will be due to tests, analyses, monitoring, capacity building, training, general maintenance, among others.

12.5 Testing the efficacy of the ESMP

The academy management will work with the supervisors to implement a monitoring programme that will seek to test the efficacy of the above management plan. The monitoring programme developed will be both active and reactive. Active monitoring will include the following:

a) Development of an audit checklist
b) Monitoring the specific indicators of the success of the ESMP in terms of anticipated results and environmental performance
c) Systematic and scheduled inspection of hotspots and workplace areas
d) Monitoring workers health and safety systems
e) Monitoring for compliance with environmental legislations and other laws governing the development

On the other hand, reactive monitoring will include the following;

a) Safety of workers
b) Occurrence of incidents and accidents at the work place
c) Emergency response
d) Damage to property

CHAPTER 13: RECOMMENDATIONS AND CONCLUSION

The proposed academy brings to Uganda's education system a unique teaching approach that blends international standards curriculum, vocational training, ICE technology, arts and healthcare to benefit mostly orphans and poor students that are commonly excluded from the education system due to lack of financial support. This gap denies HIV-positive orphans a chance to live a full active life, possibly as long as an average adult would.

The proposed project will have significant positive environmental and social impacts on the surrounding communities in direct confluence of Muduma in Mpigi district. The academy will benefit the communities in Ntula, Nswanjere, Muduma and other parts of Mpigi by boosting the living standards, improving access to education, healthcare and market for goods and services produced in the surrounding areas. It is expected to increase student and staff welfare, improve number of teachers in the district, create employment (both skilled and unskilled people), increase revenue for the local authority, utility and other service providers, provide income to material /goods suppliers for project development (i.e. planning and design, construction and operation phases).

Some potential negative impacts have been identified for the project, the majority short term and relating mainly to site preparation and construction. Key potential negative environmental impacts include: safety and health, disruption of traffic, generation of noise, generation of waste, GHG emissions, generation of dust, modification of drainage and fire risks. For most of the negative impacts that have been identified, measures have been developed to either eliminate or minimize these potential impacts.

Implementation, monitoring and enforcement of the mitigation measures that are recommended in this report and improved communication to the wider community, will ensure successful execution of this development with minimum negative impact on the environment.

BIBLIOGRAPHIES

1. USAID Environmental Guidelines (as updated)
2. The Environment Impact Statement for the Empower Children's Academy
3. Constitution of Republic of Uganda, 1995
4. The National Environment Act (Cap 153)
5. The Environment Impact Assessment Regulations, 1998
6. State of Environment Report for Uganda, 1998: NEMA
7. The Republic of Uganda: The Environment Act.
8. The Republic of Uganda, 1999: Standards for Discharge of Effluent into Water or on Land) Regulations.
9. The Republic of Uganda (1998) Environment Impact Assessment Regulations.
10. The Water (Waste Discharge) Regulations 1998.
11. The Republic of Uganda, 2001: The National Environment (Minimum Standards for Management of Soil Quality) Regulations.
12. The Republic of Uganda, 1998: The Discharge of Effluent into Water or Land Standards Quality.
13. The Republic of Uganda, 1999: The National Environment (Waste Management) Regulations.
14. Uganda Bureau of Statistics (2002). 2002 Uganda Population and Housing Census: *Provisional results*.
15. National Environmental Management Authority (2004). Environmental Legislation of Uganda.
16. The Republic of Uganda (2005). Education Sector Strategic Plan 2004-2015, Ministry of Education and Sports.
17. The Republic of Uganda (2005). Uganda Educational Statistics Abstract, Vol. 1, Ministry of Education and Sports.
18. Empower African Children – Company documents and Business Plan.
19. Environmental Assessment For Empower African Children Environmental Examination, 2015
20. USAID DCHA ASHA Memo of Issues for Initial Environmental Examination,2015
21. EMPOWER SCHOOL Preliminary Report - February 2015 DRAFT 3
22. National State of Environment Report for Uganda: 2012-2014: NEMA Uganda
23. Mpigi District State of Environment Report – 2013
24. Mpigi District Development Plan (2012 – 2016)

APPENDICES

Appendix 1: AID-ASHA-A-13-00001 document

USAID
FROM THE AMERICAN PEOPLE

USAID DCHA ASHA MEMO OF ISSUES FOR INITIAL ENVIRONMENTAL EXAMINATION

Awardee: Empower African Children
DCHA Office: American Schools and Hospitals Abroad (ASHA)
Program Title: Empower African Children Academy
Award Number: AID-ASHA-A-13-00001
Country/Region: Uganda
Life of Grant: 11/13/2012 to 09/30/2016
LOA Funding: $750,000

ENVIRONMENTAL ACTION RECOMMENDED:	(Place X where applicable)
Categorical Exclusion: X	**Negative Determination w/ Conditions: X**
Positive Determination:	**Deferral:**
Bureau Environmental Threshold Decision (ETD):	**Reclassify to Positive Determination, requiring EA**

USAID Bureau Environmental Officer Approval:
This Memo is to inform that the **Empower African Children** project has been reclassified by the DCHA Bureau Environmental Officer (BEO), on **January 30, 2015** to a Positive Determination, necessitating additional analyses of an Environmental Assessment.

First, the BEO would like to commend Empower African Children for its in-depth analysis of the baseline situation and issues, and for providing the water quality and air quality testing results for the site. The photos, maps and plan provided also helped the BEO get a better idea of the local context of the program.

However, the fact that this project aims at constructing a school of unknown scale on a previously undeveloped piece of land raises issues that need to be considered. As the IEE mentioned, a power grid connection was made that was previously inexistent, in order to provide energy to the construction site. But in addition to this, the new structure will need new infrastructure for waste management, potable water and sanitation structures as well as an access road, all of which may not have been needed if the construction had been done on a site that had previously been developed and had existing roads, septic tank systems, potable water structures that could be modified to fit project needs. Such a major change in land use patterns - from livestock grazing to an educational institution - could have significant impacts on the

current environment, and the study of such unforeseen impacts would be best done via an Environmental Assessment. An Environmental Assessment would conduct a more detailed analysis of the current situation, and conduct stakeholder review of community, government and other local actors to determine the current issues and potential impacts of such a project on the present situation.

Another issue that came up during the review was the need for an IEE that describes the environmental safeguard and mitigation measures for both the construction and operation phases. There should be components in the IEE that are pertinent to the A&E Firm, and those for the Institution for operation of the facility. In this IEE that Empower submitted to USAID, the IEE appears to have been written for the benefit of the A&E contractor only and not that of the overseas institution. As a result, key aspects of the program's operation and maintenance were not included, which is a missed opportunity for the project to adequately plan for the sustainable maintenance of the school over the life of the project and for turnover to the school staff at the end of the project.

Therefore, after review, the BEO has rejected the grantee IEE, and requires that Empower **African Children** submit an **Environmental Assessment (EA) which** will need to address a number of issues, incorporated in the conditions outlined below. Construction activities cannot begin until the EA is received, reviewed and approved by the Mission Environmental Officer and the Bureau Environmental Officer.

The BEO recognizes that as a small organization, Empower African Children may not have the inside capacity or prior experience in developing Environmental Assessments. The BEO recommends that the awardee consult with outside specialists as well as the Mission Environmental Officer on necessary steps and recommendations in developing an EA.

Summary of BEO Conditions (7):
Condition 1: The grantee is required to develop an Environmental Assessment for project activities, and submit for MEO and BEO review and approval.

Condition 2: The grantee EA must address the grantee's plans to must procure and install appropriate water treatment technology and facilities as needed, and include a Water Quality Assurance Plan (WQAP).

Condition 3: The grantee must conduct stakeholder consultations with the local community, stakeholders and locally active environmental conservation organizations to ascertain past and current environmental issues, in order to estimate potential, unforeseen environmental impacts of project activities, and mitigate these impacts accordingly in the grantee EA.

Condition 4: The grantee EA must address energy consumption, fuelwood consumption, waste management, medical waste management as well as infrastructure maintenance/upkeep. Deliverables here include an Integrated Waste Management Plan and Medical Waste Management Plan for the academy's health clinic.

Condition 5: The grantee must incorporate details on the access road to be improved upon by the project, as well as follow USAID best practices in the construction/rehabilitation of access roads in project implementation and include appropriate mitigation measures to attenuate the negative impacts of rural road construction in the EA.

Condition 6: The grantee will describe the steps it intends to follow to control termites, rodents,

malaria-vectors and other pests during pre- and post-construction stages, and ensure that these measures are in compliance with USAID regulations.

Condition 7: The grantee will ensure that its A&E firm use climate resilient and appropriate materials and designs during construction activities.

Issue 1: The construction of new institution on previously undeveloped land requires additional structures and modifications to the current land use patterns that can have important environmental impacts.

Discussion: As explained above, the construction of a new academic institution involves the construction of not only the school itself, but of other necessary infrastructure such as septic tanks, water piping systems, access roads etc. Such new structures on previously undeveloped land are bound to impact the environment both during construction and in the long run operational phase of the project, especially since the project is located so close to the Mpanga forest. An Environmental Assessment will enable the grantee to evaluate the baseline situation (physical environment, topography, climate, biological and socio-economic environment of the project area) in order to assess the nature, extent, magnitude and probability of the potential positive and negative impacts of conducting this construction process, as well as the mitigation measures proposed.

The Environmental Assessment equally enables the consultation of local stakeholders including community members, local government authorities and conservation organizations working locally on existing issues in the area as well as previous environmental issues such as protected fauna and flora, deforestation, flooding and potential cultural heritage sites. The proximity of the construction site to the Mpanga forest is especially of concern. It is therefore especially important for the grantee to look into past and potential issues of fuelwood consumption or deforestation caused by local consumption, an issue which could be exacerbated by project activities.

Condition 1: The grantee is required to develop an Environmental Assessment for project activities, and submit for MEO and BEO review and approval.

Issue 2: Empower African Children Academy has water quality testing results that do not meet international water quality standards for potable water.

Discussion: Water quality assurance in an institutional setting is important, especially in a boarding school, and the BEO commends the grantee for having conducted a Water quality test on the spring it intends to use as a water source for the academy.

Typically, multiple samples are collected during a test for water quality, and according to the Ugandan Standard for Drinking Potable Water, (which reference ISO standards for microbiological limits of drinking water in Table 7 of the linked document), 95% of these samples should have no Coliform or E.Coli detected in the sample. The water quality results show that the spring well that the academy intends to use has fecal coliform amounts at 3CFU/100ml, which are above the prescribed Ugandan, USAID and WHO standards for potable water. There is also the need for a testing for Arsenic, with all these results and procedures outlined in a Water Quality Assurance Plan (refer to this Sample Water Quality Assurance Plan - WQAP for more details).

Also, because the Academy is sited on a hill, and the IEE mentions previous issues with fecal contamination in the area, the grantee should also conduct water quality assurance tests of the contaminants outlined in the WQAP on water points downhill of the project site. This test should be done before the construction activities start, and regularly during the Academy's operation period, to make sure that downstream use is not contaminated by the school's operations.

Frequency of Monitoring:
A key variable in determining the recommended frequency of water quality testing for groundwater is the stability and residence time of aquifer waters. According to a UNEP/WHO study the recommended minimum frequency for large stable aquifers is once per year and the maximum, recommended for smaller alluvial aquifers, is four (4) times per year. http://www.who.int/water_sanitation_health/resourcesquality/waterqualmonitor.pdf

Additional USAID and WHO guidance on water quality testing can be found in the USAID Environmental Guidelines for Small Scale Activities in Africa (EGSSAA) Chapter 16: Water supply and sanitation, accessible via the following link: http://www.encapafrica.org/EGSSAA/watsan.pdf.

Also, based on the photo of the spring to be used by the program (page 32 of the IEE) it appears that the open pooling of water at the putative spring head is highly sedimented , and likely contaminated with other surface water/rainfall runoff from the surrounding landscape. It is therefore important for the grantee to procure and install appropriate water treatment/purification technology beyond simply boiling the water before use, as recommended on page 31 of the IEE. Boiling the water before use also raises the issue of unsustainable fuelwood sourcing and consumption when boiling water on such a large scale, in order to meet the school's potable water demands.

The grantee will therefore have to incorporate the method(s) it will use to develop unimproved spring in order to make it suitable for human consumption. Refer to the Centers for Disease Control (CDC)-USAID Fact Sheets on point-of use treatment at: http://www.hip.watsan.net/page/2848 or to this link for water treatment and distribution through spring capping in the case the spring will be capped and a small piping distribution established.

Condition 2: The grantee EA must address the grantee's plans to must procure and install appropriate water treatment technology and facilities as needed, and include a Water Quality Assurance Plan.

Issue 3: Local stakeholder consultation is primordial to ensure the success of a project, and prevent conflict during project implementation.

The BEO commends the grantee for providing information the current land tenure situation and other multiple uses for the land near the institution. However, since this project involves the construction of a new structure on an otherwise undeveloped site, in-depth consultation of nearby residents as well as the former landowner and his relatives currently using the area nearby the project site, to ensure that their agreement with project design and implementation, in order to ensure community support and prevent possible conflicts in the future on the change in land-use brought about by the new school.

Also, since this project is taking place on previously undeveloped land, construction activities could have unforeseen environmental impacts. It would therefore be beneficial for the grantee to

consult with conservation organizations working locally (if available) as well as the local community on previous environmental issues, as well as protected flora and fauna. The proximity of the construction site to the Mpanga forest is especially of concern. It is therefore especially important for the grantee to look into past and potential issues of fuelwood consumption or deforestation caused by local consumption, an issue which could be exacerbated by project activities.

Condition 3: The grantee must conduct stakeholder consultations with the local community, stakeholders and locally active environmental conservation organizations to ascertain past and current environmental issues, in order to estimate potential, unforeseen environmental impacts of project activities, and mitigate these impacts accordingly in the grantee EA.

Issue 4: Operation and maintenance of infrastructure after construction has been completed, have impacts due to increases in resource use. Such impacts have to be addressed in the grantee EA.

Discussion: The construction of an infrastructure is simply the beginning of the intervention, and without sound mechanisms in place for the operation and maintenance (O&M) of the infrastructure, the project objectives cannot be successfully achieved. Factors to be considered here include Energy consumption, Fuelwood consumption, Waste management, Medical Waste Management, Sanitation, and standard maintenance/upkeep of the infrastructure.

Energy consumption:
On page 35 of the IEE, the grantee mentions that there is already has a power line hooked to the national electric grid on the construction site. However, other aspects of energy consumption not addressed in the grantee IEE include whether there will be use of emergency power systems (such as generators, fuelwood, etc), and sustainable energy consumption through the purchase and use of energy efficient appliances, energy-saving light-bulbs etc. Refer to **USAID Sector Environmental Guidelines on Small-Scale Energy** for more details.

Fuelwood consumption: As previously mentioned, the BEO is concerned at the potential unsustainable sourcing and harvesting of fuelwood for boiling water and cooking needs in general, especially with the proximity of the Mpanga forest, estimated to be within 10km from the construction site. The grantee will therefore be required to address its plans to ensure efficient fuel use, as well as fuel-efficient cooking practices and devices in the EA, in order to minimize fuel consumption. It is also important to consider potential social impacts such as competition, inequitable distribution or conflict over scarce energy resources that may arise with the local community over fuelwood use.

Waste management: While it is correct that the Empower African Children Academy will provide sanitary facilities for its workers during the construction phase of the project, the IEE has no discussion of the facilities for neither solid nor sanitary/sewage/waste water/human wastes for students and staff during the operation phase of the program. The grantee EA should therefore include these details, including the type of sanitation systems (pit latrines, pour-flush or water flush toilets), waste systems (septic tank, biodigestor, composting, waste burial, recycling) and waste water management water systems that will be used by the school (lagoons, soak pits, etc). An Integrated Waste Management Plan that includes all the various

waste streams should also be included in the grantee EA (Refer to **USAID Sector Environmental Guidelines on Solid Waste**).

Water Consumption:
An analysis of existing water resources is also important to determine whether these resources will be sufficient to meet long-term use by the school, both for potable use and sanitation needs. This analysis can be done alongside the Water Quality Assurance Plan requested under Condition 1.

Medical Waste management:
In the grantee IEE there is also mention of a Health Clinic on campus, which could be expanded to serve the surrounding community as well. Such an endeavor has the potential to generate hazardous medical waste (such as sharps, pathological waste, pharmaceutical waste, chemical waste and hazardous wastewater) which could have important adverse impacts on human health and the environment if not treated and disposed of adequately. The potential expansion of the clinic to serve surrounding populations, while a commendable effort to expand health services to the local community, can also lead to an increase in the amount of waste generated. The grantee must therefore develop a Medical Waste Management plan with the aim of adequately disposing of all waste streams generated by the school clinic. For guidelines on the requirements for a Medical Waste Management Plan, refer to the USAID Sector Environmental Guidelines on Healthcare Waste as well as the WHO (2014) Safe Management of Wastes from Health-Care Activities, for guidance with a focus on Chapter 8.11: Application of Treatment and Disposal Methods to Specific Waste Categories.

The grantee should also take into consideration the school's capacities to adequately dispose of additional waste that will result in an expansion of its health services before implementing this expansion, in order to ensure the quality of health services is maintained with an increase in the clinic's target population.

Infrastructure maintenance:
Infrastructure maintenance and monitoring schedule should also be incorporated in the grantee EA, with a frequency and responsible party component to ensure follow-up.

Condition 4: The grantee EA must address energy consumption, fuelwood consumption, waste management, medical waste management as well as infrastructure maintenance/upkeep. Deliverables here include an Integrated Waste Management Plan, and Medical Waste Management Plan for the academy's health clinic.

Issue 5: **The construction and rehabilitation of access roads has the potential to cause negative impacts, which must be mitigated.**

Discussion: On pages 10 and 39 of the IEE, there is mention about the improvement of an access road to the project site. As mentioned in the grantee IEE, an improved road network can have positive impacts, especially for communities that lack proper road infrastructure. However, small-scale road work can also have potentially adverse impacts, such as soil erosion, impacts on water quantity due to high amounts of water need for road compaction, deforestation due to increased access to fuelwood in the area, as well as impacts on human health as a result of noise and dust generated from construction activities. Although some of these impacts, such as noise, dust, traffic hazards and erosion are addressed by Empower's IEE, very few details are available about the road improvement itself.

As a result, little is known on the length of the access road, the material used in the road improvement (and its subsequent sourcing for use), or the plans for the maintenance of the road after construction to ensure its durability. These details about the road work planned, its potential impacts and mitigation measures for potential environmental impacts should also be integrated in the program's EA. Refer to the USAID Sector Guidelines on Rural Roads for more details on guidelines for the construction of rural roads.

Condition 5: The grantee must incorporate details on the access road to be improved upon by the project, as well as follow USAID best practices in the construction/rehabilitation of access roads in project implementation and include appropriate mitigation measures to attenuate the negative impacts of rural road construction in the EA.

Issue 6: Pest control is an important component in project operation and management, both for human health concerns as well as to protect the constructed infrastructure from damage.

Discussion: There is some ambiguity concerning the potential use of pesticides by the grantee. On page 43 and 44 of the IEE, the grantee confirms that its contractor will not purchase or use toxic materials including pesticides, nor will any pesticides be used or procured. However in Annex 1 of the IEE (p. 47), Question 5 on the use of pesticides, rodenticides and termiticides in hectares is marked as a "Maybe". Because the occurrence of pests could have negative impacts on both human health as well as the integrity of the constructed infrastructure, it is necessary for the grantee to develop and detail its management plans for the control of termites, rodents, agricultural pests (if any), disease vectors and other pests both before and after construction takes place.

In the event that pesticide use becomes necessary either for construction, landscaping or agricultural purposes, Empower African Children Academy will need comply with US Regulation 216.3(b) requirements and submit a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) to USAID for BEO approval. In such a case, it is recommended that Empower African Children Academy review the USAID searchable IEE/EA database for Illustrative PERSUAPs: http://gemini.info.usaid.gov/egat/envcomp/.

Condition 6: The grantee will describe the steps it intends to follow to control termites, rodents, malaria-vectors and other pests during pre- and post-construction stages, and ensure that these measures are in compliance with USAID regulations.

7: Incorporating climate resilient design features and local climatic conditions in construction plans and designs ensure sustainable use of the infrastructure and economic benefits in the long run.

Discussion:
Incorporating environmental safeguards and climate resiliency in the construction plans of the academy can lower operating and maintenance costs as well as lengthen the lifespan of the school infrastructure in the long run. It also important to consider the local climate in construction designs and construction material choice, by using appropriate construction materials and planning for high temperatures, rainfall, floods etc, depending on the local realities and hazards. Such considerations will provide both environmental and financial benefits to the program overtime. Condition 7: The grantee will ensure that its A&E firm use climate resilient and appropriate materials and designs during construction activities.

Appendix 2: A summary of relevant legislation

Table A.2-1: National regulatory assessment for the proposed Empower School Academy

Policy/Law/Regulation	Description	Application to the project
Policy Requirements		
The National Environment Management Policy, 1994	In 1994, Uganda developed a National Environment Management Policy aimed at promoting intergenerational equity and sustainable development. It seeks to enhance health and quality of life of the people of Uganda and the integration of good environmental practice and behavior into development policies, plans and activities. The policy also aims at conservation and restoration of the environment, raising public awareness, and ensuring individual and community participation in environmental and development activities.	The proponent should carry out an EIA in consideration of the nature of the project in relation to its receiving environment.
National Water Policy, 1999	The National Water Policy aims at managing and developing the water resources endowment in an integrated and sustainable manner, so as to secure and provide water of adequate quantity and quality for all social and economic needs with the full participation of all stakeholders. One of the main objectives of the policy is to control pollution of water resources and promote safe storage, treatment and disposal of waste, which could have adverse effects on public health. Hence, contamination of watercourses during development or operation of the project would conflict with this policy.	Contamination of watercourses especially wetlands, seasonal springs during development or operation of the school would conflict with this policy. EIA will highlight measures for protecting the nearby water resources from anticipated pollution that could be due to establishment of the academy.
The Land Use Policy, 2004	The main goal of the National Land Use Policy is 'to achieve sustainable and equitable social and economic development through land utilization in Uganda'. The specific objective of the policy is to promote land use activities that ensure sustainable utilization of natural resources for national socio-economic development.	Sustainable and equitable social and economic development of the area.
Legal and Regulatory Requirements		
The Constitution of the Republic of Uganda, 1995	The Constitution places obligations on both the state and the citizens of Uganda to among other things: a) protect the environment; b) protect important natural resources including land, water, wetlands and fauna and flora; and c) promote a good water management system; d)	The operations must comply with the national constitutional provisions especially the right of all Ugandans to a clean and healthy environment.

	promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced manner for the benefit of the present and future generations. Article 39 and 41 of the Constitution provide that everyone has a duty to maintain a sound environment. It also stipulates that every person in Uganda has a right to a healthy and clean environment and as such can bring legal action for any pollution or disposal of wastes. Chapter III, Section 245 stipulates that the Parliament shall by law provide measures intended to protect and preserve the environment from abuse, pollution and degradation. It is therefore the proponent`s responsibility to operate the proposed project in an environmental sound manner as required by the constitution	The proponent must ensure that all project activities must not deny public a right to clean and health environment. For this matter the proponent is undertaking an EIA. The proponent must present proper documents to prove land ownership of the project land.
The National Environment Act (Cap 153)	The main law relating to the protection of the environment in Uganda is the National Environment Act (NEA), Cap 153 of 1995. Among its provisions is the duty to protect and preserve the environment. It also provides for the establishment of measures to manage the environment for sustainable development and promotion of environmental awareness. The Act also provides for the establishment of NEMA – the regulatory Authority mandated with the responsibility to oversee, coordinate and supervise environmental management in Uganda, including the review and approval of environmental impact assessments carried out for various projects. The Act gives categories of projects likely to have significant environmental impacts and which are required to undertake an Environmental Impact Assessment (EIA) procedure execution. The Act provides that every person has the duty to manage any waste generated by his activities or the activities of those persons working under his direction in such a manner that he does not cause ill health to the person or damage the environment (Section 53). In addition no person shall pollute or lead any other person to pollute the environment contrary to any of the	Proponent should carry out an EIA in consideration of the nature of the project in relation to its receiving environment. EIA should be submitted to NEMA for authorization prior to implementing the project. The proponent must follow standards as prescribed by the act in regard to waste disposal and pollution mitigation.

	standards or guidelines prescribed or issued under the Act (Section 57).	
The Education Act 2008	Every school owner shall manage his or her school in such a way that the objectives of education as specified in this Act are observed. This Act requires that every private education institution is registered and classified. It is also a legal requirement that examination centers are registered by the Uganda National Examination Board.	The proponent should ensure that the school is registered with the Ministry of Education The school's curriculum should be similar to the national curriculum and also approved by the ministry.
The Investment Code Act, 1999	The Investment Code Act, 1999 makes provision for local and foreign investments in Uganda by providing more favorable conditions for investment. Part III sets out procedures for obtaining an investment license. It also provides implied terms and conditions of an investment license (section 18). One of the terms and conditions is to take necessary steps to ensure that the operations of business enterprises do not cause injury to the ecology or environment.	The proponent should acquire a licence for the operation of the facility and all the ongoing activities so as to be deemed legal. The proponent should ensure that the activities being carried out are not detrimental to the surrounding environment.
The Land Act, 1998	The Land Act, 1998 provides for the ownership and management of land. It provides for four different types of land tenures (Customary, Leasehold, Mailo and Freehold) and the procedure for applying for grant of any of the tenures. Section 43 of the Act requires that a person who owns or occupies land shall manage and utilize it in accordance with the Forest Act, the Mining Act, and the National Environmental Act, the Water Act, the Uganda Wildlife Act or any other law.	All project activities will be conducted in accordance with the laws and regulations of Uganda.
National Environment (Waste Management) Regulations	Under Regulation 5(1), a person who owns or controls a facility or premises which generate waste shall minimize the waste generated by adopting the following cleaner production methods. Eliminating the use of toxic materials; and Reducing toxic emissions and waste. Identifying and eliminating potential negative impacts; Enabling the reduction, recovery and reuse of the by-product where possible; Reclamation and recycling; and Incorporating environmental concerns in the design and disposal of a facility.	The proponent shall liaise with NEMA for advice on the best practical manner of handling all generated waste onsite. As per the provisions of the Regulations, a waste generator / licensed handler must ensure that the containers, in which any waste is stored, are intact and rendered fit for the safe storage of waste; adequate measures are taken to prevent accidental spillage or leaking; Pollution of the environment and harm to health are prevented. The proponent shall communicate appropriate

	Under Regulation 11 (1), no person shall discharge any hazardous substances, chemical, oil or mixture containing oil in any water or any other segment of the environment except in accordance with guidelines prescribed by the Authority in consultation with the Lead Agency.	waste management methods to his/her clients at the site management and disposal.
The National Environment (Noise Standards and Control) Regulations, 2003	The National Environment (Noise Standards and Control) Regulations of 2003 are aimed at ensuring the maintenance of a healthy environment for all people in Uganda, the tranquillity of their surroundings and their psychological well-being by regulating noise levels. This is done through prescribing the maximum permissible noise levels from a facility or activity to which a person may be exposed and the provision for control of noise and mitigating measures for the reduction of noise. Under regulation 8, it is the duty of the owner of a facility or premises to use the best practicable means to ensure that the emission of noise from his/her premises does not exceed the permissible noise levels. Regulation 6(1) of these regulations requires that the maximum permissible noise levels from a facility in the general environment specified in Part 1 of the First Schedule as "residential, industry or small scale production and commerce", shall not exceed 60 dBA and 50 dBA during day and night-time respectively. This regulation will have a direct influence on noise levels generated at proposed school during construction and operation phases.	Noise impacts may result from specific activities carried out during the construction phase of the project and could present an intrusion impact to the surrounding communities. The proponent shall observe maximum permissible noise levels while conducting its activities. Construction related activities should be limited to 6.00am to 6.00pm (Monday – Saturday) excluding public holidays. If there is need for extension of activities out of the regular times then the surrounding communities need to be notified.
The Occupational Safety and Health, 2006	Occupational Health and Safety Act, 2006, is a statutory instrument aimed at ensuring the health, safety and welfare of persons employed in all workplaces. In accordance with the Act, proponent is required to create and maintain a healthy and safe work place by: Consulting employees and their representatives; Establishing hazards; Carrying out risk assessment and control; Establishing a safety program or system that includes the necessary policy and regulations; Providing information, instruction and competent supervision with adequate authority; Training workers to enable them to work in a healthy and	Proponent (through project contractors) will implement adequate controls to protect workers and general public from any potential injury or harm during project construction and occupational phase. Employees at the project site should be provided with protective gear which should be used daily so as to limit the rate of accidents. The project site should possess an Emergency Response Plan (ERP) in case of any work related accidents like fire outbreaks.

	safe manner; Providing workers with necessary equipment to enable them carry out work in a healthy and safe environment; Reporting hazardous situations, illness, injuries and fatalities; Not allowing workers or forcing them to work contrary to required health and safety measures; Ensuring that workers understand the scope of their authority. Section 13 indicates that it is the duty of the employer to take as far as is reasonably practicable all measures for the protection of his or her workers and general public from the dangerous aspects of the employer's undertaking at his or her cost. The employer is also required to ensure that the working environment is kept free from any hazard due to pollution by employing technical measures and employing supplementary organizational measures. An employer should monitor and control the release of dangerous substances into the environment (Section 18). Where there is major handling of chemicals or any dangerous substances which are liable to be airborne or to be released into rivers, lakes or soil and which are a danger to animal and plant life, it shall be the duty of the concerned employer to arrange for equipment and apparatus to monitor the air, soil and water pollution and to arrange for the actual monitoring of these mediums with a view of rendering them safe from the dangerous undertaking. Section 23 stipulates that employers have the duty to persons other than their employees. Section 23(1) states that it is the duty of an employer to conduct his or her undertaking in a way that ensures as far as is reasonably practicable, that any person who is not in his or her employment but who may be affected by the undertaking is not exposed to risks to his or her health and safety. Section 25 (a) demands that every employer shall display	There should be proper storage of hazardous chemicals or any other dangerous substances, proper signage and labeling in order to protect and prevent employees from any accidents related to them.

	or provide safety precautions to any persons who may be affected by the manner in which the employer conducts his or her undertaking whether or not that person is his or her worker. Section 26 demands for the provision of safe premises, means of access to and exit from the premises without risk to health. It is a duty of every worker to take reasonable care for health and safety of himself or herself and of any other person who may be affected by his or her acts or omissions at work. More still a worker should report immediately to a supervisor any situation which the worker has reasonable grounds to believe presents an imminent or serious dangers to his or her life or health or to the life or health of any other persons in the premises (Section 35 – 36). Section 39 states that a person who intentionally or recklessly interferes with or misuses anything provided in the interest of health, safety or welfare under the Act commits an offence. Every building used as workplace as stipulated in Section 45(2) shall: Be designed to protect workers from the weather; Have water tight roof; and Be free from any significant amount of dampness that is liable to affect the safety of the building or the health of workers. While Section 46(1) demands that every workplace should be kept in a clean state and free from effluvia i.e. an unpleasant or harmful odor or discharge arising from any drain, sanitary convenience or other nuisance. Section 55 compels the employer to provide a first aid room capable of being used for purpose of administering first aid. Where a room is not practicable, a readily	

	accessible first aid box or cupboard should be provided and maintained. Section 58 demands that fire extinguishing gadgets be provided and maintained to be readily accessible to extinguish fire.	
The Physical Planners Act, 2010	Section 33 stipulates that a person shall not carry out a development within a planning area without obtaining development permission from a physical planning committee. A local government physical planning committee shall require a proponent to restore the land on which a development is made without permission as much as possible to its original condition. The Act further demands that where a development relates to matters that require an environment impact assessment to be carried out, the approving authority or physical planning committee may grant preliminary approval of the application subject to the applicant obtaining an environmental impact assessment certificate in accordance with the National Environment Act.	The proponent should submit the building plans to Mpigi district planning Committee for approval. Approval of the application subject to the applicant obtaining an environmental impact certificate in accordance with the National Environment Act.
The Public Health Act, 1964	The main objective of this Act is to safeguard and promote public health. Section 7 of the Act provides local authorities with administrative powers to take all lawful, necessary and reasonable practical measures for preventing the occurrence of, or for dealing with any outbreak or prevalence of any infectious, communicable or preventable disease to safeguard and promote public health; and to exercise the powers and perform the duties in respect of public health conferred or imposed by this Act or other relevant laws. Section 56 prohibits any person from causing a nuisance. However, Section 59 details what constitutes a nuisance. Any chimney emissions in such a quantity or toxicity level, that it may be hazardous or injurious to health is a nuisance. Section 57 of the same Act authorizes the local authorities to cause the abatement of a nuisance. Under section 105, local authorities have a duty to take measures to prevent any pollution dangerous to health of any water supply that the public has a right to use for drinking or any other domestic purposes.	The proponent will take all lawful, necessary and reasonable measures to ensure the general public safety in relation to any likely negative impacts that may arise as a result of the project. A proper waste management system should be put in place to prevent pollution of the nearby water sources and environment at large.

The Water Act, 1995	Section 31 (1) of the *Water Act 1995*, states that it is an offence for a person to pollute water through discharge of waste into watercourses. In conformity with this law, disposal of overburden, litter or construction waste should be avoided during construction.	The proponent should ensure that the project activities do not in any way contribute to the pollution of water sources in the vicinity.
Relevant Standards		
Uganda's national drinking water standard US 201:2008	**Requirements:** <u>Approved water supply</u>; Source of water that has been inspected and approved by the competent authority for the intended purpose. Water distribution system public or private water systems providing consumers with tap water suitable for direct consumption <u>Treated water</u> Water that is conventionally treated usually by coagulation, sedimentation, filtration, and disinfection and distributed through a water distribution system <u>Untreated/rural water</u> Water that is either mined or harvested from natural sources without any conventional treatment applied to it such as borehole water, spring water, shallow wells, or harvested rainwater <u>Conventional treatment</u> Collection, storage and distribution of drinking water involving deliberate coagulation, sedimentation, filtration, and disinfection to improve the safety and quality of the finished drinking water for consumers <u>Potable</u> Water which is suitable for human consumption	

Table A.2-2: USAID Standards and Requirements that apply to this project

No	Policy	Description	Remarks/Application
1	22 CFR 216 Agency Environmental Procedures	Section 216.6 Environmental assessments It provides for: a full discussion of significant environmental effects of a proposed action. It includes alternatives which would avoid or minimize adverse effects or enhance the quality of the environment so that the expected benefits of development objectives can be weighed against any adverse impacts upon the human environment or any irreversible or irretrievable commitment of resources.	The EIA study for the proposed school will analyze all the potential impacts from the development
2	USAID Sector Environmental Guidelines: Construction	Construction projects may cause both direct and indirect potential adverse environmental impacts. All potential impacts should be considered and mitigated to the extent possible, but the most significant impacts should be addressed first. As with any project, the best way to accomplish this is by careful planning and incorporation of mitigation measures into project design. Environmental impacts of special concern include: Damage to sensitive or valuable ecosystems, Compaction of the soil and grading of the site, Sedimentation of surface waters, Contamination of ground and water supplies, adverse social impacts, spread of Disease and Potential Adverse Impacts on Workers.	The facility contractor should adhere to the provisions within these guidelines
3	USAID Sector Environmental Guidelines on Small-Scale Energy	It is especially important that the process of assessing potential impacts occurs as early in the design stage as possible. This includes properly weighing feasible project alternatives and considering how best to avoid or minimize potential adverse energy-related and environmental impacts. The guideline emphasizes the potential for cumulative environmental effects from multiple small-scale energy activities, discusses the risks small-scale energy projects face as a result of global climate change, and provides general information on the economics and gender impacts of small-scale energy projects. The environmental impacts for each energy source in this guideline are presented, which also includes associated mitigation and monitoring measures for each impact identified. These mitigation and monitoring measures are designated according to the project phase(s) where they best apply: Planning and design (P&D), Construction (C), Operation and Maintenance (O&M), and Decommissioning.	The school will investigate and use renewable energy sources and consider tools and technologies available to optimize energy resource management, optimize energy efficiency, and minimize potential environmental impacts.
4	USAID Sector Environmental Guidelines:	Road improvements can bring substantial economic and social benefits to both communities and national economies, including	Road improvement activities will be carried out in consultation with these

	Rural Roads	access to education, employment, and health care. But they may also lead to significant and long-lasting environmental damage. Issues to consider include: Common types of environmental damage from road projects. Proper planning of road projects to avoid environmental degradation. Putting operation and maintenance programs into effect to prevent and mitigate environmental impacts. Best means of decommissioning roads to prevent erosion and loss of resources. Potential Environmental Impacts of Development Programs include; Soil Erosion, Degradation of Water Quality, Adverse Effects on Water Quantity, Altered Hydrology, Deforestation, Damage to Valuable Ecosystems and Habitats, Declines in Scenic Quality, Adverse impacts on Human Health and Safety and Change Local Culture and Society	guidelines
5	USAID Sector Environmental Guidelines: Solid Waste	Solid waste management is a top priority for every country, including low-income countries. Uncollected solid waste or solid waste that is improperly managed has the potential to cause flooding, air pollution, and have impacts on public health. Only a small amount of the waste in many developing countries around the world is disposed of in sanitary landfills; most is deposited in open dumps or semi-controlled unlined landfills with no groundwater protection, or treatment systems. Potential Environmental Impacts from Solid Waste; Increase disease transmission or otherwise threaten public health, Contaminate ground and surface water, Create greenhouse gas emissions and other air pollutants, Damage ecosystems and Injure people and property.	The proponent shall liaise with NEMA and Mpigi district for advice on the best practical manner of handling all generated waste onsite.
6	USAID Sector Environmental Guidelines: Water Supply and Sanitation	To remain healthy, human beings need an adequate, year-round supply of good quality water. Many debilitating or even fatal illnesses are spread by contamination of the water supply by human fecal matter containing disease-causing viruses, bacteria, and parasites. Potential Environmental Impacts Of Water and Sanitation Activities; Increased Morbidity and Mortality, Degradation to Ecosystems, Fresh Water Resources Depleted.	The proponent will take all lawful, necessary and reasonable measures to ensure safety at the school and general public safety in relation to any likely negative impacts that may arise as a result of the project
7	USAID Sector Environmental Guidelines:	Small-scale healthcare activities, such as rural health posts, immunization posts, reproductive health posts, mobile and emergency	The proponent shall communicate appropriate waste management

	Healthcare Waste	healthcare programs, and urban clinics and small hospitals, provide important and often critical healthcare services to individuals and communities that would otherwise have little or no access to such services. Currently, little or no management of healthcare wastes occurs, especially in small-scale facilities in developing countries. Wastes generally fall into three categories: General, hazardous and highly hazardous. Potential Environmental Impacts include; Disease Transmission, Chemical and Toxic Threats.	methods to the clinic staff for proper management and disposal of waste.

Table A.2-3: Review of Equator Principles

Principle	Summary of Requirement	Comment
Principle 1: Review and Categorization	When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorize such project based on the magnitude of its potential impacts and risks in accordance with the environmental and social. Screening criteria of the International Finance Corporation (IFC) (Exhibit I). These categories are: Category A – Projects with potential significant adverse social or environmental impacts that are diverse, irreversible or unprecedented; Category B – Projects with potential limited adverse social or environmental impacts that are few in number, generally site specific, largely reversible and readily addressed through mitigation measures; and Category C – Projects with minimal or no social or environmental impacts.	Based on the ESIA team evaluation, it falls under Category B considering that most of the environmental and social impacts are reversible and can readily be addressed through mitigation measures (IFC, 1998)
Principle 2: Social and Environmental Assessment	For each project assessed as being either Category A or Category B, the borrower has conducted a Social and Environmental Assessment ("Assessment") process to address, as appropriate and to the EPFI"s satisfaction, the relevant social and environmental impacts and risks of which may include, if relevant, the illustrative list of issues as found in Exhibit II. The Assessment should also propose mitigation and management measures relevant and appropriate to the nature and scale of the project	The detailed impact study builds on the information provided during Environmental Assessment and a subsequent review to determine conformance to this requirement will be included in the ESIS.
Principle 3: Applicable Social and Environmental Standards	For projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the Assessment will refer to the then applicable IFC Performance Standards (Exhibit III) and the then applicable Industry Specific EHS Guidelines ("EHS Guidelines") (Exhibit IV). The Assessment will establish to a participating EPFI"s satisfaction the project's overall compliance with, or justified deviation from, the respective Performance Standards and EHS Guidelines.	The ESIA has included information required as per the IFC performance standards.

	The following list of IFC Performance Standards are applicable: Performance Standard 1 -Assessment and Management of Social and Environmental Risks and Impacts Performance Standard 2 - Labor and Working Conditions Performance Standard 3 - Resource Efficiency and Pollution Prevention Performance Standard 4 - Community Health, Safety and Security Performance Standard 5 - Land Acquisition and Involuntary Resettlement Performance Standard 6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources Performance Standard 7 -Indigenous Peoples Performance Standard 8 - Cultural Heritage	
Principle 4: Action Plan and Management System	For all Category A and Category B projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the borrower has prepared an Action Plan (AP) which addresses the relevant findings, and draws on the conclusions of the Assessment. The Action Plan will describe and prioritize the actions needed to implement mitigation measures, corrective actions and monitoring measures necessary to manage the impacts and risks identified in the Assessment. Borrowers will build on, maintain or establish a Social and Environmental Management System that addresses the management of these impacts, risks, and corrective actions required to comply with applicable host country social and environmental laws and regulations, and requirements of the applicable Performance Standards and EHS Guidelines, as defined in the Action Plan.	The final ESIS includes the Action Plan to be discussed under the Environmental Management and Monitoring section of the report.

Principle 5: Consultation and Disclosure	For all Category A and, as appropriate, Category B projects located in non-OECD countries, and those located in OECD countries not designated as High-Income, as defined by the World Bank Development Indicators Database, the government, borrower or third party expert has consulted with project affected communities in a structured and culturally appropriate manner. For projects with significant adverse impacts on affected communities, the process will ensure their free, prior and informed consultation and facilitate their informed participation as a means to establish, to the satisfaction of the EPFI, whether a project has adequately incorporated affected communities" concerns.	The stakeholder consultation process has been initiated and conducted as part of this ESIA

Appendix 3: List of stakeholders consulted

Table A.3-1: Lead agencies consulted

Lead agency	Name ,Contact & Designation	Comment, Responses &Opinions
National Environment Management Authority	Mr. Mugambwa Richard Mukasa 0775074849 Environment Monitoring Officer, Environment Monitoring Compliance Department (EMC) 14/12/2015	✓ Comprehensive consultations should be conducted and their views/opinions presented in the report. ✓ Ensure low construction noise emissions to avoid inconveniences to the neighboring residential community. ✓ Provide land ownership documents for the proposed site to the concerned authority. ✓ The proponent should contract only registered companies to manage generated waste from construction and operation activities of the proposed site. ✓ The proponent should ensure presence of Health, Safety and Environment measures for workers during operation of the project. ✓ The proponent should ensure proper waste management of both solid and effluent from the proposed facility during construction and operation phase. ✓ Adequate drainage systems should be constructed around and within the site. ✓ The EIA team should provide global positioning satellite (GPS) coordinates for the proposed project. ✓ The proponent should provide visible drawings and site layout plans for the proposed project ✓ There should be adequate parking for the proposed facility. ✓ Provide a Geo-technical survey report for the proposed site to measure and ensure soil stability to the concerned authority.
National Environment Management Authority	Herbert Nabasa	✓ During the design phase, green belts should be incorporated in, to improve the aesthetics of the institution.

	0782616038 District Support Officer District Support Department 14/12/2015	✓ Avoid overcrowding the facilities but rather encourage storeyed buildings which will reduce on vegetation clearance. ✓ Firefighting equipment like extinguishers and detectors should be put in place. ✓ Ensure that there are adequate solid waste management facilities onsite during both construction and operation phases. ✓ Comprehensive consultations especially for local community should be conducted by the EIA team.
National Environment Management Authority	Nakafero Anne 0772449163 District Support Officer District Support Department 14/12/2015	✓ The EIA team should conduct a comprehensive biodiversity survey or studies for both underground and above ground biodiversity. ✓ The proponent should ensure that sanitary facilities are established or lined in one place other than scattering or locating them in different places. ✓ Site preparation or clearance should be conducted in phases to minimize on the exposure of the bare land to soil erosion. ✓ The proponent should ensure resource efficiency through installing water harvesting facilities like water tanks. ✓ Site landscaping should be done onsite and outside the site for aesthetics improvement of the area. ✓ The proponent should ensure effective solid waste management onsite. ✓ In addition, the proponent should contract only registered companies to manage and collect generated waste. ✓ The EIA team was urged to carry out Community consultations and issues should be presented for action.
Ministry of Gender Labor and Social Development	Yiga Joseph Flavian 0772423390 Senior General Safety Inspector	✓ The proponent should practice proper record keeping and reporting including accidents that have occurred. ✓ Training of workers (induction and continuous) on Occupation Safety, Health and Environment by the concerned parties.

	Occupation, Health and Safety department 15/12/2015	✓ The proponent should put in place separate welfare amenities for each gender and provide adequate sanitary facilities. ✓ Workers should be provided with wholesome drinking water and a meal area. ✓ For medical provisions, the proponent should ensure first aid facilities and trained first aiders. ✓ The proponent should conduct pre-employment medical examinations on workers where necessary. ✓ The proponent should provide and display HIV/AIDS policy and programs including VCT. ✓ Emergency contacts should be displayed on the plant premises in case of any emergencies. ✓ The EIA team and the proponent should design an emergency plan and create awareness of the plan to workers in order for them to know what to do in case of an emergency ✓ Provide fire prevention mechanism like detectors and firefighting equipment i.e. alarms, extinguishers among others
National Forestry Authority	Aliho Julius 0782301600 Forestry Monitoring and Evaluation Specialist 15/12/2015	✓ The proponent should ensure that no activity of the proposed facility encroaches the forest in the area vicinity. ✓ The proponent should plant more indigenous trees within and outside the facility to improve on area aesthetics.
Ministry of Education Technology and Sports	Ms. Doreen Matovu Lwanga 0782226882 Assistant commissioner construction	✓ The proponent should ensure that the building plans are approved by the concerned authority. ✓ The EIA team should assess the impact of the proposed project on vegetation, water source and the community and identify mitigation measures where need be.

	10/03/2016	✓ The EIA team should inquire about the community's perception in regard to the proposed project ✓ The proponent should put in place a proper waste disposal and management system ✓ The proponent should create a good working relationship with the community ✓ Means of limiting the noise produced by the trucks during construction should be devised by the proponent.
Ministry of Education Technology and Sports	Mr. Lusuba Liayz 0772440790 Head of private school department both primary and secondary 10/03/2016	✓ The proponent should acquire an operation license from all the concerned authorities in regard to the proposed project. ✓ The proponent should ensure that the school premises are registered under the Ministry of Education. The proponent should consider the following components when developing the proposed school project : ➢ Well-furnished and spacious Classrooms ➢ Spacious dormitories ➢ Proper Sanitary facilities i.e. Separate wash rooms for both male and female ➢ Adequate staffing
Mpigi District Local Government	Mwanje Anthony 0772617104/ 0758899965 District Community Development Officer (DCDO) 14/12/2015	✓ The proponent should endeavor to make sure that the school relates well with the community, ✓ The proponent should seek local government's advice and cooperate to have this proposal a success. Most of the proponents and organizations do not seek the local government's say hence failing to work hand in hand with each other, ✓ The proponent should have HIV/ AIDS plan because workers come from

		different places with various health backgrounds, ✓ The communication gap between proponents and the local government should be bridged. ✓ Concerns related with school accessibility by local community of students were raised since most of community members are low income earners, ✓ Many people will benefit from the education and training as they will learn how to be self-sustaining, ✓ An environmental impact assessment has to be done with the involvement of the Environment Officer to get his/her views on negative issues and their mitigation as well as enhancement of the positive issues about the project.
Mpigi District Local Government	Ssekalegga Joseph ssekaleggajoseph@yahoo.com 0772366089 District water officer 14/12/2015	✓ There are three protected springs in Malima parish which are also utilized by EACA and these include Kiduguma which was constructed by donors in 2001 , Piida which was constructed by donors in 2003, Majwega which was constructed by Water Environment and Sanitation ,Mpigi district in 2001 ✓ There are two deep boreholes in Malima parish these are, Nswanjere deep borehole which was constructed by the community in 2004 and Nswanjere bore hole which was privately constructed in 2004, ✓ The school proponent is advised to construct a production well i.e. water is pumped from the ground to serve a large community. ✓ The proponent should employ a hydrologist during the initial stages of the project to carry out hydrological surveys ✓ The proponent should ensure that a competent driller with a drilling permit should be involved when drilling the borehole. ✓ The area has a thick burden i.e. thickness of the soil layers, so the proponent should plan to drill at 100 meters and more deep in the soil. ✓ The proponent should plan for an iron removal filter (involved aeration, filtration and sedimentation) in case the iron content gets high.
Mpigi District Local	Ssekiwunga Muhammad	✓ The district local government is responsible for the development and

Government	0752933385 Senior Lands management officer, (currently acting district physical planner) 14/12/2015	maintenance of roads in the district therefore the proponent should work hand in hand with the district officials if there's need to work on the access road to the project site. ✓ He emphasized the principle of neighborhood harmony between the proponents and the community. ✓ There should be effective communication between the district officials and the proponents. ✓ He urged the proponents to maintain the infrastructure in the area. ✓ He also emphasized and encouraged the proponent to adopt the triple P principle; public private partnership should be adopted. ✓ There is neither a land use plan nor structure plan nor a detailed land for particulars at the district local government because of lack of funds. ✓ The proponent should involve the chief administrative officer in case of any land conflict. ✓ He anticipated development in the area in terms of infrastructure and human development after earning a living. ✓ He was concerned about the sustainability of the project in 100 years, that is, how long will USAID fund the project. ✓ The proponent should talk to the district authority to get recommendation to extend electricity especially the transformer in the village ✓ On the positive side according to him human and infrastructural development will occur, power extension to the area, employment opportunities.
Mpigi District Local Government	Birakwate Polly 0772426894/ 0701426894 District Natural Resources officer and District Forest office 14/12/2015	✓ The proponent has to put in place a waste management plan as well as working with the local government to manage waste ✓ The proponent should avoid any possible causes of land conflicts; ✓ He strongly encouraged the proponent to replace any trees that will be cut as they act as wind brakes.

		✓ The active community groups advocating for environmental protection are in the process of signing agreements with the district officials and relevant authorities. One of the already existing community groups in Muduuma Sub-County is called "Trial for women" getting involved in tree planting. ✓ He encouraged the proponent to put up gutters and also replace grass so as to reduce surface run off. ✓ He advised the proponent to get energy saving stoves as alternatives to fire wood in order to minimize its use. ✓ Other than that he thinks the project will be very beneficial to the community and district at large in terms of development.

Table A.3-2: Consultations held at Nswanjere-Ntula village, Malima Sub-County

Meetings (Name, Venue and date)	No of people Present	Present stakeholders	Issues/ comment/ opinions	Response to the comments
Nswanjere community meeting held on 15th/12/2015	20	List of attendants appended	• The community wanted to know whether the school will have lower classes besides the secondary section. • They expressed concern about the likely increase in traffic along the access route during construct. Likely increase in the incidences of accidents associated with speeding vehicles and general increase in the traffic. • They also expressed that there is likelihood of deterioration of the road due to plying by heavy vehicles. • The community members said that there should be a program put in place by the proponent to benefit the entire community because they think the school might be very expensive for local people. Basing on that they suggested that the proponent can consider extending power to the community or can commit to routine maintenance of the road so that the entire community benefits. • The community wanted to know if those eligible for jobs from within the area will be considered especially the unskilled people emphasizing that sometimes proponents outsource personnel even for tasks that community member would ably execute. • Community members in attendance wanted to know how we shall ensure	• The current plan only has a secondary school. • The proponent has a plan to extend electricity to the project area. • The proponent is willing to employ both skilled and non-skilled labor from the project area. His main goal is to ensure that the community benefits in one way or another. • Traffic will be controlled. • The community members are free to access the school premises however it cannot be done at any time therefore the community has to also abide by the rules and regulations set by the school management. • Since the project area lacks any medical facility, the school clinic will provide medical services to community members too therefore the locals will be allowed to access it. • As initially planned by the proponent, one borehole is going to be left for the community to use. • Quite a number of programs will be put in place so as to help out OVCs .These have to be identified by the local officials and this has to be done on merit. • The proponent argued that the community will always be given first priority therefore they will be given a chance to supply the school with agricultural products. • There will be proper waste management and disposal therefore the community members should not worry about any kind of distraction. • Working hand in hand with all the concerned officials that is to say local, district and national authorities portrays that the proponent is ready

			that the actual activities for which the EIA is being under taken are those that will be undertaken in the premises. Adding that establishments of this nature normally have restricted entry so community members may not be able to ascertain exactly what happens inside the confinement. They said vices such as homosexuality should not be part of what is brought in their area because this is against African culture. • Wanted to know whether the school health center will be accessible to the general public. • Likely increase in the level of noise was also raised as a concern during the community consultative meeting. The noise during construction could come from the vehicles and during the operation phase students are likely to generate some noise. • They wanted to know whether the two water points will remain under public use and how this could be ensured expressing fear that the school could fence of the water points when it is fully functional and operational. • The community also wanted to know whether there will be chances of bursaries because the school is likely to be expensive for the local people. • Members also said that the community is based on agriculture as the main economic activity so in case there is an opportunity priority	and willing to abide by all the laws and regulations therefore the proposed project will do what it has set out to do

			should be given to community members to supply requirement agricultural produce. • Wanted to know how run off from the site after clearance will be handled because this could damage private property in the neighborhood. • The community suggested that based on current trends of school based strikes measures should be put in place to ensure that in case a strike sprung up students should be contained so that no damage is caused to private property. They added that there should also be clear avenues to be followed by the community in case of such an eventuality. • I wanted to know the current land use of the area and the residents indicated that they get firewood, medicine, and grass for covering bricks and as a grazing area for animals.	

A3-3: Copy of the invitation letter for the stakeholder consultative meeting

EMPOWER
AFRICAN CHILDREN

20th April 2016

The Chief Administrative Officer - MPigi

Re: Introducing Empower African Children Ltd

Dear Sir/Madam,

The Chief Administrative Officer Mpigi District together with United State Agency for International Development (USAID) is executing the Empower African Children Academy. This program includes the construction of a new school at Ntula village, Nswanjere zone, SSabaddu mulima parish, Muduuma Sub county, Mawokota County on Mityana Road. EMI international is the provider of engineering, consultancy, designer and supervisor of the program and Gissat Environment Associates is the providing and consulting on the environmental issues.

To effect this, our team is preparing un environmental impact assessment to evaluate the anticipated effects that the project may have on the environment and the community, as well as the physical and cultural environment will have on our project. As part of this process, the scoping session will be held to encourage discussion of the possible pertinent environment issue that have been identified.

Therefore, we are pleased to invite you participate in this scoping session, which will be held on 29th - April- 2016 between 10:00am to12pm, at Mpigi District headquarters. We kindly request that you confirm your attendance or inform us of the name of one or two of your representatives who will be attending.

Yours sincerely,

ALEX BYARUGABA

Program Manager

Empower African Children

0774-433-570

alex@empowerafricanchildren.org

Cc: LC 5 Chairperson Mpigi

PO BOX 141226, DALLAS, TEXAS 75214 OFFICE 214.828.9323 WEBSITE www.empowerafricanchildren.org

EMPOWER
AFRICAN CHILDREN

EMPOWER
AFRICAN CHILDREN

Cc: Resident district Commissioner

Cc: District Health Inspector

Cc: District Education Officer

Cc: Secretary Of Education

Cc: District Engineer

Cc: District Planner - assistant statistical officer

Cc: District Physical planner

Cc: District Environment officer

Cc: District Water Officer

Cc: District Development Officer

Cc: District Forest Officer:

Cc: Lwamunda CFR -Sector Forest Officer - Sector manager

Cc: NGO Forum Mpigi

Cc: Chairperson LC 3

Cc: District Police Commander Mpigi

Cc: OC Muduuma Police

Cc: LC 1 Executive committee Nswanjere

Cc: Sub County Chief Muduuma

Cc: USAID Environment compliancy Officer

Cc: New vision reporter

Cc: Residents of Ntula village.

PO BOX 141226, DALLAS, TEXAS 75214 OFFICE 214.828.9323 WEBSITE www.empowerafricanchildren.org

EMPOWER
AFRICAN CHILDREN

A3-4: Photographic record of the stakeholder meeting at Mpigi district

MDC.

MPIGI LGDP II FY 2007/08

A3-5: Presentation made by the Gissat team during the stakeholder consultation meeting held on April, 29 2016 in Mpigi District.

EA for Empower International Academy Stakeholders Meeting

April 29, 2016
Mpigi District Local Government Chambers

Gissat Inc
Gissat Environment Associates
House 30 | 7140 Muyenga Tank Hill
P. O. Box 21598 Kampala
+256 312 107 083

INTRODUCTION OF THE PROJECT:
Development of Empower International Academy

The development proposal is for the construction and operation of a boarding secondary school to be known as the "*Empower International Academy*" in Nswanjere-Ntula village, Malima parish, Muduuma Sub County in Mpigi district.
The aim of this presentation is to provide background information about the project and the Environment Assessment (EA) process and to invite comment on any issues or concerns you may have.

Environment Impact Assessment (EIA)

Under the Uganda Environment Impact Assessment Regulations of 1998, an EIA is required to be submitted by the application in support of proposed development activities out of character with their surroundings.

Empower commissioned a consultant: Occupational Q & E Management Systems Ltd – to undertake the EIA for this project which was submitted to NEMA Uganda and approved in April 2015.

KEY OUTCOME: EIA CERTIFICATE NUMBER: NEMA/EIA/6155

3

Although an environmental certificate was obtained by this project from NEMA (Uganda), compliance with USAID environmental guidelines is a prerequisite to securing agency financing. USAID's mandatory life-of-project environmental procedures require that the potential adverse impacts of USAID-funded and managed activities be assessed prior to implementation via the Environmental Impact Assessment (EIA) process defined by 22 CFR 216 (Reg. 216). They also require that the environmental management/mitigation measures ("conditions") identified by this process be written into award documents, implemented over life of project, and monitored for compliance and sufficiency. It is for this reason therefore that the assessment needs to be done.

5

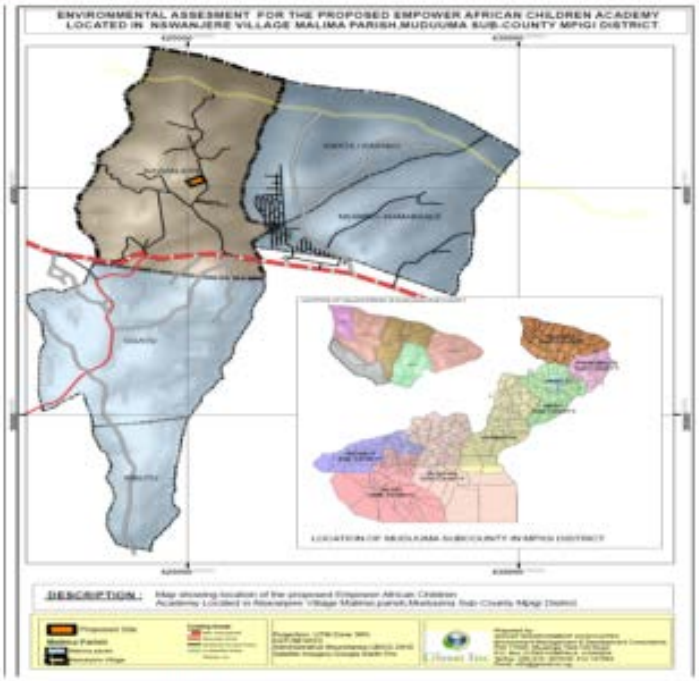


Figure 1: Map showing the project site in Nswanjere

7

About the Project Proponent:

- Empower African Children (EAC) is a private company registered in Uganda (with liability limited by guarantee).
- Supports AIDS orphans and vulnerable communities.
- Offices are located in Makerere Kikoni, Kampala.
- The school development project is to be funded by USAID.

The Development Project:

- Components will include:
- Classroom blocks (4)
- Administration block
- Science lab and generator house
- Multipurpose hall
- Dormitories (boys: 32 + 24; girls: 32 + 40)
- Washrooms / Ablution area
- Kitchen
- Clinic
- Computer lab
- Staff quarters
- Sports grounds
- Water supply
- Power supply
- Waste management
- Storm water management network

9

Plate showing students at school

Figue 2: Artistic impression showing planned placement of the project components

EMPOWER AFRICAN CHILDREN

USAID Environmental Requirements: Environmental Impact Assessment

- Every USAID-funded program is required to comply with the U.S. Government's environmental regulations (often referred to as, "Reg. 216). Reg. 216 outlines the EIA process that USAID has designed to identify potential effects – positive or negative – that a project or activity may have on the environment. The process is intended to prevent activities that are likely to cause significant environmental harm and to ensure that projects monitor and mitigate any negative effects on the environment.

Some Salient definitions:

What is EIA: this is a systematic process to identify potential effects – positive or negative – that a project or activity may have on the environment. It includes establishing plans to monitor and mitigate any negative effects as well as ways to prevent activities that are likely to cause significant environmental harm.

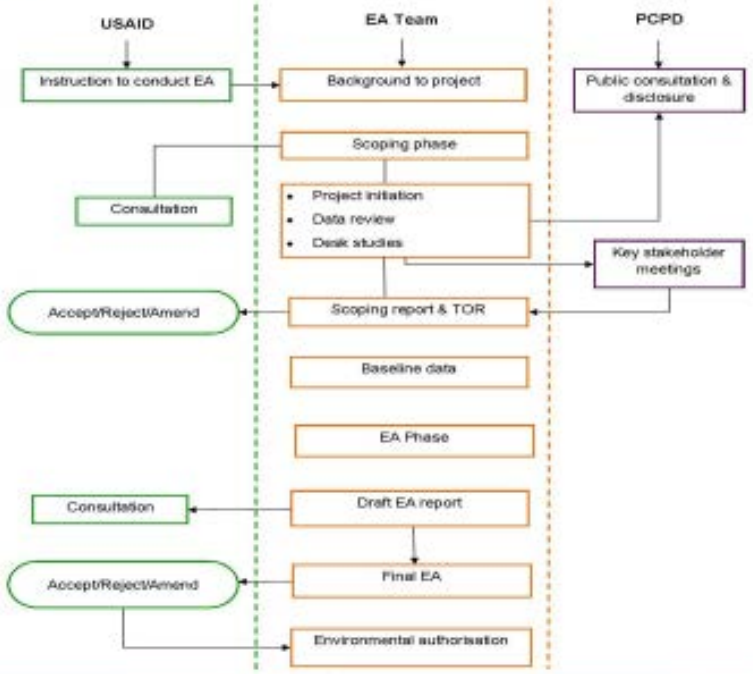
What is Initial Environmental Examination (IEE): A survey of reasonably foreseeable effects of a proposed project or activity on the environment. It is a simplified version of a more comprehensive examination of environmental impacts called the environment assessment (EA).

What is Environment Assessment (EA): this is a detailed environment analysis that is necessary when an initial review of the program indicates that at least some program activities are likely to have significant adverse effect on the environment.

The EA Process has the following main steps

- Initial consultation with key stakeholders
- Compile and submit scoping statement to USAID
- Approval/rejection of scoping statement by Bureau Environmental Officer (BEO)
- Stake holder consultation to discuss proposals and obtain comments
- Collate baseline information
- Conduct specialist studies (Ecology, Pesticide use, etc)
- Collate EA report and Environment Management Plan
- Compile final EA and submit to USAID for decision making
- Approval/rejection of project.

The EA Process



Key issues identified to date

The following key issues were identified during the Scoping Study:

1. Changes arising from the physical footprint of the proposed construction and operations:

Possible changes to the site (levels, drainage system, etc) as a result of earthworks or excavation on the land. Specific attention should be paid for the potential of land clearance for construction of buildings, parking and other proposed land uses to impact on the site especially the hilly areas (stability).

a) Impacts from road improvement and operation
b) Flood potential in adjacent lands arising from proposed drainage modifications.
c) Changes to visual aesthetic arising from excavation (if any), demolition and construction works.

21

Key Issues cont'd…

2. Changes arising from storage of project subsidiary inputs and disposal of waste streams:

a) Impacts from operation of the medical facility
b) Increased total suspended solid loads during construction works (including material stockpiling) in low-lying areas as well as during site preparation and construction.
c) Effects on receiving water bodies during the operational phase of the project (arising from upset conditions, sewage effluent disposal and other school operations). This shall include, but not necessarily be limited to, demand created on the importation, storage and disposal of e.g fuels and other chemicals including pesticides if they are to be used.
d) Any potential effects on air quality.
e) There should be a thorough examination of the effects of any proposed drainage modification and associated outfalls to the roadside and adjacent lowlying environments.

23

Key Issues cont'd…

3. Impacts on biological receptors and habitats

a) Impacts on neighbouring sensitive ecosystems (Lwamunda forest reserve, Ntula wetland, seasonal stream)
b) Biodiversity, biomass and populations, with specific attention to endemic, protected, endangered species, migratory species and commercially important species.
c) Eco-system functions and integrity (e.g. habitat reduction/modification or fragmentation; introduction of invasive alien species, and predators, breeding grounds).
d) Impacts arising from usage of resources (e.g. fuel wood, water, deforestation)

25

Key Issues cont'd…

4. Impacts on the socio-economic environment, specifically:

The effects of having large numbers of visitors and employees at this site:

a) The impact of increased traffic flows to the site at specific periods, including during the construction period.
b) The effects of the proposed development on transients and other informal users of the site surrounding areas
c) The effect of demand and consumption of the following services and utilities to this location: police services, emergency services, solid waste (including hazardous) collection and disposal, water, electricity.
d) Off-site impacts of construction material sourcing and transportation.
e) The availability of water for this development must also be indicated.
f) Student's welfare, including:
   - Communicable disease prevention
   - Indoor and outdoor safety issues for students
   - Protection from intruders
   - Safety in workshops and laboratories
   - Provisions for students with special needs

Cumulative Impacts

The EIA will consider cumulative impacts of existing projects, the proposed project planned future projects.

27

Plate showing an existing borehole within the site sunk by EAC

Plate showing an existing borehole within the site sunk by EAC

29

Plate showing part of the site viewed from western boundary

Plate showing view of the site from the north-western boundary

31

Plate showing the immediate neighborhood of the site to the east

Plate showing the section of the access road to the site

33

Gissat Inc

DEVELOPMENT OF EMPOWER INTERNATIONAL ACADEMY ENVIRONMENT ASSESSMENT STAKEHOLDER COMMENT SHEET

You are invited to participate in the EA process and raise any issues and concerns you may have about the proposed project. Your comments are a key part of the assessment process and it is important that Gissat understands your concerns so that they can be responded to and addressed in the EA report.

If you wish to make any comments at this stage please use this form. Alternatively, please send an email or write separately.

The final EA Report will be submitted to USAID decision making. Any other comments you would like the study team to record may be noted on a separate page or on the reverse side of this form.

35

EMPOWER AFRICAN CHILDREN

Please fill in your details	
Name:	Organization
Telephone:	Position:
Cell phone:	Email:
Address:	

Please post or email to:

Gissat Environment Associates
Environment Management & Development Consultants,
Plot 7140A, Muyenga Tank Hill Road;
P.O. Box 21598 KAMPALA, UGANDA
Tel/fax: 256-414- 267078/ 312-107083
Email: info@gissat.co.ug

Empower African Children Limited
Makerere Kikoni P.O. Box 71747
Kampala Uganda
+256414110890
info@empowerafricanchildren.org

Please answer the questions below and feel free to provide any comments you would like to raise. Please continue on additional paper if required:

1. What are the primary concerns faced by you/ your community / your organization with regards to this development?

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

EMPOWER
AFRICAN CHILDREN

Questions cont'd…

2. Are you in favour of or against the proposed activities? Please provide a reason for your answer

41

Questions cont'd…

3. Do you have or know of any information that might be relevant to the EA (e.g information about schools in the area, environmental information and community, social or economic information)

43

EMPOWER
AFRICAN CHILDREN

Thank
You...

Table A.3-3: Responses to the questionnaires issued prior to EA for Empower International Academy stakeholders meeting that was held on April, 29 2016 in Mpigi District.

Name, Contact, Designation Organization	Concerns faced with regards to this development.	In favor of/against the proposed activities. Give a reason for your answer.	Any relevant information to the EA (schools in the area, environmental & community information, social /economic information.
Mr.Birakwate Polly 0772426894 District Natural Resources Officer / District Forest Officer Mpigi District Local Government	✓ He urged the proponent to ensure that trees are planted in accordance to the requirements on site. ✓ Proper waste management should be highly practiced in order to avoid pollution of the environment. ✓ Supervision and monitoring of project activities for adherence. ✓ Ensure that wetlands are not affected during the construction phase.	He is in favor of the project because: ✓ It will act as a stepping stone for developing the area. ✓ It will provide quality education to the school going children.	✓ He urged the proponent to conserve the environment through use of energy saving facilities for instance minimal use of firewood ✓ The local communities should be able to benefit from the proposed project for instance it should provide market for their local goods. ✓ The proponent should adhere to mitigation measures as stipulated in the laws. ✓ The proponent should plant relevant trees in terms of requirements on site.
Mr.Giribo John 0782933001 Sector Manager National Forestry Authority-Lwamunda Sector	✓ His major concern is change of land use which will impact on the ecosystem which has been existing in the affected project area.	✓ As per NFA Lwamunda Sector forest management plan area, it favors the proposed activities as the project will continue to provide conservation education to the young generation as the country is being faced with challenges of climate	✓ The project's location is near the CFR which totals up to 4,696Ha.According to the statutory instrument 1998 No.63 it has a boundary length of 139.3km.Lwamunda CFR is a riverine forest i.e. largely occupying valleys and lower hill slopes. Therefore it has rivers and lakes that can be affected

		change.	by the drainage system of the project which has to be put in to consideration by the proponent.
Mr.Mayanja Jimmy 0782733013/0703718565 Mpigi District NGO Forum	✓ The proposed school officials have to be part of the district NGO Forum so as to have better coordination.	✓ He is in favor of the proposed development since it will bring about social and economic transformation of Mpigi district.	✓ The proponent should work hand in hand with the District Natural Resources Officer and NFA to identify key environmental issues and how to address them.
Mr. Mugerwa Robert 0772331557/0751331557 Chairperson Local Government III Muduuma Sub county	✓ The proponent was urged to provide bursaries to some students who cannot afford the school fees.	✓ He fully welcomes the proposed project since it is going to bring about development in different aspects i.e. social, political economic.	✓ The proposed development will be strategically located, in the middle of Muduuma Sub County which will be helpful to the community as a whole. ✓ It will also be located in Malima parish which hardly has any secondary school in the vicinity thus being beneficial to the community.
Mr.Mutaaawe Ronald 0702604030 Senior Assistant Secretary Muduuma Sub county	✓ The proponent was urged to come up with mitigation measures for any arising environmental issues. ✓ The proponent should ensure that he adheres to the government policies.	✓ He is very much in favor of the proposed development since it will benefit various vulnerable groups of people e.g. orphans, women	✓ The area will develop economically ✓ Security may become an issue due to such a development. ✓ The school is well positioned considering the fact that it is in an area which is void of secondary schools. ✓ The proponent should devise means of addressing traffic and its impacts. ✓ The proponent should also critically observe the long dry spells, the off running water, the

			ecology and biodiversity of the area.
Mr. Nsubuga Saka 0783027880/0705202180 Muduuma Sub County Environment Officer Focal Point Person Mpigi District Local Government Environment Office	✓ All the different types of waste should be properly disposed of.	✓ The project is highly welcomed because it will contribute to the development of the area and district as a whole.	✓ There are higher school dropout rates in that particular area therefore it should be given special consideration. ✓ Skill enhancement is encouraged most especially for the youth thus reducing on the number of job seekers in the country.
Mr.Tamale John 0752868558 Chairperson Nswanjere-Mawokota North	His major concerns were: ✓ Proponent should create jobs for the community members. ✓ The proposed project should help in improving on the water and electricity supply in the area. ✓ There should be proper drainage systems and road construction.	The chairman fully supports the proposed project because: ✓ It will cater for vulnerable groups of people like the orphans, PWDs etc. ✓ The proposed project will provide market for the local goods. ✓ Help in beefing up the security in the area. ✓ Creation of employment opportunities for the masses. ✓ Source of education to the children in the community.	✓ There is poor performance in schools due to unqualified staff therefore qualified teachers from the proposed project will be of a great service. ✓ Too much noise emitted from both the construction and operation phases should be controlled since it negatively affects the neighboring community. ✓ The proponent should ensure that proper waste disposal is practiced most especially medical wastes so as to prevent pollution and disease outbreaks.
Mr. Mukwaya Benon 0772930681/073013515	✓ The local community should be put in to consideration in regard to labor and affordable fees at the proposed school	He is in total support of the proposed project because: ✓ The proposed project will	✓ The proponent should ensure that Environmental screening is done during the construction of the project premises.

Assistant Statistical Officer Mpigi District Local Government	project. ✓ The proponent should work hand in hand with the district officials (monitoring the project activities) ✓ Integrating project activities with those of the district like school health immunization and reproductive health, tree planting etc.	provide market for the local goods. ✓ It has also tackled critical areas of service delivery like water and sanitation, health, education and environment ✓ Since Muduuma Sub County has only 3 secondary schools yet there are 10 primary schools, there will be improved access to secondary education.	✓ Tree planting should be practiced by the development to replace the vegetation that will be cleared. ✓ He urged the proponent to construct an energy saving store and also sensitize children on environmental issues and energy saving.
Ms. Nagaddya Noeline 0772881623 Secondary Education & Health Mpigi District Local Government	✓ The proposed project should set higher standards for the already existing schools in regard to performance of the students.	✓ She totally supports the project because there is no secondary school around the project area, this development has come at the right time.	✓ Since the community members are farmers, they should be given a chance by the proponent to benefit from the project through providing market for their agricultural products. ✓ Trees must be planted to restore the environment and beautify the area. ✓ Considering the fact that there are quite a number of primary schools in the area the proposed school will grow so fast.
Mr.Ssekiwungu Mohammed 0752933385/0782302875 Acting Physical Planner	✓ There should be annual consultations on the progress of the project with all stakeholders. ✓ Need for the project to become	✓ He is in favor of the project since it will provide /act as a model for environmentally and socially responsive / relevant projects within	✓ Acquisition of occupational permits by the proponent before occupation of the proposed development's completion. ✓ The proponent was urged to

Senior Lands Management Officer Mpigi District Local Government	more program focused for sustainability purposes. ✓ More integration of nature (ecosystems) especially during street and fencing off developments. ✓ Involvement of the district officials in especially integrations with the community for easier negotiations and community ownership feelings advancement.	the sub county and for the future.	work closely with especially the district technical team attached to the identified area. ✓ Outside interactive clinics with the community for project community and sustainability of service delivery.
Mr.Yoweri Musisi 0705187090/0782475326 News Reporter CBS Radio Bulange Mengo	✓ There should be various special services offered to orphans and vulnerable children (OVCs).	✓ He supports and welcomes the project since it will be a new development in the area.	✓ If the surrounding environment is well preserved the project will be highly beneficial and commendable. This can be done through afforestation, proper waste disposal etc.
Mr. Kajubi Bashir 0701319155 D.I.O Mpigi District Local Government	✓ We are concerned that the proposed project may not meet the required minimum standard shown in the architectural designs. ✓ The other concern is if the project lacks enough funds and fails yet the community is very eager to about it what will be the way forward.	✓ He is completely in favor of the project if everything discussed in the booklet will be adhered to.	✓ He suggested that the proponent should consult with the relevant departments at the district who will readily avail them with detailed information of those various areas.
Mr.Mwanje Anthony 0772617104/075889965	✓ How to identify the true OVCs using the tools approved by the Ministry of Gender Labor &	He is in favor of the project because:	✓ Information should be got depending on the information gaps. The locals, the sub

District Community Development Mpigi District Local Government	Social Development. ✓ The occupation and health safety conditions once the construction phase starts. ✓ The provision of HIV/AIDS work plan once all the activities commence.	✓ It will contribute to the development of the area. ✓ He also commended the project for showing that they support deep awareness through the consultations that have been held and other mitigation measures that have been proposed.	county and district officials should be consulted.
Ms.Asaba Elizabeth 0752451924 Resident Ntula	✓ Accidents from high speeding vehicles. ✓ Soil erosion that may occur during construction which may affect the neighbors. ✓ A lot of noise generated by the machines on site. ✓ Health issues may arise due to too much dust raised and an increase in the population. ✓ Neighbors property maybe be in danger due to the quarrying which is likely to take place	She is in full support of the project because: ✓ It will create market for the available goods ✓ Provide employment opportunities for the locals. ✓ Most of all help in developing the area.	✓ The area has a lot of OVCs who have failed to go to school because of various reasons. Therefore the proposed development should put them in to consideration.

Appendix 4: Records of attendance

A4-1: Attendance record of the community meeting in Ntula-Nswanjere Village

15/12/2015

Community meeting with Ntula-Nswangere village

1. Tamale John 0752868558
2. Ssemaganda Edward
3. Majwega Paul 0782414615 – 0705187096
4. Kasozi Bosco 0753635801
5. Kisumika Paul 0782558853
6. Ssengoye Peter 0782491289
7. Mbasa Martin 0782821835 / 0705574484
8. Mulangila [illegible] D.
9. Nannozi Francis 0754533338
10. Mrs Mutaawe 0772574395
11. Muky Mukambwe E. Ndagano
12. Kayanja ~~Jos~~ Joseph 0782425978
13. Ssentamu Richard 0782988852
14. Kamugisha Wilson 0774746492
15. Namitala Ruth
16. Mrs Kayanja
17. Nnanfaka Veronica 0782806831
18. LWANGA RONALD 0779693966
19. Robert Kayemba 0775422077
20. Olivia Namutosi 0776949098

A4-2: Attendance record for the meeting held with the LC1 by Gissat team

Meeting with the chairman.

MEETING WITH THE CHAIRMAN.

Gissat Inc

Date: 10th/Dec./2015

	Name	Contact	Designation	Signature
1.	Jackie Ampaire	0774275140	Envi'tal Practitioner	Jackie.
2.	MIRANDA BIRUAMBA.V.	0701245910	Envi'tal Practitioner	Biruamba
3.	Sammy Namutebi	0704593424	Envi'tal practitioner	[illegible]
4.	MUKASA Ashraf	0701547674	Envi'tal practitioner	[illegible]
5	TAMALE JOHN	0752868558	ENVIRONL. PRACTIONER	[illegible]
6	IMPAM PETER	0774829579	"	[illegible]
7	ALEX BIARUGABA	0701321211	PROJECT MANAGER	[illegible]

GISSAT ENVIRONMENT ASSOCIATES
Environment Management & Development Consultants
Plot 714CA, Muyenga Tank Hill Rd
P. O. Box 21598
Kampala, Uganda
Tel/Fax: +256 414 267078
0312 107083
E: info@gissat.co.ug
gissat@mtninternet.co.ug
W: www.gissat.co.ug

A4-3: Attendance Record for the stakeholder consultative meeting held on 29th April in Mpigi

EMPOWER AFRICAN CHILDREN

Gissat Inc

STAKEHOLDER CONSULTATIVE MEETING: ENVIRONMENT ASSESSMENT FOR DEVELOPMENT OF THE EMPOWER INTERNATIONAL ACADEMY AT NSWANJERE

Ref:	Name	Contact	Designation	Signature
01	Mutaawe Raymond	0700-604030	SAS – Mubuuma	
02	Nagaddya Nboline	0772831623	Sec. Education Mpigi	Nboline
03	Meegar D.	0772428665	New vision	
04	Birakwate Polly	0772426894	District Forest Officer	
05	KATUBI BASHIR	0701319155	DLO	
06	S. LUBEGA-WALUMBA	0772411157	R.D.C	
07	Lutalo Ms	0776487105	Educ. Coord	
08	Nuwagira G.	0772680264	O/S	
09	Ssendikwanawa F.	0772413097	DHI	
10	Luwakanga J.M	0772480643	L.C V.P	
11	Kikomeko G.	0702819469	Engineer	
12	Tumale Abdu	0757338886	GISSAT Engineer	
13	Koiregorilla	0772 430473	SFO	
14	Namutebi Fauzia	0701684673	Inspector	
15	Kateregga Badru	0776266134	V/C Person LCV	
16	Mwanje Anthony	0772617104	District Community Development Officer	
17.	SSEKIKUBO MUHAMMAD	0752933585	P/PLANNER	
18.	KAKOOZA Simon P	0775944597	Envl Engineer	

EMPOWER AFRICAN CHILDREN

Gissat Inc

STAKEHOLDER CONSULTATIVE MEETING: ENVIRONMENT ASSESSMENT FOR DEVELOPMENT OF THE EMPOWER INTERNATIONAL ACADEMY AT NSWANJERE

Ref:	Name	Contact	Designation	Signature
1.	Giribo John	0782933001	Sector Manager (MFA-Lwamata)	
2.	MATANJA JIMMY	0782733013	NGO FORUM (CHAIRPERSON)	
3.	Asaba Elizabethk	0752459124	Resident	
4.	Mukambwe Elis.	0753833154	Resident	
5.	AnnaRose McPherson	0771661279	EMI	
6.	Kulume Patience	0787454573	EMI	
7	Kamphirin Joanna	0701242285	Ofc Bufumira P/Station	
8	LWANGA ROMAN	0779693966	L.C I NSWANJERE	
9.	TAMALE JOHN	0752868558	DEFENCE NSWANJERE	
10	Mujwega Paul	0782414668	L.C I CHAIRMAN	
11	SSENGOYE PETER		Information Officer	
12	NSUBUGA SALIM	0782558853	Farm	Ssengoye Peter.
13	Bikutulu Arthur	0753027880	SFPP/ENVIRONMENT OFFICER	
14	Malik Mahabba	0772398786	mudum s/c	
15	Nugeme Robert	0772553726	DCAO	
16	Yoweri Musis	0772331507	c/person Lwamata	
17	Nakiwala Josephine	0773038982	media PO	

EMPOWER AFRICAN CHILDREN

Gissat Inc

STAKEHOLDER CONSULTATIVE MEETING: ENVIRONMENT ASSESSMENT FOR DEVELOPMENT OF THE EMPOWER INTERNATIONAL ACADEMY AT NSWANJERE

Ref:	Name	Contact	Designation	Signature
1	Alex Bylamgyaka	0776433570	PROGRAMM MANAGER	
2	Ameso Angella	0753466551	Gissat Environment	
3	Mukwaya Benon	0772930681	Asst Statistical Officer	
4	Benny Namutebi	0704593424	GISSAT	
5.	Sharon Kisakye	0776967126	Gissat	
6.	Harriet Mujuni	0772705796	GISSAT	

Appendix 5: Sample Field Questionnaire

**ENVIRONMENTAL IMPACT ASSESSMENT
FOR THE PROPOSED ESTABLISHMENT OF EMPOWER AFRICAN CHILDREN ACADEMY IN NTULA VILLAGE, MUDUUMA SUBCOUNTY, MPIGI DISTRICT**

Gissat In

Okwebuzza kubekikwatako

OLUPAPULA LWA EBIBUZZO ERI ABAKULEMBEZE N'ABANTU BO MU KITUNDU

Enyanjula
Ekitongole kya Empower African Children Kirina entekateka y'okuzimba essomero; Empower African Children Academy ku kyalo Ntula, mu Gombolola ye Muduuma mu Mpigi distulikiti ku ttaka erigeralageranyizibwa okubera yikka kumi(10).

Kampuni ya Gissat Environment Associates yawebwa omulimu aba Empower African Children okwekenenya ensonga ez'ebyobutonde zikwata ku ssomero elitekebwatekebwa okuzimbibwa.

Kuno okwebuza kwakuyamba mu kunonyereza kuno.Osabibwa n'obwewombeffu okuyamba ngodamu ebibuzo bino wamangga:

Ennamba y'olupapula: .....

Ennaku z'omwezi: ....21st January 2016

1. Ebikukwatako

1.1 Erinnya...Mukambwe Elis..... Omulimu....Ebyemikono.....

Enamba y'essimu...0753 833154.....Wobeera.....Ntula Village.....

2. Ensonga ez'okuddamu

2.1 Bilime ki ebisinga okulimibwa mu kitundu kino?

Kasooli, bijanjalo
Ssoya
Muwanyi

2.2 Nga ojjeko okulima mulimu ki omulala gwemwenyigira mu nga amakka?

Tuluka emikeeka, ebitambala, eby'omukulago
Tokola Kaawa

2.3 Olowozo enkulakulana ejja mukitundu eyinza etya okukosa oba okuganyula omulimu gwo?

EMPOWER
AFRICAN CHILDREN

Emotoka zijja kututaalaganya nga bakola, enfuufu.
Eye tujja kufuna abagula ebintu byaffe mu Craft Shop.

2.4 Kino ekitundu kilimu amasomero ameka era galikuddalaki?

Waliwo amasomero asatu (3).

2.5 Nga amaaka mujawa amaazzi era waliwo buwanvu ki okuva ewakka (gelageranya)?

Amazzi ngandi mu luggya era mmuze muwagampa.

2.6 Mutera kufumbisa ki? Tufumbisa nku na manda

2.7 Ate okwakisa ekiro? UMEME

2.8 Lino ettaka kwobeera lilyo? Lyange

2.9 Lye nkana ki? Acres 2.

2.10 Eddwaliro eriri okumpi lili mu buwanvuki okuvawano era liri kuddala ki?

Mailo 2 Nswanjere missionary hospital.

3.0 Olina ebirowoozo byonna bye wandyagadde project eno effeko?

Twalyagadde eddwaliro okuyamba mu kitundu.
okutuuma ku mirimu.
okutulongosezza ekkubo.
okutekanza Pumps.
okufuna obukuumi obubbi bwe nte bukendere.

**ENVIRONMENTAL IMPACT ASSESSMENT
FOR THE PROPOSED ESTABLISHMENT OF EMPOWER AFRICAN CHILDREN ACADEMY IN NTULA VILLAGE, MUDUUMA SUBCOUNTY, MPIGI DISTRICT**

Gissat Inc

Okwebuzza kubekikwatako

OLUPAPULA LWA EBIBUZZO ERI ABAKULEMBEZE N'ABANTU BO MU KITUNDU

Enyanjula

Ekitongole kya Empower African Children Kirina entekateka y'okuzimba essomero; Empower African Children Academy ku kyalo Ntula, mu Gombolola ye Muduuma mu Mpigi distulikiti ku ttaka erigeralageranyizibwa okubera yikka kumi(10).

Kampuni ya Gissat Environment Associates yawebwa omulimu aba Empower African Children okwekenenya ensonga ez'ebyobutonde zikwata ku ssomero elitekebwatekebwa okuzimbibwa.

Kuno okwebuza kwakuyamba mu kunonyereza kuno.Osabibwa n'obwewombeffu okuyamba ngodamu ebibuzo bino wamangga:

Ennamba y'olupapula: .....

Ennaku z'omwezi: ...26/01/2016.....

1. Ebikukwatako

1.1 Erinnya...Katanzi Gerald..... Omulimu...Kulima.....

Enamba y'essimu... 0784908259.....Wobeera...Ntula.....

2. Ensonga ez'okuddamu

2.1 Bilime ki ebisinga okulimibwa mu kitundu kino?

Matooke Nakati
Kasaki Ntula
Biyaggala Bilunganya

2.2 Nga ojjeko okulima mulimu ki omulala gwemwenyigira mu nga amakka?

Okulunda

2.3 Olowozo enkulakulana ejja mukitundu eyinza etya okukosa oba okuganyula omulimu gwo?

Tujakusobola okutunda ebirime byajje musomero okugula kabbali, ebijanjalo

2.4 Kino ekitundu kilimu amasomero ameka era galikuddalaki?

Ay Amasomero Mulimu eby primary ensuanjele ne lya Secondary Limu.

2.5 Nga amaaka mujawa amaazzi era waliwo buwanvu ki okuva ewakka (gelageranya)?

Kitundu kya mpo

2.6 Mutera kufumbisa ki? Nkku

2.7 Ate okwakisa ekiro? Katadooba

2.8 Lino ettaka kwobeera lilyo? Iyange

2.9 Lye nkana ki? Tika birim ne kitundu

2.10 Eddwaliro eriri okumpi lili mu buwanvuki okuvawano era liri kuddala ki? Mayi'o Saate. Nswanjele HCIII

3.0 Olina ebirowoozo byonna bye wandyagadde project eno effeko?

Batuwa emilimu mu kyjimba
Twagala fees zibele ntono

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF EMPOWER AFRICAN CHILDREN ACADEMY IN NTULA VILLAGE, MUDUUMA SUBCOUNTY, MPIGI DISTRICT

Gissat Inc

Okwebuzza kubekikwatako

OLUPAPULA LWA EBIBUZZO ERI ABAKULEMBEZE N'ABANTU BO MU KITUNDU

Enyanjula

Ekitongole kya Empower African Children Kirina entekateka y'okuzimba essomero; Empower African Children Academy ku kyalo Ntula, mu Gombolola ye Muduuma mu Mpigi distulikiti ku ttaka erigeralageranyizibwa okubera yikka kumi(10).

Kampuni ya Gissat Environment Associates yawebwa omulimu aba Empower African Children okwekenenya ensonga ez'ebyobutonde zikwata ku ssomero elitekebwatekebwa okuzimbibwa.

Kuno okwebuza kwakuyamba mu kunonyereza kuno.Osabibwa n'obwewombeffu okuyamba ngodamu ebibuzo bino wamangga:

Ennamba y'olupapula: .....

Ennaku z'omwezi: ...21.:.1.:2016.....

1. Ebikukwatako

1.1 Erinnya...LUTALO..... Omulimu....Muntiny.....

Enamba y'essimu...0785990953....Wobeera.....Ntula.....

2. Ensonga ez'okuddamu

2.1 Bilime ki ebisinga okulimibwa mu kitundu kino?

.....Kasooli.....
.....Ivatooke.....
.....

2.2 Nga ojjeko okulima mulimu ki omulala gwemwenyigira mu nga amakka?

.....ojjubu ennatafali.....
.....

2.3 Olowozo enkulakulana ejja mukitundu eyinza etya okukosa oba okuganyula omulimu gwo?

EMPOWER AFRICAN CHILDREN

Nga kubaguiza amutaali gange.

2.4 Kino ekitundu kilimu amasomero ameka era galikuddalaki?

Galimu atacno oza gali kuddala lya primary.

2.5 Nga amaaka mujawa amaazzi era waliwo buwanvu ki okuva ewakka (gelageranya)?

Tugaso ku magiccondo, obuwanvu bwa kitundu kya mita

2.6 Mutera kufumbisa ki? Nkni

2.7 Ate okwakisa ekiro? Tala ya mukono

2.8 Lino ettaka kwobeera lilyo? ya

2.9 Lye nkana ki? 1 acres

2.10 Eddwaliro eriri okumpi lili mu buwanvuki okuvawano era liri kuddala ki? Kumpi

Kitundu kya nvuli.

3.0 Olina ebirowoozo byonna bye wandyagadde project eno effeko?

Nyegula ayongere ebiliimu n.n

kitundu kyaffe.

Appendix 6: Copy of land ownership documents

THE REPUBLIC OF UGANDA

MAW/24
LEASEHOLD REGISTER

Volume 4093 Folio 22

REGISTRATION OF TITLES ACT

CERTIFICATE OF TITLE

DESCRIPTION OF LAND

The Leasehold land edged red on the plan attached hereto and situate and known as follows:—

PLOT
~~Street~~ Number: 95
~~Road Name:~~ MAWOKOTA BLOCK 24
~~Township/Municipality/City:~~ AT NJAGI
District: MPIGI Area: APPROX:4.056HECTARES

TERM from 1ST JULY,2009 for —99— years and ——— months at the rent and subject to the covenants and conditions contained or implied in Lease Number bound up herewith and to the incumbrances (if any) entered in the Incumbrance Register.

Easements

PROPRIETORSHIP

Date, time and Inst. No.	Name and Address of Proprietor	Signature of Registrar
GD.22.4.2010 AT.3.02P.M. IST.K 52543	EMPOWER AFRICAN CHILDREN LIMITED OF P.O. BOX 36162,KAMPALA	Registrar of Titles

Date of issue: 11TH MAY,2010

Registrar of Titles.

Owner's Copy

Proprietorship—*continued*

Date, time and Inst. No.	Name and Address of Proprietor	Signature of Registrar

5000

THE REPUBLIC OF UGANDA

THE REGISTRATION OF TITLES ACT (CAP. 230)

MAILO REGISTER
MAWOKOTA BLOCK 24 PLOT 95 SITUATE
AT NJAGI
AREA: 4.056 Hectares

THIS LEASE is made on the 1st day of July Two Thousand and Nine under and subject to the Registration of Titles Act Cap. 230 between **A.F. Mpanga Nominees Limited** of P.O. Box 1520 Kampala (hereinafter referred to as **"the Lessor"** which expression shall, where the context permits, include its successors in title and assigns) of the one part and **Empower African Children Limited** of P.O. Box 36162 Kampala (hereinafter referred to as **"the Lessee"** which expression shall, where the context permits, include its successors in title and assigns).

WHEREAS:

The Lessor is the registered proprietor of the whole of the land comprised in Mailo Register Mawokota Block 24 Plot 95 at Njagi; and

The Lessee is desirous and the Lessor is agreeable to let the said land for a period of 99 years.

NOW THIS LEASE AGREEMENT WITNESSETH:

1. In consideration of the premium hereby reserved and of the covenants and conditions hereinafter contained on the part of the Lessee to be observed and performed, the Lessor hereby demises unto the Lessee, **ALL THAT** piece of land comprised in the above captioned register and which is particularly delineated on the plan annexed hereto and thereon edged with red, measuring 4.056 Hectares, (hereinafter referred to as **"the Demised Premises") TO HOLD** the same unto the Lessee for the term of 99 (ninety nine) years from the 1st day of July Two Thousand and Nine **YIELDING AND PAYING** therefore a premium of **Ug. Shs. 50,000/= (Uganda Shillings Fifty Thousand Only)** payable immediately upon the execution hereof and receipt whereof the Lessor hereby acknowledges.

2. **THE LESSEE HEREBY COVENANTS** with the Lessor to observe and perform all the conditions and covenants implied by law in this lease or otherwise herein contained or referred to **AND** without prejudice to the generality of the foregoing :

   (a) to pay the premium hereby reserved in the manner above set out;

CERTIFIED Memorial of the instrument registered in the Register Book
COMMISSIONER LAND REGISTRATION

Index No. 152 513 PROCEED REJECT
Registered for Registration at ..... A.M P.M on ..... 20 C.L.R

(b) not at any time during the said term to use, exercise or carry on or permit or suffer to be used, exercised or carried on in or upon the Demised Premises or any part thereof any unlawful and or noxious and or offensive trade, business, or occupation

(d) to pay all of the rates, charges or taxes and utility bills levied or charged to the Demised Premises; and

(e) to indemnify and hold the Lessor free from any claims, losses or liability in any way relating to the Demised Premises or arising out of or due to the Lessee's occupation of the Demised Premises.

3. **THE LESSOR HEREBY COVENANTS** with the Lessee as follows:

(a) the Lessee paying the premium hereby reserved and performing and observing the several covenants and conditions on its behalf herein contained, to allow the Lessee peacefully to hold and enjoy the Demised Premises during the term hereby created without any interruption by the Lessor or by any person lawfully claiming under the Lessor;

(b) Not without the Lessee's express prior written consent to sell, pledge, mortgage or in any other way deal with the reversionary interest in the land;

(c) To deposit the certificate of title in respect of the reversionary interest with the Lessee for safe keeping;

(d) To deal with the reversionary title in such manner as the Lessee may in writing direct; and

4. **IT IS HEREBY EXPRESSLY DECLARED AND AGREED** as follows:

(a) Upon the expiry of the term hereby created the Lessee shall be entitled to a further term of the same duration and upon the same conditions as the term hereby created (this clause inclusive), save as to the premium, upon paying a premium of **Ug. Shs. 10,000/= (Ten Thousand Uganda Shillings)** to the Lessor on or within 1(one) year of the last day of the term hereby created and the new term will be deemed to commence at one minute past midnight on the day after the last day of the term hereby created;

(b) The Lessee shall bear the cost of preparing, stamping and registering this Lease;

(c) Notices to be served on the Lessor shall be delivered to the registered office of A.F. Mpanga Nominees Limited on 9th Floor Workers' House,

1 Pilkington Road, P.O. Box 1520 Kampala, Uganda or such other address as may be notified to the Lessee in writing.

(d) Notices to be served on the Lessee shall be delivered to the Demised Premises.

(e) The Parties shall by notice in writing notify each other of any change in address for service at least 21 days prior to such change becoming effective.

(f) This Agreement constitutes the entire Agreement between the parties in respect of the subject matter hereof but is subject to previous undertaking signed between the parties.

(g) No variation or consensual cancellation of this Agreement and no addition to this Agreement shall be of any force or effect unless reduced to writing and signed by the parties or their duly authorised representatives;

(h) No waiver of any of the terms and conditions of this Agreement will be binding or effectual for any purpose unless expressed in writing and signed by the party hereto giving the same, and any such waiver will be effective only in the specific instance and for the purpose given. No failure or delay on the part of either party hereto in exercising any right, power or privilege hereunder will operate as a waiver thereof, nor will any single or partial exercise of any right, power or privilege preclude any other or further exercise thereof or the exercise of any other right, power or privilege;

(i) Should any of the terms and conditions of this Agreement be held to be invalid, unlawful or unenforceable, such terms and conditions will be severable from the remaining terms and conditions that will continue to be valid and enforceable. If any term or condition held to be invalid is capable of amendment to render it valid, the parties agree to negotiate an amendment to remove the invalidity;

(j) This Agreement will be governed by and construed in accordance with the law of the Republic of Uganda and all disputes, actions and other matters relating thereto will be determined in accordance with the laws of the Republic of Uganda; and

(k) The Parties hereby consent and submit to the non-exclusive jurisdiction of the High Court of Uganda in regard to any dispute arising from or in connection with this Agreement.

IN WITNESS WHEREOF the parties, intending to be bound hereby, hereto have affixed their hands hereunto on the date first above mentioned.

THE COMMON SEAL of the said **A.F. MPANGA NOMINEES LIMITED** was affixed hereto in the presence of

DAVID F. K. MPANGA
DIRECTOR

"THE LESSOR"

ERNEST K. WILTSHIRE
DIRECTOR/SECRETARY

THE COMMON SEAL of the said **EMPOWER AFRICAN CHILDREN LIMITED** was affixed hereto in the presence of

NAME: ALEXIS HEFLEY
DIRECTOR

"THE LESSOR"

NAME: DONNA MALOUF
DIRECTOR/SECRETARY

DRAWN BY:
A.F. MPANGA ADVOCATES
9TH FLOOR WORKERS' HOUSE
1 PILKINGTON ROAD
P. O. BOX 1520
KAMPALA

CERTIFIED Memorial of the instrument registered in

LRV	4093	601	22

of the Register Book

COMMISSIONER, LAND REGISTRATION

02/06/2010.

INCUMBRANCES

Date, time and Inst. No.	Particulars	Signature of Registrar

UGANDA

REGISTRATION
OF TITLES
ACT

Certificate of Title

District MENGO County MAWCKOTA

Block 24 Plot 95

Office of Titles
KAMPALA

EMPOWER
AFRICAN CHILDREN

COUNTY: MAWOKOTA

SUB-COUNTY: SS ABAGABO

UGANDA

THE LAND REGISTER

DISTRICT	PLOT No.
MENGO	95
BLOCK No. 24	

AREA IN HECTARES: 4.056

PART I—PROPERTY

NAME OR DESCRIPTION: LAND AT NJAGI

PRIVATE MAILO

ALL THAT piece of land situate and described above which is indicated on the Registry Plan by the Block and Plot numbers written hereon.

Easements, rights, etc. appurtenant to the land:

REGISTRAR OF TITLES

Proprietor's Signature or Mark

SEAL OF OFFICE

PART II—OWNERSHIP

Date and Time of Registration	Instrument No.	Proprietor's Name and Address	Father's Name (if applicable)	Clan (if applicable)	Registrar's Signature
7.5.09 10.08am	KLA414517	~~PETER SEGUYA P.O. BOX 1068, Kampala~~			
25.6.09 12.50 m	KLA419971	A.F. MPANGA NOMINEES LTD P.O. BOX 1520, Kampala			

PART III—INCUMBRANCES

Date and Time of Registration	Instrument No.	Name and Address for service of Mortgagee, Creditor, Caveator, etc.	Particulars	Registrar's Signature
22.4.10 3.02pm	KLA452543	EMPOWER AFRICAN CHILDREN LTD P.O. BOX 36162, Kampala	LEASE: FOR PLOT 95 BLOCK 24 FOR 99(NINENTY NINE) YEARS W.E.F. 1.07.2009 LRV..4093 FOL...22.....	

UGANDA

REGISTRATION OF TITLES ACT

THE REPUBLIC OF UGANDA

Certificate of Title

MAILO Tenure

EMPOWER
AFRICAN CHILDREN

Appendix 7: Water analysis results

NATIONAL WATER & SEWERAGE CORPORATION
KAMPALA WATER

Our Ref: KW
Your Ref:
Date: 30/12/2015

P.O. Box 70255 KAMPALA
PLOT 18/20 6TH STREET
INDUSTRIAL AREA
TEL: 0414-315500/1
FAX: 0414-349020

CONSULTING FIRM; GISSAT ENVIRONMENT ASSOCIATES .
CLIENT ; EMPOWER AFRICAN CHILDREN ACADEMY.
SAMPLE SOURCE; SURFACE WATER FROM NTULA VILLAGE,MUDUUMA S/C,MALIMA PARISH,MPIGI DISTRICT.
LOCATION 36N0425464,0040484
DATE RECEIVED 23/12/2015
REPORT OF PHYSICO-CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF SURFACE WATER SAMPLE

Parameters	Units	Water sample	National Standards
Temperature	^{0}C	23.8	25 - 32
pH	-	7.11	6.5– 8.5
Conductivity	μs/cm	168	2500
Turbidity	Ntu	12	10
Total dissolved solids	mg/l	132	1200
Total Alkalinity (as $CaCO_3$)	mg/l	58	500
Magnesium as $Mg2^{++}$	mg/l	7.68	50
Calcium as Ca2++	mg/l	13.6	75
Hardness total as $CaCO_3$)	mg/	66	500
Total Iron	mg/l	0.96	1.0
Total suspended solids	mg/l	5	0
Chlorides	mg/l	40	500
Nitrates	mg/l	2	5
Faecal coli forms	CFU/100ml	0	0
Colour	Ptco	80	15
Arsenic	mg/l	0.0	0.01
Sulphates	mg/l	26	200
Ecoli	CFU/100ml	0	0

The surface water showed good physcio-chemical and good bacteriological quality of the source except colour, TSS, Turbidity .There is need for conventional treatment before the water can be used for livestock and domestic supply

TUMWEBAZE STEPHEN

FOR QUALITY ASSURANCE MANAGER

NWSC KAMPALA WATER
30 DEC 2015
GGABA

KAMPALA WATER -"Every Drop Counts"

NATIONAL WATER & SEWERAGE CORPORATION
KAMPALA WATER

Our Ref: KW
Your Ref:
Date: 30/12/2015

P.O. Box 70255 KAMPALA
PLOT 18/20 6TH STREET
INDUSTRIAL AREA
TEL: 0414 - 315500/1
FAX: 0414 - 349020

CONSULTING FIRM; GISSAT ENVIRONMENT ASSOCIATES .
CLIENT . ; EMPOWER AFRICAN CHILDREN ACADEMY.

SAMPLE SOURCE; BOREHOLE WATER FROM NTULA VILLAGE, MUDUUMA S/C, MALIMA PARISH, MPIGI DISTRICT.
LOCATION 36N0425252, 0040184.
DWD NO 45249
DATE RECEIVED 23/12/2015

REPORT OF PHYSICO-CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF BOREHOLE WATER SAMPLE

Parameters	Units	Water sample	National Standards
Temperature	^0C	23.5	25 - 32
pH	-	7.10	6.5– 8.5
Conductivity	μs/cm	216	2500
Turbidity	Ntu	15	10
Total dissolved solids	mg/l	138	1200
Total Alkalinity (as $CaCO_3$)	mg/l	52	500
Magnesium as $Mg2^{++}$	mg/l	8.16	50
Calcium as Ca2++	mg/l	16	75
Hardness total as $CaCO_3$)	mg/	74	500
Total Iron	mg/l	1.95	1.0
Total suspended solids	mg/l	6	0
Chlorides	mg/l	45	500
Nitrates	mg/l	0	5
Faecal coli forms	CFU/100ml	0	0
Colour	Ptco	160	15
Arsenic	mg/l	0.0	0.01
Sulphates	mg/l	30	200
Ecoli	CFU/100ml	0	0

The borehole water showed good physcio-chemical and good bacteriological quality of the source except colour, TSS,.Turbidity .There is need for conventional treatment before the water can be used for livestock and domestic supply.

TUMWEBAZE STEPHEN

FOR QUALITY ASSURANCE MANAGER

NWSC
KAMPALA WATER
30 DEC 2015
GGABA

NATIONAL WATER & SEWERAGE CORPORATION
KAMPALA WATER

Our Ref: KW
Your Ref:
Date: 30/12/2015

P.O. Box 70255 KAMPALA
PLOT 18/20 6TH STREET
INDUSTRIAL AREA
TEL: 0414 - 315500/1
FAX: 0414 - 349020

CONSULTING FIRM; GISSAT ENVIRONMENT ASSOCIATES .
CLIENT ; EMPOWER AFRICAN CHILDREN ACADEMY.

SAMPLE SOURCE; BOREHOLE WATER FROM NTULA VILLAGE, MUDUUMA S/C, MALIMA PARISH, MPIGI DISTRICT.

LOCATION N00.363923, E032.327931

DWD NO 45250

DATE RECEIVED 23/12/2015

REPORT OF PHYSICO-CHEMICAL AND BACTERIOLOGICAL ANALYSIS OF BOREHOLE WATER SAMPLE

Parameters	Units	Water sample	National Standards
Temperature	^0C	23.6	25 - 32
pH	-	7.09	6.5– 8.5
Conductivity	μs/cm	224	2500
Turbidity	Ntu	14	10
Total dissolved solids	mg/l	143	1200
Total Alkalinity (as $CaCO_3$)	mg/l	50	500
Magnesium as $Mg2^{++}$	mg/l	6.72	50
Calcium as Ca2++	mg/l	16.8	75
Hardness total as $CaCO_3$)	mg/	70	500
Total Iron	mg/l	1.80	1.0
Total suspended solids	mg/l	5	0
Chlorides	mg/l	50	500
Nitrates	mg/l	0	5
Faecal coli forms	CFU/100ml	0	0
Colour	Ptco	218	15
Arsenic	mg/l	0.0	0.01
Sulphates	mg/l	36	200
Ecoli	CFU/100ml	0	0

The borehole water showed good physcio-chemical and good bacteriological quality of the source except colour, TSS. Turbidity .There is need for conventional treatment before the water can be used for livestock and domestic supply.

TUMWEBAZE STEPHEN

FOR QUALITY ASSURANCE MANAGER

NWSC
KAMPALA WATER
30 DEC 2015
GGABA

Appendix 8: Biodiversity assessment report

As a prerequisite, development of any magnitude requires environmental studies such that recommendations are forwarded. These help to minimize impacts on environment during projects by the proponent and take care of community concerns in the area at which the project is to take root.

This report has been compiled to give a detailed insight of the biodiversity coverage of the 10acre plot with specific attention to flora and fauna observed through the entire area where construction work is to be undertaken. It is twofold, involving documenting the entire flora and fauna cover profiles of the area and documenting some specific floral cover for areas whose GPS details have been taken in the course of the survey.

Overview

The site is located in Mpigi District, in the county of Mawokota North, Muduuma Sub-county and in Ntula Village at UTM 425251, 040186. It lies on a slope ranging between 1220 to 1228m above sea level. It is surrounded by heavily cultivated subsistence farms on relatively exhausted soils. Further, surrounding sections are built up with homesteads which also practice other forms of subsistence farming, such as goat and cattle raring more often tethered around the homestead.

The site lies within 20m proximity to the boundary of Rwamunda Central Forest Reserve, a preserve of the National Forest Authority. The forest is a mono-species with Terminalia as the plantation tree species. Other dominant crops in the surrounding included Musa sp and Robusta coffee, in a coffee tree nursery village demonstration.

General floral methods

Due to the small size of the plot and the heavy anthropogenic activities in the survey area, use of plot sampling as a method was avoided. This was in addition done to reduce bias and allow for caption of total vegetation within the plot. To examine the floral composition of this site, two transects of equal width (10m) and length equivalent to the plot length were thus used. The direction of each transect was determined by the terrain along the slope so as to capture any unexpected transitions in vegetation types and environmental gradients based on topography.

Frequency symbols (DAFOR) were used basing on the vegetation types of the study area (Kent & Coker, 1994). In addition, opportunistic sampling was applied to produce a near complete species list. Photography was also used as a form of data collection to take landscape pictures and human activity.

Floral characterization

The site is surrounded by a road on its down-slope side and gardens, thickets and grass cover are more pronounced on either side of the site. The gardens are dominated by *Musa sapientum, Phaseolus vulgaris, Coffea canephora* and *Zea mais* as food crops while surrounding thickets are dominated by the invasive *Lantana camara, Acanthus pubescens, Vernonia amygdalena* and *Acalypha bipartita* as shrubs and herbs while grasses are dominated by *Hyperhania spp*, *Imperata cylindrica*, *Paspalum notatum, Cymbopogon sp* and *Paspalum scrobiculatum*.

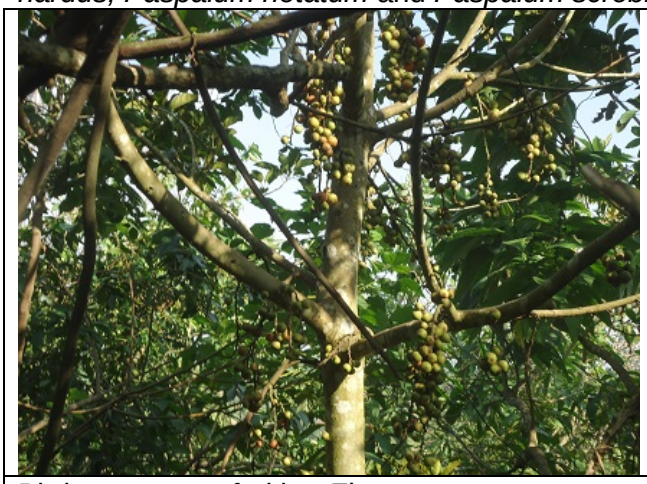
Road marking the lower slope boundary

Coffee nursery and Musa sp opposite site

The site is previously farm land that has been abandoned into fallow for over five years. Thickets and grass cover dominate the site dictating livestock rearing as current activity preferred to crop farming. A few mature and medium age tree species exist on site amidst thickets and termite mounds providing suitable habitat and breeding sites for avifauna. Fruit trees such as *Ficus sur*, *Albizia grandibracteata, Syzygium cumini* and the flowering *Erythrina abyssinica* were a major attraction for birds. Other tree species recorded in the area included *Albizia grandibracteata, Bridelia micrantha, Combretum molle, Ficus natalensis, Eriobotrya japonica* and *Mysopsis eminii*.

Thickets on site were mainly constituted of herbs and shrubs and these were dominated by *Acanthus pubescens* and *Lantana camara* at the lower section, *Vernonia amygdalina* mid slope and *Triumfetta rhomboidea*, *Urena lobata* at the top of the slope. Other shrubs and herbs recorded during the survey included *Vernonia amygdalena, Acalypha bipartita, Rhus vulgaris, Grewia similis, Pseudarthria hookeri, Berkheya spekeana, Ocimum canum, Caparis tomentosa Crotalaria sp, Plectranthus barbatus, Todalia asiatica, Grewia tenax, Dombeya burgessiae, Ceasalpinia decapetata, Flueggea virosa, Turraea parvifolia, Carissa spinarum, Acacia brevispica, Kalanchoe densiflora, Microglosa pyrifolia* and *Aloe sp.*

Grasses recorded in the survey included *Hyperhania spp, Millenus repens, Rottboellia cochinchinensis, imperata cylidnrica, Pannisetum purpureum, Panicum maximum, Cymbopogon nardus, Paspalum notatum* and *Paspalum scrobiculatum.*



Bird attractants, fruiting *Ficus sur*

Some grasses (*Cymbopogon*) common at site

MAMMALS

General methods

Transects and Local people Consultations

Owing to the little available time, dense human population and hyper activity within the sampling area, a quick sampling protocol was adopted to rapidly generate baseline mammal data for the area. Robust methods such as use of Sharman traps for small-sized mammals are not practical in such busy landscapes.

Similar transects as those for flora were used. Moving along these transects direct and indirect methods of counting and determining animal densities were applied. The direct method involved visual sighting of animals, whereas the indirect method involved using droppings and footprints to determine and estimate mammal densities (Koster and Han, 1988). Line transect sampling is practical, efficient and relatively inexpensive for any biological populations (Buckland et al. 1993). Environmental and ecological reports of the surrounding landscape were also reviewed. Further, information from residents was obtained through consultations.

The consultations basically involved asking local people of the animals they encounter as they execute their day to day activities. Because they are always in touch with their environments, local people are always a valuable source of information. Respondents were picked randomly and responses from all were collated to generate one species list for the area. Key informants such as local leaders are invaluable sources of information.

Opportunistic encounters

This involves opportunistic sightings while moving through the project area. These records are ideally not from designated sampling areas but within the larger project area. They are essential in enriching the species list of the project area.

Conservation status

The encountered mammal species were classified according to their conservation status as listed in the latest version of the IUCN Red List of Threatened Species (Version 2015-3).

Data quality and quantity

Fauna survey campaigns require long time investment to fully understand the dynamics of species assemblages of any one given area. Within the scope of this survey we could not conduct extended surveys, and are therefore constrained to stretch the results obtained to make wide ranging conclusions about the fauna of the site and neighboring area. Though the entire natural habitat was altered and supplanted by agriculture, it is likely that extended periods of field surveys spanning the different seasons might turn up a little more species than have been recorded at the time of the survey.

Mammal diversity

By virtue of site location, presence of large sized mammals is not expected on site as the surrounding natural forest and connecting corridors have been completely erased and replaced by homesteads and farmland. However, information from residents (pers. com) indicated unidentified antelope and the African Civet *Civettictis civetta* sightings in the nearby NFA plantation forests. Vervet monkey *Chlorocebus pygerythrus* have also been sighted sometimes crossing from the plantation forest to raid crops in the gardens adjacent to the site.

No traps were laid for the capture of small-sized mammals owing to hyper-anthropogenic activity with visible onsite presence of grazing animals and people. However, there was a single record of the Banded Mongoose *Mungos mungo,* three records of the Black rat *Rattus rattus* a common rodent in homes and there was evidence of presence of Lesser Cane rat *Thryonomys gregorianus*. No abundance estimates for mammals were made owing to the few numbers

encountered during the Environmental Impact Study (EIS). The few records can be attributed to the limited time of this survey in addition to anthropogenic hyperactivity observed during the survey. It is possible that further surveys over longer periods could generate more species.

BIRDS

Applied avifauna data generation methods

For birds, similar line transects were used and point counts were conducted with points at 200m apart with species identified and recorded. Use of point counts is a common method for assessing bird species in an area. This is a count of all birds detected visually or aurally by a single observer at equidistant points in a line transect in a specified period (e.g., 10 minutes) (Bennun et al 1996, Carswell & Pomeroy 2004). Opportunistic records were made of the species that occur in the area but were not recorded in the point counts for purposes of building up species lists.

In addition, timed-species counts were also used to generate abundance data for the site. These are counts conducted along transects during every 10 minutes without repetition of recorded species (Pomeroy, 1996). This method involves moving around the study area and recording the bird species seen and the time at which they are seen at ten minutes intervals for a period of 60 minutes. This method assumes that the birds seen first are more abundant than those seen last. In that case, the birds seen during the first ten minutes get a score of 6. Those in the 10-20 minutes get a score of 5, while those seen in the last 50-60minutes get a score of 1. The method has previously been used by Bennun et al., (1996) to assess birds in Kenya and Uganda.

Large birds

Most large birds occur at low densities but they are important members of the bird community. In particular, raptors (birds of prey), being top predators, are very good indicators of habitat condition. However, because they are widely dispersed (except vultures at a carcass and, in a few species, at communal roosts), only small numbers are recorded by foot transects. For this study the hilltop was used as a vantage point to observe flying birds.

The larger soaring raptors are most active once the air has warmed up and there are thermals to use. Data obtained from these surveys were supplemented by data provided by Nature Uganda and the National Biodiversity Bank.

Nightjars, and to a lesser extent owls, are active at dusk, but can be very hard to detect during the day when they are least active. Nightjars have a very brief period of maximum activity, when they are feeding and also, in many cases, displaying (Pomeroy 2013), approximately 30 minutes after sunset. Opportunistic observations were targeted within the landscape on our return journey at 6pm.

Analytical programme

For birds, the data were presented showing the numbers of species in various categories of conservation concern for each of the transect routes (counts). For raptors and other large birds these data is used for distance analyses to estimate the populations of each species. However, due to the small numbers of raptors recorded during this study, no such analysis was conducted.

Equipment

Landscape pictures

Landscape photos were taken using a Sony Cybershot DSC-W710. These were to show a description of the different features and habitat types.

Species identification equipment

In the field the types of binoculars used to identify birds were Vortex 8.5 x 42, 7.40, Wing 8 x 42 and Wing 10 x 42. Birds at the site were identified using the standard field guide reference book: "A Field guide to the Birds of East Africa" by Stevenson &Fanshawe (2002) and their locations confirmed using "The Uganda Bird Atlas" by Carswell et al. (2005).

Bird classifications

Bird species recorded were grouped into different categories basing on different criteria.

a) Habitat classifications

Birds recorded were classified into ecological categories where possible basing on the standard habitat classification by Bennun et al (1996). In this classification, species are grouped as;

- FF forest specialists – these are true forest species most characteristic of

the interior of undisturbed forest. Breeding also happens in the forest.

- F Forest generalists – typical birds of forest edges and gaps.
- f species – forest visitors and breeding is outside the forest.
- G species – grassland species
- W Water birds normally found near water, in wetlands or open water.

A combination of one or two of the above classes may also occur in a number of species.

b) Migratory classifications

Bird species with migratory tendency were also considered as derived from the Uganda Bird atlas (Carswell et al. 2005). There are two categories of migrant species considered below.

- AM or A Afro-tropical migrants
- PM or P Pale-arctic migrants

However some species can be both Afro-tropical and Pale-arctic migrants.

c) Conservation status

Birds were further classified according to their global IUCN conservation status i.e. whether they are species of global conservation concern (C) as from (Collar & Stuart 1985) and also if they are species of regional (East African) conservation concern as classified by Bennun & Njoroge (1996). In which cases species are classified as species of Global (G-) or Regional (R-) importance respectively in the categories of;

- CR Critical (Globally (G-CR) or Regionally (R-CR))
- EN Endangered
- VU Vulnerable
- NT Near-threatened
- RR Regional Responsibility

Avifauna records

Mainly species typical of cultivation and bush were recorded since the entire site and surrounding have been converted into agricultural land. Weaverbird species, specifically Golden-backed Weaver (*Ploceus jacksoni*) communities at the initial stages of nest establishment were some of the interesting observations during the survey. No single forest species (FF) was recorded during the survey. The list of species generated is dominated by generalists (f) species, with moderate numbers of forest visitors (F) (Appendix 1). Previous records of avifauna for comparative purposes span several years back (15-30) before NFA leases of natural but highly modified forest to private owners for mono-tree species establishment. There were also a few records of migrant species (Appendix 1) owing to the migration period (December) during which the study was conducted.

Bird diversity

The highest point count recorded 26 species indicating high diversity of birds while Timed Species Counts (TSCs) ranged between three to sixteen species. Total diversity during the survey resulted in a checklist of 61 species. Of these, three were migrants, nine F-species and the rest f-species. Less than 0.1% were Grass (G) species while 1.8% were typical wetland/ water dependent species implying proximity of a permanent water source e.g. river in the area. Only two raptor species, African Harrier Hawk *Polyboroides typus* and Long-crested Eagle *Lophaetus occipitalis* were recorded.
The Speckled Mouse bird *Coliusstriatus* had the highest abundance value of 6.0; with multiple flocks of 5-10 individuals recorded. Other species with high abundance values included Rupell's Long-tailed Starling *Lamprotornis purpuropterus* 5.25, Yellow White-eye *Zosterops senegalensis* 5.00, Bronze Mannikin *Lonchuracucullata* 4.85, and the Pin-tailed Whydah *Vidua macroura* 4.50.

Ecological sensitivity

There was no single record of species of global and or regional conservation concern. However, personal communication with residents and previous records indicated presence of the Grey-crowned Crane *Balearica regulorum,* Uganda's national bird, which is both Globally Endangered (G-EN) and Regionally Near-threatened (R-NT) (Carswell et. al 2005).

INSECTS

1. **BUTTERFLIES**

Sampling Method

At the site, Rapid Biodiversity Assessment (RBA) that involved moving through the survey area and recording all species of butterflies seen was undertaken. There was occasional use of sweep nets.

The RBA method described by Pollard (1977) involves combing through the target area, observing and identifying different species. Individuals difficult to identify in the field are netted and specimen preserved for correct identification. Specimens were identified using a number of standard field guides including Kielland (1990), Larsen (1991) and Larsen (2005), as well as the extensive collections at the Zoology Museum, Makerere University. According to Hambler (2004), this method is often used in cases of immediate threats to the environment, a shortage of time and money, and lack of taxonomic expertise.

Each species was assigned to their ecological requirements as described by Davenport (1996). Forest-dependent species (F-species) are those characteristic of closed canopy forest habitats. Forest non-dependent species (f-species) are butterflies which may be recorded in closed-canopy forest but are not dependent upon it, and thus often encountered in a range of forest edge, degraded forest and woodland habitats. Non-forest (open habitat) species (O-species) include those characteristic of a range of open savannas, grassland and arid habitats or swamp/wetland habitats (S). Where species occur in a wide range of habitats, they are described as widespread (W) and those known to be migratory are classified as such (M).

Limitations of method

Rapid Assessment method relies increasingly on visual recognition instead of actual capture thus it's limited by the identification capability of the observer/netter. Its success depends heavily on good weather conditions.

The other complementary method is the use of baited Blendon traps. This method samples fewer species but consistently yields species rarely obtained on the wing. It is productive even under weather conditions that render netting ineffective. It has been used to target specific subfamilies such as Nymphalinae, Acraeinae and Charaxinae (Pinheiro & Ortiz, 1992).

Seasonal factors, such as species turnover and changing weather patterns render one day at a site sampling unrepresentative and susceptible to increased sampling error. This is because butterflies are known to have seasonal variations in relations to weather factors. More effort during the season of peak abundance of adult butterflies will maximize efficiency in the field and thus permit standardized comparisons of subsequent samples and shifts in the abundance of butterfly fauna. This is because wetter months are known to have highest species turnover. This study was a single day site visit.

Species composition

The number of species and sum and relative abundance of species recorded from the site did not vary remarkably. A total of eight species belonging to three families were reported for this study. Butterfly species have varied ecological preferences within the habitats with some acting as indicators of the quality of the habitat. Species recorded were mostly the open habitat and widespread species. However, two migrants, *Catopsilia florella* and *Catopsilia florella* were also recorded during this survey. The commonest species was *Eretis lugens,* a widespread (W) species. Other species that were relatively abundant included*, Gegenes hottentota* (O)*, Junonia chorimene* (O)*, Junonia Sophia* (W)*, Neptis serena* (W) and *Ypthima asterope* (O). There was no restricted range species recorded during this survey.

Observations

- From this study, no species listed on the IUCN red listing (http://www.redlist.org) was present at this site at least for this period of the survey. Most of the species are common open country or widespread species.
- There was active vegetation cutting /trampling especially in the thicketed areas that are preferred feeding and breeding areas for the butterflies.
- The thicketed areas are some of the preferred foraging areas for adult nectar feeders and food sources for larval stages. Poor quality vegetation supports a lower density of species. Loss of vegetation could thus have reduced the suitability of habitat to support species peculiar to them.

2. TERMITES

The study site was observed to have high termite activity as seen from active epigeal and hypogeal nesting sites. Relatively incomprehensive methods were used to at least determine the presence of termites and dominance of families. Termites were collected with litter sweeps as a quick and cheap method rather than the use of baits such as cattle dung that is most efficient in detecting termite activity. Litter sweeps are the most cost effective method of assessing termite assemblages but also the least efficient (Taylor et al 1998).
The termite assemblage in the study area mainly constituted of the sub-family Macrotermitinae and genus Macrotermes. Further, assemblages comprised of Group II (wood, litter, dung and grass feeders) and Group IV (true soil feeders) feeding groups, with most of the species belonging to Group II. A total of 15 active termite mounds were recorded during this study (appendix 2).

Different types of epigeal termite nests within the site

HERPETOFAUNA

General methods

Visual (VES) - and Acoustic (AES) Encounter Surveys

The Visual Encounter Survey (VES) is widely used as a sampling method for reptiles and amphibians (Crump and Scott 1994; Doan 2003). Due to the simplicity of the method, VES and Acoustic Encounter Survey (AES) are frequently used for rapid assessments and the evaluation of larger areas. In this method an area or habitat is searched systematically for individuals in a defined time period (Rödel and Ernst 2004) with no restriction to a linear transect. It can be used to determine the species richness of an area and the species composition of a local assemblage, and to estimate relative abundances of species within an assemblage (Crump and Scott 1994). The visual technique is only appropriate for those species that can be seen while walking through a habitat whereas the ones that can be heard but not seen are catered for by the Acoustic technique. Suitable habitats were surveyed for the presence of different species. All species encountered were identified and recorded.

Opportunistic encounters

This involves recording species opportunistically encountered outside designated sampling areas. Such species in certain instances may have been missed in the designated sampling areas. This is crucial in that it adds to the checklist of encountered species in the project area.

Conservation status

The encountered herpetile species were classified according to their conservation status as listed in the latest version of the IUCN Red List of Threatened Species (Version 2015-3).

Data quality and quantity

Herpetiles like other survey campaigns require long time investment to fully understand the dynamics of species assemblages of any one given area. Within the scope of the current surveys we could not conduct extended surveys, and are therefore constrained to stretch the results obtained to make wide ranging conclusions about the herpetofauna of the area. It is likely that extended periods of field surveys spanning the different seasons might turn up several more species than have been recorded at the time of this survey.

Amphibian species encountered and their conservation status

Species	Family	Conservation status
Common Toad ***Bufo bufo***	Bufonidae	LC
Flat–backed Toad ***Amietophyrnus maculutus***	Bufonidae	LC

LC - Least Concern

There was low turn up of species owing to the dry nature of the site and hyper levels of anthropogenic activity. The species observed were in proximity to the wet and dump area next to a community borehole that lies within the survey site. No reptiles were recorded probably due to time limitations. There were no species of conservation concern among records on site and those obtained for comparative purposes.

Land-use change and implications to biodiversity

Receptor	Importance	Existing/future threat	Proposed mitigation/ recommendations
Plants	Forage and habitat uses such as nesting and breeding for wildlife especially birds	• Loss of habitat due to clearance for infrastructure • introduction and further spread of invasive and alien species such as *Lantana camara* • Exacerbated soil erosion along gentle and steep slopes	• Were applicable, retain some of the vegetation especially mature trees • Harvest roof rain water to reduce run-off
Mammals e.g. Monkeys	Part of food chain and control habitat characteristics	• Reduced habitat leading to migrations • Deaths of burrowing mammals	• Use a phased approach in case of vegetation clearance and moving of earth to allow for migrations
Birds	Dispersal, part of food chain, aesthetic values e.t.c.	• Loss of feeding, roosting, breeding and nesting sites	• Were applicable, retain some of the vegetation especially mature trees • Plan to create a wildlife friendly environment by investing in a green environment e.g. planting of fruit trees
Amphibians	Ecosystem and food chain functions e.g. feeding on mosquitoes	• Destruction of the little available habitat during earth movement	• Plan to create a friendly environment where any surface water is maintained clean and covered
Insects	Regulation of	• Total clearance of	• Phased approach

	nutrient turnover and concentration	epigeal and hypogeal nesting sites during movement of earth • Possible use of chemicals where termites persist in environment	during construction and earth movement to allow for any possible migrations

References

1. Bennun, L, Dranzoa, C and Pomeroy, D E. 1996. The forest birds of Kenya and Uganda. Journal of East African Natural History, 85: 23-48.
2. Bennun, L.&Njoroge, P.1996. Birds to Watch in East Africa: A Preliminary Red Data List. Centre for Biodiversity Research Reports. National Museums of Kenya: Ornithology 23:1–16.
3. Carswell, M., Pomeroy, D., Reynolds, J. and Tushabe, H. (2005).The Bird Atlas of Uganda.University of Oxford, London.
4. Crump, M. L. and Scott Jr., N. J. (1994) Visual encounter surveys. In: Heyer, W.R., Donnelly, M. A., McDiarmid, R.W., Hayek, L.A.C. and Foster, M. S. (eds.). Measuring and monitoring biological diversity. Standard methods for amphibians. Washington & London, Smithsonian Institution Press, Pp. 84–92.
5. Davenport, T.R.B. 1996. The Butterflies of Uganda - An Annotated Checklist.Uganda Forest Department, Kampala, Uganda.pp 48.
6. Doan, T. M. (2003) Which methods are most effective for surveying rain forest herpetofauna. Journal of Herpetology 37:72-81.
7. Hambler, C. 2004. Conservation Studies in Biology. Cambridge University Press
8. Kielland, J. 1990. Butterflies of Tanzania.Hill House, Melbourne and London.
9. Kent M., & Coker P. (1996) Vegetation description and analysis.A practical Approach. John Wiley & Sons LTD, West Sussex, England.
10. Koster, S.H and Han, J.A (1988) Methods of estimating ungulate population in tropical forests; Afr. J. Ecol. 26 117-127
11. Larsen TB. 2005. *Butterflies of West Africa*2 vols., 596pp., 125 plates. Apollo Books.
12. Pinheiro, C.E.G. and Ortiz, J.V.C. (1992) Communities of fruit feeding butterflies along a vegetation gradient in central Brazil.*Journal of Biogeography*, **19**, 505-511.
13. Pollard, E. 1977. A method for Assessing changes in abundance of butterflies. *Biological conservation*, **12**,115-134.
14. Rödel, M. O. and Ernst, R. (2004) Measuring and monitoring amphibian diversity in tropical forests. I. An evaluation of methods with Recommendations for standardization. *Ecotropica***10**: 1–14.
15. Stevenson, T &Fanshawe, J. (2001). A Field Guide to birds in East Africa. T & AD Poyser, London, UK
16. The IUCN Red List of Threatened Species; Version 2015-3.<www.iucnredlist.org>. Downloaded on 30 December 2015.

Appendix 1
Bird species recorded and their relative abundances

Atlas No.	SPECIES NAME Scientific Name	Relative abundance	Habitat	Threat
17	CATTLE EGRET Bubulcus ibis	3.33	G	0
26	BLACK-HEADED HERON Ardea melanocephala	3.50	w	0
28	HAMERKOP Scopus umbretta	2.20	w	0
30	AFRICAN OPEN-BILLED STORK Anastomus lamelligerus	1.0	AwG	0
36	MARABOU STORK Leptoptilos crumeniferus	1.00	w	0
39	HADADA Bostrychia hagedash	1.50	w	0
90	AFRICAN HARRIER-HAWK Polyboroides typus	1.0	f	0
	LONG-CRESTED EAGLE Lophaetus occipitalis	1.0		0
154	CRESTED FRANCOLIN Francolinus sephaena	0.00	0	0
268	AFRICAN GREEN-PIGEON Treron calva	2.25	F	0
271	BLUE-SPOTTED WOOD-DOVE Turtur afer	1.75	F	0
283	RED-EYED DOVE Streptopelia semitorquata	2.67	f	0
286	RING-NECKED DOVE Streptopelia capicola	2.80	f	0
	GREAT BLUE TURACO Corythaeola cristata	1.0	F	0
302	ROSS'S TURACO Musophaga rossae	1.00	F	0
305	EASTERN GREY PLANTAIN-EATER Crinifer zonurus	2.75	0	0
309	RED-CHESTED CUCKOO Cuculus solitarius	2.22	AF	0
319	KLAAS' CUCKOO Chrysococcyx klaas	2.00	f	0
320	DIEDERIK [=DIDRIC] CUCKOO Chrysococcyx caprius	1.50	0	0
323	WHITE-BROWED COUCAL Centropus superciliosus	1.17	0	0
369	SPECKLED MOUSEBIRD Colius striatus	6.00	0	0
375	WOODLAND KINGFISHER Halcyon senegalensis	3.40	A	0
401	BROAD-BILLED ROLLER Eurystomus glaucurus	1.50	Afw	0
420	AFRICAN GREY HORNBILL Tockus nasutus	1.00	0	0
431	YELLOW-RUMPED TINKERBIRD Pogoniulus bilineatus	1.40	F	0
433	YELLOW-FRONTED TINKERBIRD Pogoniulus chrysoconus	1.00	f	0
443	DOUBLE-TOOTHED BARBET Lybius bidentatus	2.50	f	0
473	CARDINAL WOODPECKER Dendropicos fuscescens	2.00	0	0
512	ANGOLA SWALLOW Hirundo angolensis	2.00	w	0
520	AFRICAN PIED WAGTAIL Motacilla aguimp	2.00	w	0
542	YELLOW-WHISKERED GREENBUL Andropadus latirostris	1.67	F	0
562	COMMON BULBUL Pycnonotus barbatus	3.50	f	0
576	WHITE-BROWED ROBIN-CHAT Cossypha heuglini	3.20	f	0
612	AFRICAN THRUSH Turdus pelios	3.00	f	0
638	RED-FACED CISTICOLA Cisticola erythrops	3.75	w	0
647	WINDING CISTICOLA Cisticola galactotes	2.83	w	0
658	TAWNY-FLANKED PRINIA Prinia subflava	3.33	fw	0
662	WHITE-CHINNED PRINIA Prinia leucopogon	2.40	F	0
677	GREY-BACKED CAMAROPTERA Camaroptera brachyura	3.58	f	0
695	WILLOW WARBLER Phylloscopus trochilus	1.50	Pf	0
703	GARDEN WARBLER Sylvia borin	1.00	Pf	0
723	AFRICAN DUSKY FLYCATCHER Muscicapa adusta	2.00	F	0
739	AFRICAN PARADISE-FLYCATCHER Terpsiphone viridis	3.00	f	0

746	BROWN-THROATED WATTLE-EYE Platysteira cyanea	2.80	f	0
781	GREEN-HEADED SUNBIRD Cyanomitra verticalis	1.50	F	0
787	SCARLET-CHESTED SUNBIRD Chalcomitra senegalensis	2.50	f	0
790	BRONZE SUNBIRD Nectarinia kilimensis	1.50	f	0
811	YELLOW WHITE-EYE Zosterops senegalensis	5.00	f	0
812	COMMON FISCAL Lanius collaris	1.00	G	0
815	GREY-BACKED FISCAL Lanius excubitoroides	3.67	Afw	0
831	BROWN-CROWNED [=HEADED] TCHAGRA Tchagra australi	1.00	0	0
853	FORK-TAILED DRONGO Dicrurus adsimilis	2.33	f	0
872	RÜPPELL'S LONG-TAILED [=GLOSSY] STARLING Lamprotornis purpuropterus	5.25	f	0
881	GREY-HEADED SPARROW Passer griseus	3.50	f	0
893	BAGLAFECHT WEAVER Ploceus baglafecht	2.50	f	0
959	RED-BILLED FIREFINCH Lagonosticta senegala	6.00	f	0
969	COMMON WAXBILL Estrilda astrild	2.83	wG	0
970	BLACK-CROWNED WAXBILL Estrilda nonnula	2.50	f	0
980	BRONZE MANNIKIN Lonchura cucullata	4.85	f	0
985	PIN-TAILED WHYDAH Vidua macroura	4.50	G	0
995	YELLOW-FRONTED CANARY Serinus mozambicus	2.20	f	0

Appendix 2
Location of termite mounds (epigeal nesting sites), UTM, at site

1	425236	040144
2	425243	040161
3	425241	040120
4	425229	040100
5	425208	040090
6	425196	040103
7	425174	040101
8	425171	040086
9	425152	040105
10	425144	040183
11	425157	040201
12	425157	040213
13	425185	040204
14	425208	040209

Power line crossing site	**425166**	**040204**

Appendix 9: DETAILS OF USAID EA CONDITIONS FOR THE DEVELOPMENT OF THE ACADEMY

A9-1 Condition 2: Procurement and installation of appropriate water treatment technology and facilities

The grantee EA must address the grantee's plans to procure and install appropriate water treatment technology and facilities as needed, and include a Water Quality Assurance Plan (WQAP).

Procurement and installation of appropriate water treatment technology, including a Water Quality Assurance Plan (WQAP).

b) Procurement and installation of a water treatment technology

The school will procure and install a water system that ensures provision of safe and adequate water supplies for both human (student, staff) use and operational activities. For a school population of 400 students and about 30 staff, expected water requirement is 25,800 liters per day and will be obtained from a borehole the project has sunk. The pumped borehole will supply water all over the school campus through a reticulated system.

The water system will have inherent saving provisions such as self-closing push-down faucets (rather than the twist types) in public student or staff washrooms that automatically shut off water flow after use.

Figure 2: Illustration of a pushdown faucet (left) and a turn/ twist faucet (right)

In additions, shower heads and other water discharging fixtures (e.g. hoses) will be water-saving. The system will have a two-day demand storage capacity as a contingency against any interruptions in supply. The water system storage and efficient water systems to conserve water.

c) Water Quality Assurance Plan (WQAP)

The project has prepared this Water Quality Assurance Plan (WQAP) to address quality of the source water and how it quality of provided water will be assured. The WQAP has also provided a response protocol in the event that water does not meet required drinking standards. At minimum, fecal coliform, arsenic will always be tested prior to use and thereafter quarterly for

four quarters. Arsenic testing must conform to the requirements in Guidance Cable State 98 108651. Table below shows WHO's recommended water quality standards for human health.

Table 2: WHO selected water quality standards for human health

Selected water quality standards for human health	
Arsenic	< 0.01 mg/L
Total Coliforms	Not detectable in any 100 ml sample
Lead	< 0.01 mg/L
Copper	< 2 mg/L
Nitrate (as NO^{3-})	< 50 mg/L
Nitrite (as NO^{2-})	< 0.2mg/L for long-term exposure
Flouride	< 1.5 mg/L

Source: WHO Guidelines for Drinking Water Quality (3rd Ed), 2004.

The plan adopts drinking water standards of Uganda, which were developed basing on World Health guidelines for drinking water quality. As required by USAID Guidelines, the project proponent undertook initial water quality testing and will undertake this role throughout the life of the project. Specifically this role will be a responsibility of the School's Facilities Manager who will carry out water sampling and dispatch to a national laboratory for testing. As a minimum, testing will be done for the following parameters:

- Fecal coliform
- Inorganic arsenic
- Other criteria drinking water parameters regulated by Uganda's national drinking water standard US 201:2008 for Class II (untreated water) potable water available for water consumers from boreholes, protected springs, shallow wells, gravity flow schemes and harvested rainwater.

Except for color and total suspended solids (TSS), water quality analysis of samples from the boreholes indicated satisfactory quality to the extent that the water should be suitable for operational functions (washing, cooking).
Drinking water will be treated using a treatment system which uses UV disinfection after filtration standards-Viqua system .It will be wired to a critical circuit which is on the backup generator. This will solve turbidity issue and treat to WHO standards. This unit will be installed in the kitchen and students can come with their containers to get drinking water. This eliminates the need for boiling, conserving energy and reducing firewood consumption.

The borehole samples had no arsenic or coliforms. The importance of these two parameters is indicated by the following facts:

- Ingesting water contaminated with fecal-oral route pathogens is the leading cause of diarrheal diseases, dysentery, cholera, typhoid, and other gastroenteritis diseases.
- Shallow groundwater easily contaminated by latrines, livestock, exchange with surface waters.

- Arsenic occurs naturally in geologic formations and can move into groundwater. It is a potent and bio-accumulative poison that causes skin lesions, neurological disorders, cancer, and heart and lung disease.

After initial testing the project will carry out quarterly analysis for four quarters.

The project's Water Quality Assurance Plan (WQAP) is provided in A1.

A9-2: Water Quality Assurance Plan

Preamble

This WQAP is prepared to ensure that this USAID-funded project water supply always meets drinking water standards as meeting Ugandan and WHO water quality standards. Once approved, the WQAP will be implemented in full, and for the duration of drinking water activities. Implementation will include testing of water prior to making the supply point available to beneficiaries. The WQAP constitutes a key element of the project and budgets, work plans, and staffing plans will be provided for its full implementation.

The WQAP to be approved by USAID entails the following elements:

1. Project information (name of project, name of IP, period of performance, contact information, name of COR/AOR)
2. A description of the drinking water points to be subject to the WQAP (approximate numbers, water source(s), technology (ies), general geographic area and installation context).
3. An inventory of applicable water quality standards of Uganda. (Note. These are based on World Health Organization [WHO] *Guidelines for Drinking-water Quality*).
4. Responsible parties/entities/institutions, under host country law or policy, for monitoring and managing water quality of the water points subject to this WQAP. If other than the IP, a summary assessment of their capacity and their involvement.
5. A technical assessment of the equipment, resources and expertise that will be required to monitor and report on compliance with applicable water quality standards. This should include, for example, sampling materials, reagents, transportation, storage, laboratory facilities and capacity, communications, training or certification criteria, etc.
6. Protocol for initial testing and ongoing monitoring of water quality, to include:
   - contaminants for which initial testing and ongoing monitoring will be conducted
   - water quality assessment methods, including test type and frequency
   - data management and reporting; the project must maintain a central registry of monitoring results by water point and date; GPS coordinates for water points are expected
   - designation of 'responsible party' for each aspect of protocol
   - response procedures in the event water does not meet water quality standards
7. Justification for NOT testing to any applicable standard
8. Sustainability strategy to the extent that responsibility for longer-term water quality assurance will transition in part or whole to project partners or beneficiaries.
9. A summary assessment of the capacity of these partners, and any capacity building to be undertaken
10. Reporting and record keeping

Project information associated with these elements is provided in table below.

Table 3: Project's Water Quality Assurance Plan (WQAP)

	Element	Project information
1	Project information (name of project, name of IP, period of performance, contact information, name of Agreement Officer's Representative (AOR) / Contracting Officer's Representative (COR)	i) Name of project: Development of Empower International Academy ii) Name of impregnating partner (IP): Empower African Children (EAC) iii) Period of performance:…… iv) Name of Agreement Officer's Representative (AOR):Raymond Jennings v) Contracting Officer's Representative (COR): To be identified.
2	A description of the drinking water points to be subject to the WQAP (approximate numbers, water source(s), technology(ies), general geographic area and installation context).	i) Water points to be subject to the WQAP: 2 borehole (one will supply the school, another is preserved to supply water to neighboring local communities) ii) Water source: Boreholes iii) Technology: Submerged pump in the borehole iv) General geographic area: The site topography and that of surrounding areas is hilly extending northwards from Ntula and Nkwata hills to the northeast, Nswanjere hill to the north and Lulumba hill to the southeastern. The general elevation of the area is 1,248 m above seas level. v) Installation context: There is large experience in Uganda in drilling boreholes and laying reticulation (distribution) system. Water from pumped boreholes will be conveyed by a network of PVC pipes. PVC pipes are prevalently sought after in Uganda's water supply sector due to their flexibility, anti-corrosion and low cost.
3	An inventory of applicable water quality standards.	This WQAP is based on Uganda's national drinking water standards US 201: 2008 Class II (untreated water) for potable water available for users from boreholes, protected springs, shallow wells, gravity flow schemes and harvested rain. This Standard is provided in Appendix II.

	Element	Project information
4	Responsible parties/entities/institutions, under host country law or policy, for monitoring and managing water quality of the water points subject to this WQAP. If other than the IP, a summary assessment of their capacity and their involvement.	Responsible party: IP will be responsible for overall water quality monitoring, collecting samples according to a fixed schedule and dispatching them for analysis at National Water and Sewerage Corporation (NWSC) laboratory. Summary capability statement of NWSC: NWSC's laboratory is one of the facilities designated by Government to undertaken analysis of water quality. It has over 200 permanent scientists, modern analytical equipment and capability to analyze all water parameters according to international test methods.
5	A technical assessment of the equipment, resources and expertise that will be required to monitor and report on compliance with applicable water quality standards. This should include, for example, sampling materials, reagents, transportation, storage, laboratory facilities and capacity, communications, training or certification criteria, etc.	Resources and expertise required for water quality monitoring are: It is recommended that water monitoring is carried out basing on *UNEP/WHO Guidelines*[‡]. A water quality monitoring program will require: ▪ Staff ▪ Laboratory where samples will be analyzed (can be onsite or offsite). ▪ Sampling resources ▪ Transport to transport samples from school to NWSC laboratory ▪ Inventory of sampling stations ▪ Schedules for sampling expeditions i) **Staff:** Staff with working knowledge of water quality who will undertake roles below: ▪ Properly collect samples from boreholes, label them properly and dispatch them to NWSC

	Element	Project information
		laboratory. ▪ Measure parameters that need to be measured on site. On-site testing is common for certain variables that may change (physical, chemical or biological) during transportation. Dissolved oxygen, turbidity, transparency, conductivity, pH, temperature are variables often measured on site. ▪ Interpret data and understand its implication to water quality ▪ Data storage in properly labeled files or electronically ▪ Suggest nay remedial measures to school management This role will be undertaken by the Facilities Manager (FM) who will also be the focal point of contact and communication in regard to any water quality aspects. ii) **<u>Resources</u>:** **For sampling:** a. Sample bottles (glass/ plastic), preservatives, labels and marker pens b. Sample storage/transit containers and ice packs c. Filtering apparatus (if required) d. Samplers/sampling equipment e. Standard operating procedures for sampling **For documentation:** f. Pens/ permanent markers g. Sample labels h. Field notebook i. Report forms

	Element	Project information
		For on-site testing: j. List of analyses to be performed on site **For onsite temporary storage and transportation:** k. A small refrigerator for sample preservation in case it is not possible to deliver them to the laboratory immediately l. Cool box (when transporting to offsite laboratory) **Safety:** m. Rubber boots, gloves, splash goggles n. First-aid kit iii) **Record of sampling points:** A record of the two boreholes that comprise sampling points for this WQAP shall be prepared to include the following: ▪ A map of the general area showing location of the boreholes in relation to the general school campus. ▪ A narrative description of how to get to the sampling station. ▪ A full description of the sampling station. ▪ Notes concerning means of access and whether permission is needed to gain access to the station. ▪ Notes on any times of year when access may be difficult or impossible. ▪ Time or times of day when samples are to be obtained.

	Element	Project information
		▪ Tests that are to be made on-site (e.g. pH, temperature, dissolved oxygen). ▪ Volume of sample required and any preservative treatment needed for sample bottles. ▪ Travel time from the sampling station to the nearest laboratory. **Water Quality Monitoring - A Practical Guide to the Design and Implementation of Freshwater** **Quality Studies and Monitoring Programmes** (Edited by Jamie Bartram and Richard Ballance) Published on behalf of United Nations Environment Programme and the World Health Organization © 1996 UNEP/WHO. ISBN 0 419 22320 7 (Hbk) 0 419 21730 4 (Pbk)
6	Protocol for initial testing and ongoing monitoring of water quality, to include: ▪ contaminants for which initial testing and ongoing monitoring will be conducted ▪ water quality assessment methods, including test type and frequency ▪ data management and reporting; the project must maintain a central registry of monitoring results by water point and date; GPS coordinates for water points are expected ▪ designation of 'responsible party' for each aspect of protocol	i) **Contaminants for which initial testing and ongoing monitoring will be conducted are:** Arsenic, Total faucal coliform, Temperature, pH, Conductivity, Turbidity, Total dissolved solids, Total Alkalinity, Magnesium, Calcium, Total hardness, Total iron, Total suspended solids, Chlorides, Nitrates, Color, Sulphate, Ecoli. ii) **Water quality assessment methods, including test type and frequency** For all water monitoring parameters, assessment methods recommended by Uganda National Bureau of Standards (UNBS) are shown in Tables 1-9 of the national drinking water standard (see Appendix 2). iii) **Frequency of monitoring** Recommended monitoring frequency is given Uganda's national drinking water standards US201:2008 Table 8-Minimum frequency of sampling of water for surveillance (see Appendix 2). This standard requires that for a water system supplying less than 2500 people, the monitoring frequency is one sample every month. Note also that USAID requires initial testing and then after, quarterly testing for four quarters.

	Element	Project information
	▪ response procedures in the event water does not meet water quality standards	a) Initial Water Quality Testing. At the time of the installation/establishment and/or rehabilitation of the water access point, the Project will undertake quality tests for parameters indicated in 6(i) above. b) Water Quality Monitoring. ▪ **Inorganic arsenic**: The Project will sample groundwater for inorganic arsenic not less than once per quarter for a minimum of four (4) quarters. ▪ **Total Coliform.** The project will monitor the boreholes for no detectable fecal coliform in any 100 ml sample at least once every six months as long as these boreholes remain a source of drinking water for the school. iv) **Data management and reporting** The Facilities Manager's Office will maintain a central registry of monitoring data by date and water point. GPS coordinates for water points will be maintained on file. Reporting on implementation of the WQAP will be completed as part of overall Project environmental compliance reporting to USAID. All documentation generated in support of this WQAP will be retained as part of the project record, and provided to USAID at its request. This includes technical specifications for the establishment, installation or rehabilitation of water access points, as well as monitoring logs and compliance records.

	Element	Project information
		v) **Designation of 'responsible party' for each aspect of protocol** The following individuals/named positions are responsible for overseeing implementation of this WQAP: a) USAID's Project Chief of Party (COP)—The COP has overall responsibility for ensuring that the project implements the WQAP and that the Project complies with all IEE conditions and environmental mitigation and monitoring requirements. b) USAID's Project Team Leader— Will be responsible for ensuring that this WQAP is implemented as it relates to project activities under his/her direct supervision. c) USAID's Project Environmental Officer— Will support (but not supplant) project staff in day-to-day execution of environmental management activities, including compliance efforts such as implementation of the WQAP. This position also supports project reporting and facilitates coordination of environment-related duties. d) USAID's Project Environmental Compliance Specialist—The Environmental Compliance Specialist provides guidance on USAID Environmental Procedures and assists with the design of specific Project interventions, helping to identify environmentally sound alternatives and recommending specific mitigation and risk management approaches. e) IP's Facilities Manager will be responsible for actual execution of duties in this WQAP, together with any staff s(he) will train as an assistant. vi) **Response procedures in the event water does not meet water quality standards** If the initial water quality testing or at any time the water quality monitoring indicate that contaminant levels exceed the thresholds established in this WQAP, the Project will take the following actions: a. **If arsenic levels are exceeded**. If field test results indicate inorganic arsenic levels greater than 10 ppb (10 micrograms/liter [0.01 mg/l]), and the Project wishes to continue use of the borehole(s)

	Element	Project information
		sampled, the Project will submit a sample to a qualified laboratory for analysis. The laboratory selected will be designated by Uganda Government. If the selected laboratory confirms presence of inorganic arsenic in excess of 10 ppb, the Project shall decommission the culprit borehole(s) and cease groundwater abstraction. The Project may alternatively opt to bypass laboratory analysis, but shall still disassemble the borehole(s) and avoid further groundwater abstraction based solely on the indicative field test results. b. **If fecal coliform is detected**. If test results show presence of fecal coliforms, and the Project wishes to continue use of the culprit borehole(s), the Project will submit a sample for retesting by a Government-designated laboratory. Note that this laboratory selected must be one approved by either the Regional Environmental Advisor (REA) or Mission Environmental Officer (MEO). If presence of fecal coliform is confirmed through laboratory retesting, the Project will ensure that the sampled borehole is restricted to non-potable, non-domestic uses only, not cooking and not drinking at the school.
7	Justification for NOT testing to any applicable standard	Not applicable to this WQAP since no criteria parameter will be omitted from the monitoring program.
8	Sustainability strategy to the extent that responsibility for longer-term water quality assurance will transition in part or whole to project partners or beneficiaries.	The school shall develop a socio-environmental sustainability policy and integrate water quality monitoring into its routine operations. The policy and socio-environmental activities will be overseen by a designated staff (Environmental Officer), office and budget. Functions of the designated person need not be limited to water quality only but also general socio-environmental performance of school operations.
9	A summary assessment of the capacity of partners, and any required capacity building.	i) **Capacity needs of Facilities Manager** The school's Facilities Manager will require basic training in: ▪ Water sampling (including proper labeling) ▪ Onsite measurement of insitu parameters (oxygen, pH, conductivity, turbidity)

	Element	Project information
		▪ Sample reservation ▪ Interpretation of results based on a comparison with national drinking water standards and USAID guidelines. ▪ Proper keeping of monitoring records ii) **Capacity of NWSC laboratory** The offsite NWSC laboratory has all required capacity to undertake analysis of samples delivered to it.
10	Reporting and recordkeeping.	▪ Reporting on implementation of the WQAP will be completed as part of overall Project environmental compliance reporting to USAID. ▪ All documentation generated in support of this WQAP will be retained as part of the project record, and provided to USAID at its request. This includes technical specifications for the establishment, installation or rehabilitation of water access points, as well as monitoring logs and similar compliance records.

A9-3: Uganda's national drinking water standard US 201:2008

Reference number: US 201: 2008

Compliance with this standard does not, of itself confer immunity from legal obligations. A Uganda Standard does not purport to include all necessary provisions of a contract. Users are responsible for its correct application

Contact:

The Executive Director
Uganda National Bureau of Standards
P.O. Box 6329
Kampala, Uganda
Tel: 256 414 505995
Fax: 256 414 286123
E-mail: unbs@infocom.co.ug
Web: www.unbs.go.ug

Contents

			Page
Foreword			iv
1	Scope		1
2	Normative references		1
3	Terms and definitions		3
4	Requirements		4
	4.1	Factors affecting organoleptic and physical characteristics	4
	4.2	Chemical requirements	4
	4.3	Microbiological requirements	9
5	Water safety plans		9
6	Surveillance		10
	6.1	General surveillance requirements	10
	6.2	Sampling requirements	11
	6.3	Parameters required for minimum monitoring	11
Annex A (informative) Recommended test methods			13
Bibliography			14

Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Tourism, Trade and Industry established under Cap 327, of the Laws of Uganda. UNBS is mandated to co-ordinate the elaboration of standards and is

a. A member of International Organization for Standardization (ISO) and
b. A contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
c. The National Enquiry Point on TBT/SPS Agreements of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Uganda Standard (US 201) was first declared a national standard in 1994 and it has now been technically revised to update it in accordance with developments in the sector. This is in line with new guidelines of the World Health Organisation (WHO) and other market requirements. The standards also takes into consideration the various types of potable water available in Uganda including the water which is conventionally treated and water made available for rural water consumers through boreholes, protected springs, shallow wells, gravity flow schemes and harvested rain water which may be used for consumption in accordance with the guidelines provided by the Directorate of Water Development (DWD).

The standard has also undergone a structural change in editorial style.
Annex A is for information only.

Committee membership

The following organizations were represented on the Technical Committee on Food and agriculture standards, UNBS/TC 2, in the development of this standard:

- Blue wave Beverages Limited
- Consumer Education Trust (CONSENT)
- Directorate of Water Development
- Government Analytical Laboratories
- House of Eden Limited
- Ministry of Agriculture Animal Industry and Fisheries (Fisheries Department)
- Ministry of Health
- Mukwano Industries Limited
- NC Beverages Limited
- Rwenzori Beverages Limited
- Uganda National Bureau of Standards

Drinking (potable) water — Specification

1. Scope

1.1 This Uganda Standard prescribes the quality and safety requirements for drinking (potable) water. It also lays down the factors required during surveillance of water sources to ensure that the quality and safety of water is maintained.

1.2 It describes two classes of drinking water:

a. Class I potable water available from conventional treatment processes such as chlorination, filtration, and ozonation; and used in food establishments or distributed through the water distribution systems. This water is comparable to current international standards for water quality. This water is considered to be acceptable for lifetime consumption, and is the recommended compliance limit.

b. Class II (untreated water) potable water available for water consumers through boreholes, protected springs, shallow wells, gravity flow schemes and harvested rain water which may be used for consumption in accordance with the guidelines provided by the Directorate of Water Development (DWD). This class specifies a water quality range that poses an increasing risk to consumers depending on the concentration of the determinant within the specified range and the possibility of monitoring its quality. It is considered to represent drinking water for consumption for a limited period.

2. Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- US ISO 5664, Water quality — Determination of ammonium — Distillation and titration method
- US ISO 5666, Water quality — Determination of mercury
- US ISO 5667-1, Water quality — Sampling — Part 1: Guidance on the design of sampling programmes
- US ISO 5667-2, Water quality — Sampling — Part 2: Guidance on sampling techniques
- US ISO 5667-3, Water quality — Sampling — Part 3: Guidance on preservation and handling of water samples
- US ISO 5667-4, Water quality – Sampling – Part 4: Guidance on sampling from lakes, natural and man-made.
- US ISO 5667-5, Water quality — Sampling — Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems
- US ISO 5667-6, Water quality — Sampling — Part 6: Guidance on sampling of rivers and streams
- US ISO 5667-11, Water quality — Sampling — Part 11: Guidance on sampling of groundwaters
- US ISO 5961, Water quality — Determination of cadmium by atomic absorption spectrometry
- US ISO 6058, Water quality — Determination of calcium content — EDTA titrimetric method
- US ISO 6059, Water quality — Determination of the sum of calcium and magnesium — EDTA titrimetric method

- US ISO 6222, Water quality — Enumeration of culturable micro-organisms — Colony count by inoculation in a nutrient agar culture medium
- US ISO 6332, Water quality — Determination of iron — Spectrometric method using 1,10-phenanthroline
- US ISO 6333, Water quality — Determination of manganese — Formaldoxime spectrometric method
- US ISO 6703-1, Water quality — Determination of cyanide — Part 1: Determination of total cyanide
- US ISO 6703-3, Water quality — Determination of cyanide — Part 3: Determination of cyanogen chloride
- US ISO 6777, Water quality — Determination of nitrite — Molecular absorption spectrometric method
- US ISO 7027, Water quality — Determination of turbidity
- US ISO 7393-1, Water quality — Determination of free chlorine and total chlorine — Part *1: Titrimetric method using N,N-diethyl-1,4-phenylenediamine*
- US ISO 7887, *Water quality — Examination and determination of colour*
- US ISO 7888, *Water quality — Determination of electrical conductivity*
- US ISO 7890-3, *Water quality — Determination of nitrate — Part 3: Spectrometric* method using sulfosalicylic acid
- US ISO 7980, Water quality — Determination of calcium and magnesium — Atomic absorption spectrometric method
- US ISO 8199, Water quality — General guidance on the enumeration of micro-organisms by culture
- US ISO 8288, Water quality — Determination of cobalt, nickel, copper, zinc, cadmium and lead — Flame atomic absorption spectrometric methods
- US ISO 9174, Water quality — Determination of chromium — Atomic absorption spectrometric methods
- US ISO 9308-2, Water quality — Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive Escherichia coli — Part 2: Multiple tube (most probable number) method
- US ISO 9390, Water quality — Determination of borate — Spectrometric method using azomethine-H
- US ISO 9964-1, Water quality — Determination of sodium and potassium — Part 1: Determination of sodium by atomic absorption spectrometry
- US ISO 9965, Water quality — Determination of selenium — Atomic absorption spectrometric method (hydride technique)
- US ISO 10304-1, Water quality — Determination of dissolved fluoride, chloride, nitrite, orthophosphate, bromide, nitrate and sulfate ions, using liquid chromatography of ions — Part 1: Method for water with low contamination
- US ISO 10359-2, Water quality — Determination of fluoride — Part 2: Determination of inorganically bound total fluoride after digestion and distillation
- US ISO 10523, Water quality — Determination of pH
- US ISO 10566, Water quality — Determination of aluminium — Spectrometric method using pyrocatechol violet
- US ISO 10705-2, *Water quality — Detection and enumeration of bacteriophages — Part* 2: Enumeration of somatic coliphages
- US ISO 11423-1, Water quality — Determination of benzene and some derivatives — Part 1: Head-space gas chromatographic method

- US ISO 11423-2, Water quality — Determination of benzene and some derivatives — Part 2: Method using extraction and gas chromatography
- US ISO 11885, Water quality — Determination of 33 elements by inductively coupled plasma atomic emission spectroscopy
- US ISO 11969, Water quality — Determination of arsenic — Atomic absorption spectrometric method (hydride technique)
- US ISO 12020, Water quality — Determination of aluminium — Atomic absorption spectrometric met hods
- US ISO 14403, Water quality — Determination of total cyanide and free cyanide by continuous flow analysis
- US ISO 15061, Water quality — Determination of dissolved bromate — Method by liquid chromatography of ions
- US ISO 15553, Water quality — Isolation and identification of Cryptosporidium oocysts and Giardia cysts from water
- US ISO 16590, Water quality — Determination of mercury — Methods involving enrichment by amalgamation

3 .Terms and definitions

For the purposes of this standard, the following terms and definitions shall apply.

3.1 Approved water supply:

Source of water that has been inspected and approved by the competent authority for the intended purpose

3.2 Water distribution system

Public or private water systems providing consumers with tap water suitable for direct consumption

3.3 Treated water

Water that is conventionally treated usually by coagulation, sedimentation, filtration, and disinfection and distributed through a water distribution system

3.4 Untreated/rural water

Water that is either mined or harvested from natural sources without any conventional treatment applied to it such as borehole water, spring water, shallow wells, or harvested rainwater

3.5 Conventional treatment

Collection, storage and distribution of drinking water involving deliberate coagulation, sedimentation, filtration, and disinfection to improve the safety and quality of the finished drinking water for consumers

3.6 Potable

Water which is suitable for human consumption

4 Requirements

4.1 Factors affecting organoleptic and physical characteristics

Drinking water shall conform to the requirements for factors affecting organoleptic and physical characteristics corresponding to a given class indicated in Table 1.

Table 1 — Requirements for factors affecting organoleptic and physical characteristics

Characteristic	Requirement levels		Method of test
	Class I	Class II	
Colour	15 true colour units (TCU)	15 true colour units (TCU)	US ISO 7887
Taste	Acceptable to consumers and no abnormal changes	Acceptable to consumers and no abnormal changes	-
Odour	Acceptable to consumers and no abnormal changes	Acceptable to consumers and no abnormal changes	Annex A
Electrical conductivity, at 25 ^{o}C	1500 µS/cm	2500 µS/cm	US ISO 7888
pH	5.5 – 8.5	6.5 – 8.5	US ISO 10523
Turbidity	5 Nephelometric Turbidity Units	10 Nephelometric Turbidity Units	US ISO 7027
Total dissolved solids (TDS)	500 mg/L	1 500 mg/L	Annex A
Iron	0.2 mg/L	1 mg/L	US ISO 6332,
Ammonia	0.5 mg/L	1.0 mg/L	US ISO 5664
Aluminium	0.2 mg/L	0.2 mg/L	US ISO 10566 US ISO 12020
Potassium as K, mg/l, max.	50	100	US ISO 9964-1
Sodium as Na, mg/l, max.	200 mg/L	400 mg/L	US ISO 9964-1
Chloride	250 mg/L	500 mg/L	US ISO 10304-1
Magnesium	100 mg/L	150 mg/L	US ISO 6058, US ISO 6059 US ISO 7980

4.2 Chemical requirements

Drinking water shall conform to the maximum limits for chemicals of health significance in drinking water as indicated in Table 2, Table 3, Table 4 and Table 5.

NOTE: Safety factors indicated in Table 3, Table 4 and Table 5 apply to both Class I and Class II.

Table 2 — Requirements for naturally occurring chemicals

Chemical	Maximum limit, mg/L		Method of test
	Class I	Class II	
Arsenic	0.01 calculated as total As	0.05	FDUS ISO 11969
Barium	0.7	1.0	Annex A
Boron	1.0		US ISO 9390,
Chromium	0.05 calculated as total Cr.	0.05	US ISO 9174
Fluoride	1.0	1.5	US ISO 10359-2
Manganese	1.0	0.1	US ISO 6333
Molybdenum	0.07		Annex A
Selenium	0.01	0.01	US ISO 9965
Uranium	0.015	0.015	Annex A
Mercury	0.001	0.001	US ISO 16590

Table 3 — Requirements for chemicals used in water treatment[2)]

Chemical	Required limit, max, mg/L	Method of test
Acrylamide	0.0001	*
Antimony	0.005	Annex A
Benzo[a]pyrene	0.0001	*
Bromate	0.01	US ISO 15061
Bromodichloromethane	0.06	*
Bromoform	0.1	*
Chlorate	0.7	*
Chlorine	5	US ISO 7393-1
Chlorite	0.7	*
Chloroform	0.3	*
Copper	2	US ISO 8288
Cyanogen chloride	0.07	US ISO 6703-3
Dibromoacetonitrile	0.07	*
Dibromochloromethane	0.1	*
Dichloroacetate	0.05	*
Epichlorohydrin	0.0001	*

Table 3 — Requirements for chemicals used in water treatment[2)]

Chemical	Required limit, max, mg/L	Method of test
Lead	0.01	US ISO 8288
Monochloroacetate	0.02	*
Monochloroamine	3	*
Nickel	0.02	US ISO 8288
Trichloroacetate	0.2	*
Trichlorophenol, 2,4,6	0.2	*
Trihalomethanes[3], total	0.1	*
Vinyl chloride	0.0003	*
* Methods of test of the ASTM or APHA may be used (see Annex A)		

[2)] Includes disinfectants, disinfections by products, contaminants from treatment chemicals and contaminants from pipes and fittings

[3)] Trihalomethanes (bromoform, bromodichloromethane, dibromochloromethane, chloroform) are formed in drinking-water primarily as a result of chlorination of organic matter present naturally in raw water supplies.

Table 4 — Requirements for residues of agricultural chemicals

Chemical	Maximum limit, mg/L, Max.	Remarks
Alachlor	0.02	a)
Aldicarb	0.01	Applies to aldicarb sulfoxide and aldicarb sulfone
Aldrin and dieldrin	0.00003	For combined aldrin plus dieldrin
Atrazine	0.002	a)
Chlordane	0.0002	Currently 0.0003
Chlorpyrifos b)	0.03	a)
Chlorotoluron	0.03	a)
2,4-D (2,4-dichlorophenoxyacetic	0.03	Applies to free acid acid)
2,4-DB	0.09	a)
DDT and metabolites b)	0.001	a)
Dichlorprop	0.1	a)
Dimethoate	0.006	a)
Endrin	0.0006	a)

Table 4 — Requirements for residues of agricultural chemicals

Chemical	Maximum limit, mg/L, Max.	Remarks
Fenoprop	0.009	a)
Isoproturon	0.009	a)
Lindane	0.002	a)
MCPA	0.002	a)
Mecoprop	0.01	a)
Methoxychlor	0.02	a)
Metolachlor	0.01	a)
Molinate	0.006	a)
Nitrate (as NO_3)	50	Short-term exposure
Nitrite (as NO_2)	3	Short-term exposure
	0.2	Long-term exposure
Permethrin b)	0.3	Only when used as a larvicide for public health purposes
Pyriproxyfen b)	0.3	a)
Simazine	0.002	a)
2,4,5-T	0.009	a)
Terbuthylazine	0.007	a)
Trifluralin	0.02	a)

a) Methods of test of the ASTM or APHA may be used (see Annex A)
b) Chemicals used in water for public health purposes such as treatment of mosquito nets and larvicidal effects on water surfaces

Table 5 — Requirements for chemicals from industrial sources

Chemical	Maximum limit, mg/L, Max.	Remarks
Benzene	0.001	US ISO 11423-1 US ISO 11423-2
Cadmium	0.003	US ISO 5961 US ISO 8288
Carbon tetrachloride	0.004	*
Cyanide	0.07	US ISO 14403
Di(2-ethylhexyl)phthalate	0.008	*
Dichlorobenzene, 1,2	1	*
Dichlorobenzene, 1,4	0.3	*

Table 5 — Requirements for chemicals from industrial sources

Chemical	Maximum limit, mg/L, Max.	Remarks
Dichloroethane, 1,2	0.03	*
Dichloroethene, 1,2	0.05	*
Dichloromethane	0.02	*
Dioxane, 1,4	0.05	*
Edetic acid (EDTA)	0.6	Applies to the free acid
Ethylbenzene	0.3	*
Hexachlorobutadiene	0.0006	*
Nitrilotriacetic acid (NTA)	0.2	*
Pentachlorophenol	0.009	*
Styrene	0.02	*
Tetrachloroethene	0.04	*
Toluene	0.7	*
Trichloroethene	0.02	*
Xylenes	0.5	*
* Methods of test of the ASTM or APHA may be used (see Annex A)		

Table 6 — Requirements of radioactive matter in drinking water

Total radioactivity present in the form of	Maximum limit
Total beta activity (except K^{40} and H^{3}) *	1 Bq/L
Total alpha activity	0.5 Bq/L
* The contribution of potassium-40 to beta activity shall be calculated using beta activity of 27.6 Bq/g of stable potassium and subtracted from total beta activity. If beta activity levels are higher than 1 Bq/LI after adjusting for potassium-40 beta activity due to tritium shall be determined and shall not exceed 100 Bq/L..	

4.3 Microbiological requirements

Drinking water shall conform to the maximum microbiological limits given in Table 7.

Table 7 — Maximum microbiological limits of drinking water

Microorganism	Allowable compliance limits and contribution of samples, %[a)]			Method of test
	Minimum 95%.	Maximum of 4% of samples,	Maximum of 1% of samples	
Heterotrophic plate count, count/mL	100	1 000	10 000	US ISO

Table 7 — Maximum microbiological limits of drinking water

Microorganism	Allowable compliance limits and contribution of samples, %[a)]			Method of test
	Minimum 95%.	Maximum of 4% of samples,	Maximum of 1% of samples	
				6222
Total coliform bacteria count [b)] count/100 mL,	Not detected	10	100	US ISO 9308-2
E. coli, count [b)],/100 mL	Not detected	Not detected	1	
Clostridium perfringens (including viable spores), count/100 mL	Not detected	Not detected	Not detected	Annex A
Somatic coliphages count, count/10 mL	Not detected	1	10	US ISO 10705-2
Enteric viruses count, count/100 L	Not detected	1	10	Annex A
Protozoan parasites *(Giardia/Cryptosporidium)* count, count/ 10 L	Not detected	Not detected	1	US ISO 15553
[a)], The allowable compliance contribution shall be at least 95 % of the samples to conform to the limits of 100 CFU/mL, and a maximum of 4 % and 1 % of samples, respectively, to conform to the limits of 1000 CFU/mL and 10 000 CFU/mL. The objective of disinfection should, nevertheless, be to attain 100 % compliance to the limit of 100 CFU/100mL. [b)], In most instances it will not be necessary to conduct both these tests; one or the other will normally suffice as the required indicator.				

5 Water safety plans

5.1 Drinking water systems operators shall develop, implement and maintain a water safety plan taking into consideration the potential risks to the safety of the water from the supply catchments to the consumer.

5.2 A water safety plan shall consist of three key components:

a. System assessment to determine whether the drinking-water supply chain (up to the point of consumption) as a whole can deliver water of a quality that meets health-based targets;

b. Identifying control measures in a drinking water system that will collectively control identified risks and ensure that the health-based targets are met; and

c. Management plans describing actions to be taken during normal operation or incident conditions and documenting the system assessment (including upgrade and improvement), monitoring and communication plans and supporting programmes.

5.3 A water safety plan shall include:

a. Measures to protect the source of drinking water from risks of pollution;

b. Measures to ensure all installations intended for the production of drinking water exclude any possibility of contamination. For this purpose and in particular:

- The installation for collection, the pipes and the reservoirs shall be made from materials suited to the water and in such a way as to prevent the introduction of foreign substances in water;
- The equipment and its use for production, especially installation for washing and packaging, shall meet hygienic requirements;

c. Measures to ensure an appropriate treatment such as pretreatment coagulation, flocculation, sedimentation, filtration and disinfection are undertaken to assure the safety of water for the consumers;

d. Appropriate operational monitoring system including monitoring parameters that can be measured and for which limits have been set to define the operational effectiveness of the activity; frequency of monitoring and procedures for corrective action that can be implemented in response to deviation from limits. If, during production it is found that the water is polluted, the producer shall stop all operations until the cause of pollution is eliminated; and

e. Averification plan to ensure that individual components of a drinking-water system, and system as a whole is operating safely.

6 Surveillance

6.1 General surveillance requirements

Drinking-water suppliers shall ensure, at all times, the quality and safety of the water that they produce. Public health surveillance (that is, surveillance of health status and trends) contributes to verifying drinking-water safety.

Adequate infrastructure, proper monitoring and effective planning and management; and a system of independent surveillance are basic and essential requirements to ensure the safety of drinking-water.

Surveillance shall cover the total supply network from the source of untreated water to the consumer delivery points.

A sampling programme that takes into consideration appropriate international recommendations shall be established and implemented. The sampling shall be regular and its frequency shall mainly depend on the following factors:

a. Quality of water harnessed including effects on the water from climatic, human and industrial activities;
b. Type of treatment for drinking worthiness;
c. Volume of water processed;
d. Risks of contamination;
e. Background of public water supply network;
f. Population served; and
g. Capabilities of the analytical facility (both in terms of capacity and in terms of analytical performance).

6.2 Sampling requirements

The recommendations given in US ISO 5667-1 shall be used as the basis for the establishment of a sampling programme, and the recommendations given in US ISO 5667-2, US ISO 5667-3, US ISO 5667-4, US ISO 5667-5, US ISO 5667-6 and US ISO 5667-11 shall be used as the basis for implementing the sampling programme.

In the absence of a formally established sampling programme, the minimum sampling frequency given in Table 8 shall be used as an interim measure.

Table 8 — Minimum frequency of sampling of water for surveillance

Population served	Frequency * (minimum) of sampling
More than 100 000	10 samples every month per 100 000 of population served
25 001 – 100 000	10 samples every month
10 001 – 25 000	3 samples every month
2 500 – 10 000	2 samples every month
Less than 2 500	1 sample every month
* During the rainy season, sampling should be carried out more frequently	

6.3 Parameters required for minimum monitoring

It is recognized that, in many instances, the cost of performing a full analysis against Table 1, Table 2, Table 3, Table 4, Table 5, Table 6 and Table 7 can be prohibitive.

Analysis of the parameters in Table 9 may be deemed acceptable for the purpose of indicating ongoing levels of operational efficiency in a water treatment plant.

Table 9 — Parameters for surveillance of drinking water safety

Property	Methods of test
Physicochemical:	
Conductivity, or dissolved solids	

Colour	
Turbidity;	See Table 1
Taste	
Odour	
Microbiological	
Faecal coliform bacteria or *E. coli;*	
Clostridium perfringens	See Table 7
Heterotrophic plate count	
Chemical	See Table 2
Fluoride as F^-	DUS/ISO 10304-1
(Nitrate and nitrite) as N	See Table 1
pH value	DUS/ISO 10566
Aluminum	DUS/ISO 12020
	DUS/ISO 6332,
Iron	DUS/ISO 6332,
Ammonia	DUS/ISO 5664
Appropriate residual treatment chemicals and disinfectants	

If abnormal results are encountered in any of these analyses, sampling frequency shall be increased and/or additional analyses carried out.

NOTE: A consumer complaints register for the aesthetic qualities of the water should be maintained.

Annex A

Recommended test methods
(Informative)

A.1 General
The test methods listed in Tables 1 – 7 are recommended

A.2 ASTM standard test methods
All the determinants for which the requirements are listed in Tables 1-7 may be evaluated with the required accuracy, using ASTM test methods (see bibliography).

A.3 APHA-AWWA-WPCF test methods
All the determinants for which the requirements are listed in Tables 1 – 7 may be evaluated with the required accuracy, using the methods given in the latest edition of Standard methods for the examination of water and wastewater (see bibliography).

Bibliography

1. Annual book of ASTM standards 2003 – Section 11: Water and Environmental Technology – Volume 11.01: Water (I).
2. Annual book of ASTM standards 2003 – Section 11: Water and Environmental Technology – Volume 11.02: Water (II).
3. Standards methods for the examination of water and wastewater. 17th Ed., 1989, Washington, DC: American Public Health Association (APHA), American Water Works Association (AWWA), Water Pollution Control Federation (WPCF).
4. Guidelines for Drinking-water Quality [electronic resource]: incorporating first addendum. Vol. 1, Recommendations. – 3rd ed., 2006, World Health Organization
5. SANS 241:2001, Drinking Water – Specification. South African Bureau of Standard

A9-4: Condition 4: Energy consumption, fuel wood consumption and waste management

The grantee EA must address energy consumption, fuel wood consumption, waste management, medical waste management as well as infrastructure maintenance /upkeep. Deliverables here include an Intergrated Waste Management Plan and Medical waste Management Plan for the academy's health clinic.

The school will use both electric power and biomass energy in form of firewood. The latter will be used for lighting and cooking.

a) Energy consumption

- Building designs incorporate large windows and clear story roof designs to utilize sunlight for daytime lighting to reduce electricity usage.
- Lighting fixtures will use energy efficient bulbs.
- Buildings are designed to maximize natural air circulation and measures will be taken (e.g. Planting trees to shade East and West facing walls) to reduce building heat gain during the day. This will eliminate the need for fans.
- Kitchen will be fitted with energy efficient wood-burning stoves reducing electricity usage for cooking.
- Generator for back-up electricity.

b) Fuel wood consumption

The kitchen will be fitted with energy efficient wood-burning stoves. Initially the trees removed from the site for construction will be used for fuel wood. Once this source runs out, fuel wood will be purchased locally from the community.

Consumption levels will depend on final project design and are not certain at the moment however for a typical school of population 400 students, about 30 staff., expected consumption levels are:

- Firewood: 6 tonnes per month
- Electricity: 9000 units/ month (averaging a cost of about UgShs 5 million/month noting that for commercial establishments, a unit of electricity costs UgShs540: Note 1 USDollar =UgShs 3320).
  Note however this depends on number of buildings on campus, energy efficiency measures integrated in design and operation of the school.

c) Facilities maintenance

Maintenance of facilities, especially buildings will generate typical construction waste such as steel waste ("Hard waste"), concrete rubble, paint waste, cement dust, glass and wood waste. Quantities generated will be small when the school is new but shall increase with age of facilities.

d) Waste generation rates

Waste is defined as "any matter, whether solid, liquid, gaseous or radioactive, which is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause alteration of the environment".

Likely types and volume of wastes to be generated by Empower Academy campus are estimated in table below.

Table 4: Current waste scenarios

<table>
<tr><th></th><th>Practice</th><th>Observation</th><th>Notes</th></tr>
<tr><td>1</td><td>Total population</td><td>430 (comprising 400 Students and 30 staff)</td><td>Total campus population: 430</td></tr>
<tr><td>2</td><td>Waste generation rates</td><td>Estimates of total waste from campuses:
- Solid waste: 387 kg/day
- Sullage / effluent: 10,750 litres/day

Typical waste generated by a school campus can be characterized as shown in box below:
<table>
<tr><th>Type</th><th>%</th></tr>
<tr><td>Vegetable matter</td><td>75</td></tr>
<tr><td>Paper</td><td>5.4</td></tr>
<tr><td>Wood waste</td><td>2.7</td></tr>
<tr><td>Plastic</td><td>2.6</td></tr>
<tr><td>Metal</td><td>3.1</td></tr>
<tr><td>Glass</td><td>0.9</td></tr>
<tr><td>Yard/ green waste (grass, tree cuttings, etc)</td><td>9</td></tr>
<tr><td>Rubber</td><td>0.5</td></tr>
<tr><td>Foam/Sponge mattress waste</td><td>0.3</td></tr>
<tr><td>Leather waste</td><td>0.17</td></tr>
<tr><td>Ceramic tile waste</td><td>0.2</td></tr>
<tr><td>Total</td><td>100%</td></tr>
</table></td><td>Solid waste generation rate average per capita considered as: 0.9 kg per person per day.

Effluent generation rate: 25 liters/ day</td></tr>
<tr><td>3</td><td>Typical waste management</td><td colspan="2">h) Sewage/ effluent:</td></tr>
</table>

	Practice	Observation	Notes
	practices	- Disposal method: Septic tank-soak away system. - Possible challenges: Overflow due to blockage of drainage pipes, stagnation/ponding of sullage in some cases hence vermin and vector (mosquito) infestation.	
		i) Medical waste: Relatively small (less than 5 kg/week) quantities of medical waste is expected to be generated. This waste constitutes syringes, glass bottles, cotton, paper and plastic packaging (but excludes menstrual sanitary pads which will depend on population of female students and types of pads used). - Common disposal method: Open air burning at edge of school compound - Noted risks: Waste not completely destroyed by burning and, through scavenging or accidental contact, sharps pose a risk to health of students and workers. - Recommended practice: Procurement of an appropriate small capacity incinerator for the school's medical waste (noting that locally fabricated iron or masonry kilns are ineffective as waste incinerators).	
		j) Solid (domestic) waste: Disposal method: Solid waste is non-hazardous. Typical disposal method: Use of a waste pit or compost pit on school campus Noted risks: - Students exposed to waste at dumps. - Dumps pose risk of vermin (rodents, snakes, etc) infestation. - Risk of death (due to intestinal obstruction) of livestock when they ingest plastic waste. Recommended practice: Compost pit compost could be used for landscaping	
		k) Metal waste or "Hard Waste": This mostly constitutes broken chairs,	

	Practice	Observation	Notes
		beds and construction waste (reinforcement bars). Typical disposal practice: While this waste could be sold to recyclers, it rusts away at dumps on school campuses. Noted risks: ▪ Injury to students, with possible disease such as tetanus. ▪ Vermin from metal scrap stockpiles. Recommended practice: Sell scrap metal to recyclers	
		l) Kitchen waste: This comprises food waste and peelings (of bananas, potatoes etc). Typical disposal method: Taken offsite by workers to feed swine	
		m) Canteen waste: Typically this comprises egg shells, plastic beverages bottles, discarded paper and plastic packaging. Typical disposal method: Burnt on site Noted risks: Vermin infestation and air pollution Recommended practice: Sort waste to recycle recyclables and compost organics	
		n) e-Waste: This comes from discarded computers and associated equipment (screens, keyboards, etc.) and electronic equipment such as copiers, printers and spent electric bulbs/ florescent tubes. These are of probably small quantities kept in stores at school campuses. Typical disposal method: Stockpiled in school stores Recommended practice: Contract a licensed e-Water contractor	

e) Waste Management

Sanitation will include a combination of double vault pit latrines and flush toilet facilities. Wastewater will be treated on-site in septic tanks then discharged to soak pits.

In order to minimize waste, materials will be reduced or reused. Selecting products with less packaging or products with greater usable materials, for example purchasing bulk quantities, will reduce the amount of waste generated at the site. Waste can be reduced by reusing spent materials or packaging (e.g., reusing plastic bags for collecting rubbish, or using old newspapers to clean windows). Recycling will be utilized for metals, glass, and plastics when

available. Another example of recycling is composting, where food wastes from the kitchen and other decomposable waste such as paper are recycled as soil nutrients through the process of composting. There will be one designated location for compostable waste, and one for non-compostable waste. The waste pits will be located where the water table is low and a minimum of 30m from the site water source. The waste pits will be located far from any ponds or streams and measures will be taken to protect the area from vermin.

All medical waste will be disposed in two pits. One pit is lined with concrete and masonry for the disposal of hazardous medical waste (sharps). The other pit (placenta pit) is unlined for the disposal of biological medical waste.

f) Waste management plans

For a period between years 2017-2022:

- Integrated Waste Management Plan is provided in Annex 1
- Medical Waste Management Plan is presented in Annex 2

A9-5: Integrated Solid Waste Management Plan

EMPOWER ACADEMY INTERNATIONAL's

Integrated Waste Management Plan (Annex 1)

for period 2017-2022.

1. Purpose of the Plan

The Waste Management Plan sets out the nature and extent of all waste streams associated with Empower Academy and how they are to be minimized and managed. This Plan defines:

- Vision for transforming how Empower Academy International (herein "Empower Academy") manages waste.
- Current and future waste management requirements.
- Policies and actions in accordance with all legal, ethical and best practice requirements
- Clear performance targets for waste minimization and management specifying areas of responsibility.
- A framework for reaching these targets with realistic and achievable timelines.

2. Waste Minimization Policy

Empower Academy will follow a waste minimization policy in Annex 3.

3. Benefits of minimizing waste

i) Implementing waste minimization strategies provides leadership to the community in demonstrating commitment to social and environmental responsibility.
ii) Minimizing waste reduces school cost through energy efficiency, reduced waste disposal and reduced risk management.
iii) Minimizing waste reduces impacts on natural ecosystems and biodiversity.
iv) Reducing waste minimizes greenhouse gas emissions, decreases air and water pollution and reduces consumption of both natural and processed resources.
v) Waste minimization reduces adverse environmental and social impacts of school operations.

Empower Academy will follow a waste minimization plan with key components illustrated in Figure 1 below.

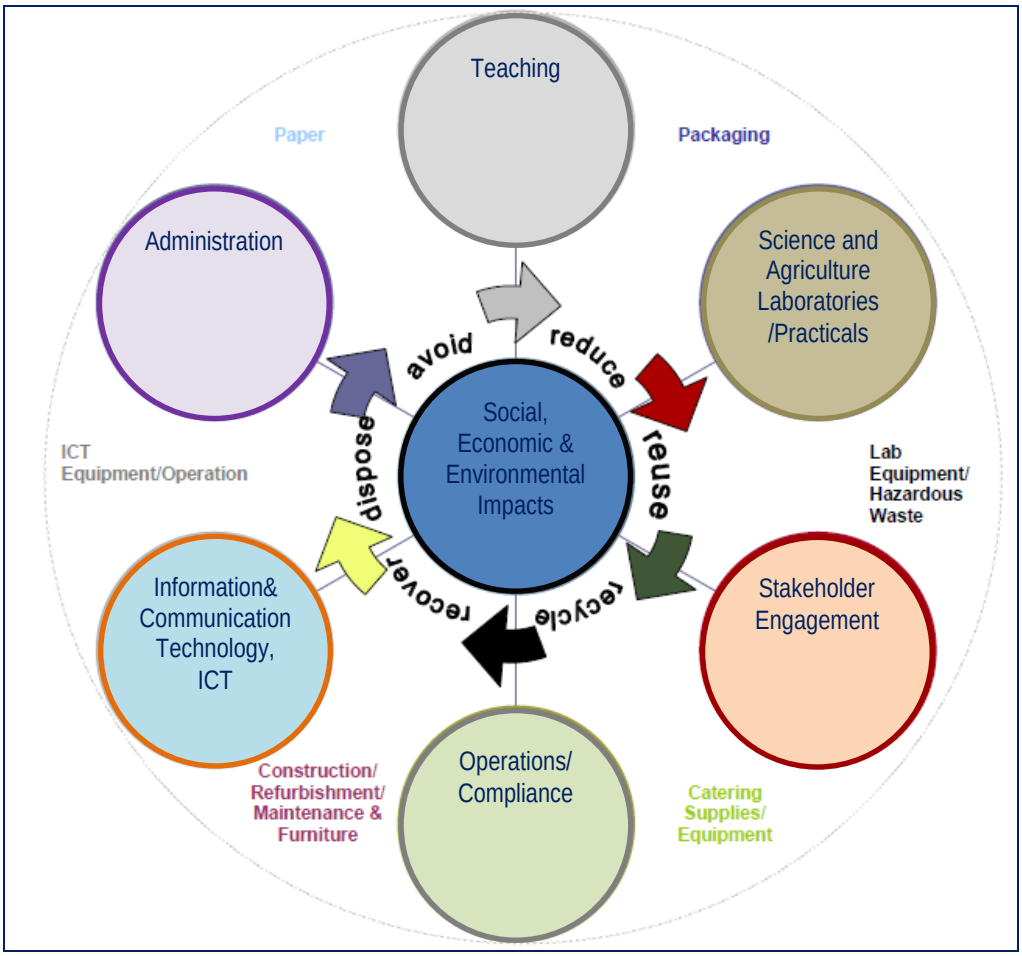


Figure 1: Key components of waste minimization plan for Empower Academy

4. Relation with Environmental Sustainability Policy

The WMP will be in line with the school's Environmental Sustainability.

5. Scope

This plan applies to all staff, contractors and students at all Empower Academy and any associated investment entities. The plan provides for management of **solid** waste, **liquid** effluent, **gaseous** emissions, **hazardous** waste from teaching laboratories and infirmary healthcare waste. The plan applies to a five-year period 2016-2021 after which it will be updated.

6. Responsibility

At each Campus the Headmaster has overall responsibility for overseeing implementation of this plan, planning and putting forward waste management suggestions to the Board and proprietor.

Each Head of Department is also responsible for contributing to the Plan and assisting in implementing actions related to their departments (e.g. purchasing, catering, laboratories, infirmary/ sick bay etc).

7. Vision of the WMP

"Less Waste, More Resources"

8. Mission of the WMP

To transform current waste management practices using effective strategies, systems and education to achieve best practice waste reduction, reuse and recycling rates based on the school w**a**ste management hierarchy of: "***Rethink – Prevent – Reduce – Reuse – Recycle***" before responsible final onsite or offsite disposal.

9. Applicable national policies, laws and regulations

Empower Academy are aware of and abide by the relevant laws related to waste management:

<u>Policies</u>

i) The National Environment Management Policy, 1994
ii) Electronic Waste (e-Waste) Management Policy for Uganda, 2012
iii) The National Health Policy, 1999
iv) National Policy on Injection Safety and Health Care Waste Management, 2004

<u>Legislations</u>

i) The Constitution of the Republic of Uganda, 1995
ii) National Environment Act, Cap 153
iii) The National Water and Sewerage Corporation Act, Cap 317
iv) The Water Act, Cap. 152
v) Occupational Safety and Health Act, 2006
vi) Public Health Act, Cap 281

<u>Regulations</u>

i) National Environment (Waste Management) Regulations, 1999
ii) The National Environment (Wetlands, River Banks and Lake Shores Management) Regulations, 2000
iii) National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, 1999
iv) Draft National Air Quality Standards, 2006
v) National Environment (Minimum Standards for Management of Soil Quality) Regulations, 2001

10. Stakeholder Engagement

Within school campus feedback should be sought from:

- Laboratory Managers
- Student's Environment Club
- Staff and students

External stakeholders to be advised and consulted where necessary are:

- National Environment Management Authority, NEMA
- District Local Government
- Waste Contractors
- Local Councils of respective campuses

11. Education and communication

To achieve objectives of this Plan, regular education and training of all involved personnel such as staff, contractors and students will be necessary. Education and training will be delivered by a school staff- Patron of the Environment Club. Information about new initiatives will be regularly communicated via school's website noticeboards and any other relevant media.

12. Implementation

The Integrated Waste Management Plan will be implemented via an Implementation Action Plan which will be an annually reviewed. See Annex 3: *"Implementation Action Plan 2016".*

A9-6: Medical Waste Management Plan

	MEDICAL WASTE MANAGEMENT PLAN FOR EMPOWER ACADEMY INTERNATIONAL				
NOTE	This Medical Waste Management Plan should be used in conjunction with *Approaches To Health Care Waste Management: Health Workers Guide, Second Edition*, 2013 (Produced by Uganda's Ministry of Health, USAID and Ugandans And Americans In Partnership To Fight HIV/AIDS).				
Facility Name:					
Address:					
City:					
E-Mail:					
Owner(s):					
Individual Responsible for Management of Medical Waste:					

Types of Medical Waste Produced at this Facility: (Check all that apply)	
☐	Sharps (needles, syringes, scalpels, tubing with needle attached)
☐	Cultures and stocks (lab waste, biological production waste, live/attenuated vaccines, culture dishes, and related devices)
☐	Pathological Waste (human tissues, products of conception, or fluids removed during trauma or other surgical procedure, and not fixed in formaldehyde)
☐	Liquid human waste, including blood and blood products and body fluids, but not including urine or materials stained with blood or body fluids
Indicate the segregation, packaging, labeling, and collection procedures used for each type of medical waste generated facility:	
Sharps:	
☐	Not Applicable (sharps not generated at this school infirmary)
☐	Sharps are placed into an appropriately labeled sharps container before being stored and/or removed by a medical waste disposal contractor licensed by NEMA, and are stored at the facility no longer than 90 days (the storage period begins when the use of the container is initiated)
☐	Placed in rigid, puncture-resistant containers that are appropriately labeled and transported to a sanitary landfill in a manner that retains the integrity of the container
☐ Other Approved Method (Specify)	
Blood and Body Fluids:	
☐	Not Applicable (blood and body fluids not generated at this school infirmary)
☐	Flushed into a sanitary sewer system using appropriate personal protection equipment (PPE) and universal precautions

☐	Saturated and solidified blood items are placed into a red biohazard bag prior to removal by our medical waste disposal company
☐ Other Approved Method (Specify)	
Cultures and Stocks:	
☐	Not Applicable (cultures and stocks are not generated at this facility)
☐	Stored in closed, puncture resistant containers and removed by our medical waste disposal company for autoclaving or incineration prior to disposal in a sanitary landfill
Pathological Waste:	
☐	Not Applicable (pathological waste not generated at this facility)
☐	Removed and incinerated by a licensed medical waste disposal company
☐	Ground and flushed into a sanitary sewer using appropriate PPE and universal precautions to protect from splashing
☐	Burial in a pit
☐	Ground until rendered unrecognizable, stored in closed, puncture-resistant, properly labeled containers, and, if not in liquid form, disposed of in a landfill
☐ Other Approved Method (Specify)	
Use and methods of on-site or off-site storage (check all that apply)	
☐	Stored in appropriate containers (biohazard bin, box) in a designated storage area until removed by our medical waste disposal company
☐ Other Approved Method (Specify)	
Use and methods of on-site or off-site decontamination (check all that apply)—Please check with your medical waste disposal company to obtain this information	
☐	Not Applicable – All medical waste generated at this facility is incinerated by our medical waste disposal company prior to disposal in a sanitary landfill
☐	Medical waste generated at this facility (sharps, blood, body fluids, and cultures and stocks only) is decontaminated on-site by autoclaving or other method specified below by a medical waste treatment facility prior to disposal in a sanitary landfill
☐	Medical waste generated at this facility (sharps, blood, body fluids, and cultures and stocks only) is decontaminated off-site by autoclaving prior to disposal in a sanitary landfill (medical waste treatment facility)
☐ Other Approved Method (Specify)	
Use of on-site or off-site incineration (check all that apply) – please check with your medical waste disposal company to obtain this information	

☐	Not Applicable – None of the medical waste general at this facility in incinerated
☐	Pathological and/or contaminated animal waste (if applicable) is incinerated off-site by our medical waste disposal company or treatment facility prior to disposal in a sanitary landfill – other medical waste is treated by autoclaving or another approved technology
☐	All medical waste generated at this facility is incinerated off-site by our medical waste disposal company or treatment facility prior to disposal in a sanitary landfill
☐	All medical waste generated at this facility is incinerated on-site prior to disposal in a sanitary landfill (medical waste treatment facility)
☐ Other Approved Method (Specify)	

Corporate or other legally recognized business address and telephone number of your medical waste disposal company

Name:			
Address:			
City:		State:	Uganda
Phone Number:			
Not Applicable (Explain)			

Use of sanitary landfills, cemeteries, and other disposal sites

☐	Not Applicable – We do not transport any of our medical waste directly to a sanitary landfill
☐	Decontaminated and/or appropriately packaged medical waste is transported to the following sanitary landfill:

Facility Name:			
Address:			
City:		State:	Uganda

The measures to minimize exposure of the facility's employees to infectious agents throughout the process of handling and disposing of the medical waste (check all that apply)

☐	Blood borne Pathogens training is required for each employee with potential exposure initially upon hire, and refresher training is provided on an annual basis. These records are maintained at the facility.
☐	Training is provided upon hire regarding proper handling of medical waste.
☐ Personal protection equipment available and universal precautions employed at the facility (specify)	

Note: A producing facility shall update this medical waste management plan (Plan) each time there is a change in either of the following within 30 days after the change occurs: 1) A person

or site named in the plan, or 2) The types of medical waste handled or the methods of handling medical waste at the facility. Upon request, a producing facility shall make its plan available to National Environment Management Authority (NEMA), Ministry of Education, or Ministry of Health pursuant to an inspection of the school.

A3: Implementation Action Plan

This action plan for implementation of the Waste Management Plan will be annually reviewed.

Mission: To transform current waste management practices using effective strategies, infrastructure, systems and education to achieve best practice waste reduction, reuse and recycling rates.

We will know we are on track to realise this goal if:

1. Empower Academy manage waste, including hazardous waste, in ways which minimize risk and are environmentally safe.
2. Waste streams are routinely managed as a resource to achieve better environmental, social and economic outcomes.
3. Opportunities to safely manage, reduce and recycle waste are available to all Empower Academy.
4. Empower Academy have increased amount of products, goods and materials being reused instead of discarded.
5. Comprehensive waste education has resulted in properly used systems so that there is minimal contamination in recyclables and waste per capita disposed of at dumps or landfill is reduced.

Objective	Actions	Key performance indicators	Who	When	Resources
RETHINK: Current Waste Management Plan and Action Plan in place.	Develop Waste management Plan in consultation with relevant staff. Develop Implementation Action Plan in consultation with relevant staff. Review Action Plan, check KPIs achieved and draw up new Actions for the following year.	Waste Management Plan produced. Implementation Action Plan produced. Plan endorsed by Empower Academy. Action Plan reviewed and reappraised.	School Director/ proprietor	September 2017	$ 5000 for internal facilitation of school staff

Objective	Actions	Key performance indicators	Who	When	Resources
REDESIGN: All waste systems subject to a continuous improvement process	Feedback sought from users of the various waste systems by way of surveys, meetings and comments. Annual Waste Audit conducted (internal school personnel)	Feedback from users rates systems as user-friendly and effective. Five key staff trained in Waste Audit techniques Audit results show improvement with a goal of 50% of waste recycled by December 2018	Patron of Environment Club	June 2018	$ 5000 for internal facilitation of school staff
REDUCE: Staff, contractors and students educated and empowered to reduce waste.	Form Student Environment Club with one science teaching staff as its patron. Student sensitization based on waste reduction tips. Updates given at each student assembly about waste reduction.	Student Environment Club formed. Waste Reduction sensitization tips written. Key student leaders of Environment Club given quarterly training and updates to enable them to educate other students and contractors	Headmaster	December 2018	$5000 facilitation of entailed activities
REUSE: Opportunities are available for staff and students to reuse waste and other resources	Work towards strengthening reuse opportunities e.g. wood waste as kitchen cooking fuel.	Current opportunities publicized on staff and student noticeboards and on school website. At least one new waste reuse system implemented per year.	Patron of Environment Club.	June 2018	--

Objective	Actions	Key performance indicators	Who	When	Resources
RECYCLE: Recyclable items collected and sent to recycling facilities.	Progressively roll out / provide bins for each building (All campuses). Rollout replacement wheelie bins in. Standard colors for cleaners waste. Install outdoor rubbish and recycling bin stations around all campuses. Signs in place at all campuses to make use of systems easy. Opportunities for recycling publicized on School website	Uniformly colored and Labeled mixed recycling receptacles and rubbish bins for offices provided. "Follow Your Waste" tours held for all interested staff to KCCA's landfill in Kiteezi near Kampala or a medical waste incineration facility along Gayaza Road in Kampala.	Patron of Environment Club.	Continual	To be determined per activity.
RECOVER: Potential for energy recovery from waste investigated.	Search for what is already in existence. Fill gaps in knowledge. Training in waste	Report produced and presented to school management Training certificate in waste composting by at least one staff.	Headmaster and	June 2018	$1000

Objective	Actions	Key performance indicators	Who	When	Resources
Composting opportunities investigated.	composting		Patron of Environment Club.		
RESPONSIBLY DISPOSE RESIDUAL WASTE: All Hazardous, Medical/ infirmary, Radioactive, laboratory/ Chemical or other wastes that require special management are disposed of responsibly and according to NEMA requirements	Contractors checked and their NEMA Licenses reviewed. Contractors report amounts of waste disposed monthly. Amounts checked and graphs produced.	Report indicating 100% compliance presented to Headmaster. A 5% reduction in tonnage per year.	Patron of Environment Club.	January 2018	None.

A4: Empower Academy Waste Minimization Policy
Rationale:
Empower Academy, like all schools, have potential to generate large amounts of solid waste. However, strategies that reduce waste lead to financial savings for the school, considerable benefits for the environment and opportunities for students to develop environmentally sound attitudes and habits.
Aims:

- To develop an environmentally conscious school culture which minimizes waste
- To have students actively involved in programs to reduce waste

Implementation:

1. Our school has an unwavering commitment to environmental conservation by minimizing waste.
2. A committee consisting of staff, parents and students coordinates all aspects of the program.
3. The committee develops and implements an action plan each year.
4. Key action plan strategies will include:

   i) Separate colored bins for:
   - Compost/food scraps
   - Plastic
   - Recycling
   - Rubbish
   - Medical waste

   ii) Awards for reaching waste reduction targets and incentives or recognition awards being announced and distributed on World Environment Day.
   iii) Examination of ways to reduce canteen waste.
   iv) Excursions to landfill sites, incineration facilities and recycling depots
   v) On-going analysis of student collected data
   vi) Paper recycling, pruning chippers, designated eating areas, clean up days,
   vii) Photocopier limits, use of email and white boards.
   viii) Provision of a plastic recycling facility for the wider community.
   ix) Recycling printer cartridges
   x) Waste monitoring and audits.

5. School Council will initially resource the program, with all savings due to waste reduction being channeled back into the program.
6. We will communicate closely with the local council, other schools and environmental groups to investigate other methods of waste minimization.

Evaluation: This policy will be reviewed as part of the school's five-year review cycle.
This policy was last ratified by Empower Academy Board Council on: ……/……/ ……. (dd/mm/yyyy)
Signed: …….
(school Board Chairperson)

A5: Glossary of terms

E-Waste – Computers and associated equipment (screens, keyboards, etc.) and electronic equipment such as copiers and printers

Green Waste – Garden waste such as plant cuttings, branches, leaves, lawn clippings

Hard Waste – Generally bulky waste material (e.g. unwanted furniture) that is not general rubbish (food scraps, plastic wrapping etc.) or recyclable (paper, cardboard, glass etc.)

Landfill Waste – general rubbish from offices, student areas and kitchens that is not recyclable

Mixed Recycling – Paper; non-waxed cardboard; and glass, metal, plastic, and liquid paperboard containers

Organic Food Waste – Food scraps

Paper – Recyclable office paper and that discarded by students as packaging or old books

Hazardous Wastes – Wastes that must be managed in accordance with strict requirements mandated by NEMA

A9-7 Condition 5: Details on improvement of the access road

The grantee must incorporate details on the access roads to be improved upon by the project, as well as follow USAID best practices in the construction /rehabilitation of access roads in project implementation and include appropriate mitigation measures to attenuate the negative impacts of rural road construction in the EA.

Details on access road to be improved following USAID best practices for construction/ rehabilitation of roads and include appropriate mitigation measures to attenuate negative impacts of rural road construction.

g) Details of the access road

The length of the gravel is 1 kilometer from Mubende-Mityana highway where it originates to the proposed school site. Currently the road has uneven width varying between 5-7 meters.

Rehabilitation of the road will be a responsibility of the District Local Government although the project has pledged support in this undertaking. Where vegetation grew close to the road, bends are turned into dangerous blind spots. In such locations, vegetation should be cleared from the road reserve during its upgrade, as well as placing roads signage on stretches approaching bends.

h) USAID best practices for construction/ rehabilitation of rural roads

USAID support for rural roads is generally confined to the development or rehabilitation of one- or two-lane roads. These may be constructed to provide access to markets or to increase community access to services, such as health care or schools. USAID's sector environmental guidelines for rural roads provide information about:

- Common types of environmental damage from road projects.
- Proper planning of road projects to avoid environmental degradation.
- Putting operation and maintenance programs into effect to prevent and mitigate environmental impacts.

Some impacts of road projects are:

- Soil erosion.
- Degradation of water quality (minor impact since road remote from surface watercourses).
- Adverse effects on quantities of water.
- Altered hydrology and flooding.
- Loss of vegetation (minor impact to occur along the road reserve).
- Adverse impacts on human health and safety (accident risk to road users and occupational OHS risks to road workers).
- Socio-economic and cultural impacts (these impacts can be negative or positive). Road rehabilitation often improves livelihoods. Access to educational opportunities and to social services, including health care, is often a key rationale for road improvements. However, socio-cultural values may also be altered and communities adversely affected by exposure to social change.

i) **Mitigation of road rehabilitation impacts**

Perhaps the most important mitigation measure for rehabilitation projects will be to ensure that maintenance, included in the road design, operates effectively. Protection of the biophysical environment can be assisted by regular drain clearing, upkeep of vegetation on slopes and exposed surfaces, maintenance of flow reduction devices in drains, removal of waste arising from road works, and avoiding the use of herbicides and other polluting substances. Impacts on the community and social environment will be mitigated by designing good traffic management plans, using quiet equipment, operating during daily periods of high ambient noise, and focusing attention on improvements in the quality of signs, pedestrian walkways (on shoulders).

Environmental "hot spots" or problem locations, such as easily eroded sites or notoriously unstable slopes, or areas that are expected to be inundated in the future by sea level rise, can be identified during the planning and design process and when carrying out rehabilitation and maintenance works. District Local Government experts in roadside vegetation, traffic management, and transportation safety shall monitor maintenance activities to ensure that work practices meet environmental objectives.

ii) **Adapting to climate change by minimizing vulnerability**

Adaption to climate change through planning, design, and project execution involves ensuring that road infrastructure can withstand changes and variations in climatic conditions and extreme weather events such as heavy storms and heat waves. Therefore road rehabilitation will take into account of potential climate change effects on both the function and the purpose of the road (e.g., primary destinations), as well as the types of vehicles that will use it and the vulnerability of users (e.g. drivers and pedestrians).

Measures in table below will be undertaken to mitigate against climate change impacts when rehabilitating the existing road.

Table 5: Mitigation of potential climate change impacts during road rehabilitation

Direct impacts	**Indirect Impacts**	**Possible Adaptation Responses**
Heavy storms and flooding increase erosion, make the road impassible, increase maintenance costs, and reduce the life expectancy of the road	• Reduced access to transportation services • Poor quality road leads to increased accident risk	• Design of the roads will have increased drainage capacity; or, room on the shoulder to increase drainage capacity later as needed

iii) **Mitigation against poor or inadequate maintenance - a primary cause of environmental damage from unpaved roads.**

Environmental damage from unpaved rural road construction is frequently the effect of insufficient or poor quality maintenance. These in turn stem from poorly or incompletely trained maintenance personnel, broken or incorrect equipment, or lack of regular maintenance schedules. To succeed, a maintenance program for rural unpaved road must therefore the

project will purchase appropriate, maintainable equipment, apply preventive maintenance, and keep mechanics trained and equipped; consider using manual labor as an alternative.

Too often in road maintenance operations, projects are underfunded and go over the time initially budgeted for the project, and most heavy road equipment is broken. If equipment is not available when needed, roads may incur heavy, costly damage. To keep equipment in working order: The district local government should provide sufficient funding for operation and repair. Account for recurring costs and assign funds to cover them in the annual budget.

iv) **Managing invasive plants**

When planning new roadways local experts shall be consulted regarding restoration of construction areas and plantings on road shoulders to prevent the introduction of non-native species. Attention also will to be paid to ensuring that crews are trained in the early removal of exotic plant species that have been accidentally (e.g., transported on road machinery) or otherwise introduced, and preservation of native plants, especially when roads pass near or within protected areas.

v) **Quarries and borrow pits**

Extraction of road materials from quarries and borrow pits shall be closely supervised, and procedures for reclamation, which should have been prepared during the planning and design stage, will be carefully followed.

A9-8 Condition 6: Pest control during pre-and post-construction stages.

The grantee will describe the steps it intends to follow to control termites, rodents, malaria-vectors and other pests during pre-and post-construction stages, and ensure that these measures are in compliance with USAID regulations.

Steps to control termites, rodents, malaria vectors, during pre-construction and post-construction stages to ensure these measures comply with USAID regulations.

i) Vermin and disease vector control program in pre-construction and post-construction stages

The school plans to implement a vermin control program on quarterly basis (every after three months) a week before the school opens for a term to ensure that the school is free from pests when school opens. Termites are controlled at construction stage by treatment of foundation of a new structure /building before construction starts. This avoids building damage by termites in the future.

Vermin control will be carried out by a private fumigation company and the following chemicals will be used:

vi) **Mosquitoes, cockroaches, ants and other crawling insects**

Indoor
- Icon 10cs (lambdacyhalothrine)
- Gel bait

Outdoor
- Actellic 25EC
- Dursban 4E

vii) **Bats**
- Durban 4E
- Chlorpyrifos (48%EC)

viii) **Termites**
- Termidor 25Ec
- Contra-z termiticide (500/50EC)
- Wood used in construction (roof trusses) will be treated to resist termites.

ix) **Snakes**
- Quickphos tablets (aluminium phosphide)

x) **Rodents**
- Bait stations
- Storm block

j) Compliance with USAID Pesticide Guidelines

USAID guidelines on pesticide use are comprised in “Environmental Guidelines for Small-Scale Activities in Africa (EGSSAA) Chapter 13: Pest Management II: Safer Pesticide Use”. It is

however noted that the guidelines dwell more deeply on control of agricultural pests, warning that while pesticides usually succeed in their main purpose killing pests they should be used as a tool of last resort because of their unintended effects on health and environment. The "safer pesticide use" approach advocates considering, testing and integrating all options for pest management.
USAID pesticide guidelines advise use of protective clothes and masks as part of safe pesticide use, noting common reason why they fail to help, namely:

iv) Being too costly for most African farmers to buy;
v) Being too hot to wear in tropical climates;
vi) When worn, they often accumulate pesticides because they are not thoroughly washed between uses, thus exposing the wearer to *more* toxins.

Compliance measure*:* All vermin control staff will wear appropriate protective gear.

The guidelines also advise against use of outdated/ expired pesticides for any purpose.

Compliance measure*:* In compliance with above advice requirement, no expired chemicals will be used at the school for purposes of vermin control.

USAID Guidelines advocate for integrated pest control or use of non-chemical options before chemicals are used. Some non-chemical options are given below:

- While in many countries, malarial mosquitoes are controlled by indoor sprays on walls and ceilings, water management, screens, and pesticide-treated bed mosquito nets (see Hirsch et al., 2002). Introduction of mosquito-eating fish in mosquito-breeding waters can preclude use of conventional pesticides
- Window screens and bed nets can be used in school buildings to keep out mosquitoes.
- Mice can be trapped by baiting and trapping. Mice can also be prevented by keeping a clean indoor environment free from food crumbs/ waste that would attract mice.
- Planting repellent plants such as neem tree or lemon grass near buildings on the school campus can prevent mosquito infestation or at least reduce quantities of chemicals required for vector control

Compliance measure: Utilizing advice of botanical experts, mosquito repelling plants will be identified and planted on the school campus. This may also apply to snake-repelling plants. Smell of the Pink Agapanthus and tobacco plant are also known to repel snakes.

Appendix 10: Social Impact Assessment

1.1 Overview

A number of social impacts were identified in the project area and their magnitude and severity varies depending on location, environmental receptors to be affected and life cycle of the project. The following are key words guiding the scaling of impacts summaries of potential direct and indirect, on site and off site impacts associated with the project.

1.1.1 Direct Impacts: these are effects that arise from activities that form an integral part of the project (e.g. site clearance, access road maintenance, construction, materials sourcing etc.); and

1.1.2 Indirect Impacts: these are impacts that arise from activities not directly and clearly forming part of the project (these may include noise changes due to an increase in activity of neighboring trading centres resulting from school establishment).

These effects are subdivided into groups according to the phases (pre-construction, construction and operational) in which, they may occur. In each of the categories, the environmental impacts are sub-divided according to the activities associated with the project component. It is also important to note that effects have further been sub-divided on the basis of their Magnitude (High-H, Medium-M, Low-L, Negligible-N) and Duration (short term, medium or long term) and Permanency (Reversible or Irreversible) and these have been summarized.

2.0 Overall impact assessment

The overall impact of an activity of the project has been established based on a combination of considerations such as magnitude of the impacts, impacts duration and, their permanency and all these have been related on a continuous scale between extremes of Very Large Positive Impacts and Very Large Negative Impacts. The extremes of significance have varied according to aspect(s) considered. For instance, an aspect of high value (e.g. water body) if they are highly impacted negatively gives an overall impact assessment in the scale of very large negative impacts. On the reverse, such highly valued areas when affected by little or no impacts will have overall impact assessment of minimal/no impact or small negative impact depending on the specific characteristics as summarized in the Table below.

Table: A: 10:1 Impacts Scaling

Scale	Narrative
++++	Very large positive
+++	Large positive
++	Medium positive
+	Small positive
0	Minimal/no impact
X	Small negative
XX	Medium negative
XXX	Large negative
XXXX	Very large negative

3.0 Positive Impacts associated with the proposed school development in Nswanjere village

3.1 Employment opportunities

The proposed school development project is anticipated to create employment opportunities for both skilled and unskilled labour. This project is expected to provide a reasonable number of jobs especially during the construction. People will be employed as cooks, workers, truck drivers among others. Most of the laborers will be hired from the project area and this will benefit the local communities.

School development will generate income to families that will take on construction related activities at the proposed site through earnings realized from wages and salaries which will in turn improve on their livelihood. This will mostly be the case for unskilled and semi-skilled worker who the proponent will be encouraged to source locally as much as possible.

Impact scale ++++

3.2 Improvement of local infrastructures

During the study it was established that the 2k access road from the main Mityana-Kampala road leading to the proposed site is not in good shape. The project will improve the road which will improve and ease transport within the Ntula/Nswanjere village.

Impact scale ++++

3.3 Enhancement of Agricultural production

Farming (crop production) is the major economic activity in the project area second to fishing. During the study, it was established that the main crops grow in the area include maize, beans cassava and potatoes are food crops. Vegetables such as cabbages, nakati, egg plants and tomatoes are grown for commercial purposes. The improved road network will allow free marketing of produce and farmers will be able to access bigger markets in the area hence better income to the farmers.

Impact scale ++++

3.4 Creation of business opportunity

Business activity in most of the trading centres is buying and selling of agricultural produce such as matooke Beans, groundnuts and maize. Near-by towns such as Bujuko are relatively active and growing. Consultations with the district authorities and the community stated that lack of infrastructure is a hindrance to a number of development opportunities in the area. They hoped that when the school development project is established economic development as well as businesses in Nswanjere village Muduma Sub County in Mpigi district.

Impact scale +++

3.5 Improvement of social services

Access to social facilities such as schools and health services is anticipated to improve after the school development project is established. The associated infrastructure such as the road and water points will provide connectivity between the villages with better social services. The provision of a bore hole to area residents has improved the sanitation in the immediate neighborhood.

Impact scale ++

3.6 Enhance gender development

In Ntula/Nswanjere village where the development is proposed, women are active in farming and are optimistic about the project. It is important to note that, to enhance the social benefits of the project, the condition of women as a vulnerable group will have to be improved. Women will also be encouraged to take up a number of the skilled, semi-skilled and unskilled employment positions of the workforce in the project during implementation.

Impact scale ++

4.0 Potential negative impacts

This section summarizes potential negative social impacts of the proposed school development project in Ntula nswanjere village, Malima parish, Muduma sub county Mpigi district and also suggests some mitigation measures to address such impacts.
These include the following:

4.1 Population influx and HIV/AIDs concerns

There will be an influx of people into the area in search of employment opportunities and this will come with its social negative consequences. Population will likely be concentrated in the nearby trading centers such as Muduuma and Bujuko. One of the issues of concern will be impacts on the HIV/AIDS-STIs prevalence in the area. It was expressed during one of the meeting with district leaders that contracted workers often take advantage of local people's wives because they tend to have a relatively high disposable income compared to the area people. There will also be issues of increased crime rate and general possibilities of insecurity/ so

4.1.1 HIV/AIDs concerns and mitigation measures

- All contractors should have a strict policy against sexual fraternization among workers and local people to avoid prostitution.
- As a contractual obligation, the contractors shall have an HIV/AIDS policy and action plan to implement it for the respective projects they implement.
- Service providers and contractors shall work with various HIV/AIDS support institutions such as district health centers and NGOs in project areas to sensitize, test and counsel workers and communities about the risk of HIV/AIDS
- Continuous sensitisation of the population on the dangers of acquiring HIV
- Collect and avail district Data on HIV/AIDS to ease monitoring
- Integration of HIV/AIDS concerns into the district sector work plans.
- Local leaders should liaise with district health persons to carry out VCT so that those infected can be given the necessary help.

In order to minimize the negative social behaviours, it is recommended that, where necessary and feasible, the proponent should engage local labour force from within the immediate communities to minimize housing pressures as well as, social conflicts around the proposed project area;

4.2 Increase fuel wood demand

Wood fuels are the most common sources of energy for the majority of the population in Mpigi district. Firewood and charcoal are often referred to as traditional fuels and are dominant sources of energy for cooking within the domestic sector and institutional settings therefore there is need for streamlining provision of adequate supplies of low cost energy for homes and institutions whilst minimizing environmental effects. This should be by energy planners considering all economic, financial, environmental and social factors.

In Uganda no ministry has a direct role in the development of the wood fuel energy base but rather relies on the relevant government departments to inform it of energy developments and this compounds the effect of over exploitation for example of forests.

It should be noted that there are environmental impacts connected to all types of energy use which need to be considered in planning for a sustainable energy mix at the proposed institution. The wood energy trade within Uganda as a whole and Nswanjere village in particular is under the informal sector, which makes it difficult to formulate intervention strategies at the different levels. However the following has been suggested;

- Entering into agreement with private forest owners to supply the needed wood fuel at the institution.
- Promoting reforestation of parts of Mpanga forest
- Using energy efficient technics such as energy saving stoves and use of brickets at the institution
- Acquiring land and establishing wood lots
- Establish tree nurseries for supply to villagers willing to plant
- Engaging Mpanga forest management for possible lease of part of forestry land for wood lot establishment.

4.3 Gender concerns

Impacts relating to women will include issues like denial of employment opportunities, gender violence when husband forcefully demand their wives pay from the school development and lack of appropriate public facilities for women such as shelter for their children as they work on the proposed school development. Other potential negative impacts on women include exposure to HIV/AIDS and STIs and potential increased sexual exploitation of young girls which will likely lead to unwanted pregnancies, drop-out from school and concerns of poor distribution of employment opportunities for the women.

These are **large negative impacts** which are proposed to be mitigated through the following measures:

- Encourage women to participate in school development activities as much as possible.
- The proponent should be gender sensitive when employing workers so that able and willing women are not left out.
- Provide gender sensitive working environment such as gender specific washrooms which will encourage women to participate in the proposed development works.
- Ensure “positive discrimination” in job allocation whereby women are given tasks they would do best, based on their potential.
- Workplace environment including tools and fixtures should be gender-friendly.
- Access routes to water collection points should not be blocked by the proponent/contractor

4.4 Loss of livelihood

Although communities around the proposed site do not directly use the proposed site neighboring families use it as a grazing area for their animals. Development of the site would therefore reduce access to grazing land for the local people. This is a large negative impact which should be mitigated through the following measures.

- Those using the land should be informed about the proposed development early in time so that they make the necessary livelihood adjustments.

4.5 Impact on schools and learning process

Two schools are located within Nswanjere and it is possible that during access road construction works will likely impact on the activities of these schools and learning at large. The site construction phase is also likely to use heavy machinery that emits high levels of noise hence disruption of the learning process. These works are likely to have large negative impacts on learning process and safety of children.

Mitigation measures

- Schools could be sensitized on road safety and need to keep off construction sites;
- Workers to be instructed to observe general order while working
- Where schools are fairly exposed to the road, there could be provisions to screen off such sections with iron sheets or mats during the construction;
- There will be erected speed control humps across sections of access roads near the schools.

4.6 Noise and vibration impacts

During construction of the proposed school and access roads noise will be generated through construction activities, extraction of murram and compaction of the roads among others. During operation; noise will likely be generated from students. It is anticipated that traffic along the Ntula access road will increase since there will be increased traffic activity along it. Communities in Ntula-Nswanjere live in isolation so noise will cause nuisance effects and may have health implications through stress.

Mitigation measures proposed to control noise levels include:

- Restrict construction activities to day time hours to minimize disrupting sleep in the nearby communities; and

4.7 Dust nuisance

The school construction works will likely generate dust from a number of activities, earthworks and general clearing works which will impact negatively on the surrounding communities and residents around the proposed site. The dust will also impact on the safety of the nearby residents through reduced visibility and as well will affect businesses along the road and near trading centers. Dust may also present health risks to the workforce and the neighborhood such as severe respiratory diseases.

Mitigation measures proposed include:

- Dust control will be through routine sprinkling of water on the loose surfaces especially near landing sites;
- Observance of speed limits by heavy vehicles delivering construction materials through speed control sections of the access roads with humps and related infrastructures; and
- Workers will be availed with Personal Protective Equipment (PPE) such as masks, helmets, hand gloves, boots and ear muffs to protect them from dust.

4.8 Change in land use

The 10 acres that have been acquired for the proposed development are currently under fallow with no active use but once the project activities commence there will be site clearing and eventual construction of structures which will change the land use patterns. The development is also likely to influence development patterns in the village for example through growth and expansion of existing trading centres and emerging of new ones as a direct consequence or as a secondary consequence which may lead to unplanned settlement and exploitation of natural

resources, conflicts arising between development and protection, natural resource use, recreational use and historical or cultural resources.

Aesthetics are likely to be affected because the current view and scenery will be altered by establishing the school and associated facilities.

The fact that the proposed development will involve excavation there is a likelihood that damage could be caused to materials of archaeological importance. Archaeological assemblages are

4.9 Archaeological materials

These are classified as small bones, small and medium-sized pottery scatters, stone artefacts, iron smelting sites and other features that are historic information. These sites may be impacted by the implementation of the plan indirectly or directly if the project comes into contact with the material.

5.0 Assessment of risks and opportunities in light of the proposed school plan

1. **Excavations -** of the access road and foundation for structures to support the proposed infrastructure will lead to total distraction of the archaeology and other cultural resources found in the soils like burials places if any. This impact is likely to happen during the construction phase.

2. **Vibration from equipment and vehicles** -This poses threat to the physical fabric of the pottery, iron slag, furnaces and bone remains among others which are already under threat from the natural causes and by vehicles using the road. This impact is likely to run from the construction phase to the operational phase.

3. **High Humidity and oil spillage** - The consequence of high humidity and moisture is the deterioration of the material culture fabric. The archaeological materials are made of different fabrics and react differently to sudden change some cannot withstand high moisture content. This may happen when the cultural materials get exposed due to different project activities.

4. **Encroachment** - There is likely to be an expansion of both human settlements and agricultural land use, which will ultimately have an impact on the aesthetic values of the area. Human traffic, also poses a threat to the sites. The major consequences of encroachment are the destruction of the physical site and its related values.
5. **Poor drainage** may cause erosion which will damage and also lead to the exposure of archaeological materials in the project area. It may also cause water logging which will directly impact on archaeological materials buried in the soil negatively.
6. **Theft of Cultural property***;* Movable physical cultural properties may be impacted on by the project as the incoming workers may provide ready markets for the cultural resources.
7. **Interference/ abuse of the spiritual life**; the intangible life of the region may not be easily understood by the project workers who may end up doing wrong things in spiritual related areas.

6.0 Chance finds

Several precautionary measures have been suggested for under taking under the project implementation phase to safe guard materials of archaeological and cultural importance that may be come across. The following is a comprehensive plan based on best practice as out lined

by the World Bank that would be implemented in the event of chance discovery of heritage resources.

6.1 Chance find procedures will be used as follows:

- Stop the construction activities in the area of the chance find;
- Delineate the discovered site or area where the PCR has been sighted;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be present until the responsible local authorities and the Directorate of Museums and Monuments take over;
- Notify the supervisory Engineer who in turn will notify the responsible local authorities and the Directorate of Museums and Monuments under the Ministry of Tourism, Wildlife and Antiquities (within 24 hours or less);
- The Directorate of Museums and Monuments would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures.
- Decisions on how to handle the finding shall be taken by the Director Uganda Museums. This could include changes in the layout (such as when finding are irremovable of cultural or archeological importance) conservation, preservation, restoration and salvage;
- Implementation for the authority decision concerning the management of the finding shall be communicated in writing by the Directorate of Museums and Monuments; and
- Construction work could resume only after permission is given from the responsible local authorities and the Directorate of Museums concerning safeguard of the heritage;
- Construction work will resume only after authorization is given by the responsible local authorities and the Uganda Museum concerning the safeguard of the heritage; and
- Relevant findings will be recorded in Contractors Implementation Reports as well as in the Consultants Supervision Reports (CSRs) and later, Project Completion Report will be assessed for its overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

7.0 PROJECT MONITORING PHASES

7.1 Pre- construction phase monitoring

Monitoring during the pre-construction phase of the project will be concerned with Checking whether the project designs and specifications incorporate appropriate measures to minimize negative social impacts and to enhance beneficial impacts.

7.2 Construction phase monitoring

Social monitoring during the construction phase will principally comprise two sets of activities. Namely:

- Review of the proponent's method statements and arrangements relating to obtaining necessary approvals from NEMA and other important LEAD agencies, so as to ensure that social measures specified are adopted, and that the Contractor's proposals provide an acceptable level of impact control; and
- Systematic observation on a day-to-day basis of all construction site activities as a check that the requirements relating to social matters are in fact being complied with, and that no impacts foreseen and unforeseen are occurring.

These activities will be fully integrated with other school establishment and monitoring activities carried out. Primary responsibility for ensuring that an adequate level of social monitoring is carried out will lie with Mpigi district environment officer.

The majority of monitoring will comprise visual observations and site inspections will take place with emphasis on early identification of any social problems and the initiation of suitable remedial action. Where remedial actions have been required on the part of the proponent, further checks will need to be made to ensure that these are actually being implemented to the agreed schedule and in the required form.

Reports whenever necessary will be prepared by the proponent and will contain a section referring to social matters, which summarizes the results of site monitoring, remedial actions, which have been initiated, and whether or not the resultant action is having the desired result. The reports will also identify any unforeseen social problems and will recommend suitable additional actions. In addition to visual observation, monitoring may also include limited informal questioning of people and local community leaders who live in Nswanjere village since they may be aware of matters which are unsatisfactory, but which may not be readily apparent or recognized during normal site inspection visits.

The monitoring program will be based on the project ESMP and NEMA Approval conditions for the project as well as other national Specifications provided for by Ministry of Education and any other lead or funding agency

Table: A: 10 .2: Social parameters suggested for monitoring

Social issue	**Monitoring indicator**	**Entity responsible for monitoring**	**Monitoring activity to be undertaken**	**Frequency of monitoring**
Strain on social services	Available social services Increase in population	Mpigi district education and environment officers	-Project area inspection -Records review	Quarterly
Increased demand on resources such as firewood and water	Stain on water sources e.g. by having long queues at water points Increase in the cost of wood energy	District environment officer Sub county development officer	Review of the changes in the baseline of the area.	Quarterly
Increase in social ills such as, criminal acts, prostitution, alcoholism	Employment laws in place; - Law enforcement agencies in place; - Create awareness on HIV/AIDS	District authority	Review of records	Monthly
Increase in HIV/AIDS	-Create awareness on HIV/AIDS -Reports of HIV/AIDS sensitization in place	District health authorities	Records review	Quarterly
Increase in hygiene and sanitation related diseases	Number of water points in place Hygiene and sanitation programs in place	District authorities	Records review	Monthly
Gender mainstreaming	-Gender service provider in place; -Reports on Gender mainstreaming in place	Contractor	Records review	Monthly

7.3 Social monitoring indicators

Some of the monitoring indicators amongst others to be monitored are:

- Gender mainstreaming i.e. involvement of women in the project activities,
- HIV/AIDS Sensitization Programme put in place;
- Dust suppression measures instituted and implemented by the contractor;
- Traffic control measures put in place during construction of access and farm roads for the project;
- Contractors noise control measures put in place and operationalized;
- Records of workers issued with the PPEs materials.

The monitoring program is to be based on the ESMP and NEMA Approval conditions for the project as well as on the Specifications for construction that relate to social, Occupational Safety and Health, Gender and HIV/AIDS and other cross cutting issues.

8.0 Conclusion

The community discussions and stakeholder interviews showed that the community of Nswanjere-Ntula will support the project. Maintenance of the access road and access to the existing water sources are some of the key requests from the community to the proponent. The project is also viewed as an avenue through which the project area neighbourhood can get infrastructure development as well as being a source of employment for themselves or their children.

Notwithstanding the anticipated benefits, the project will lead to negative social and economic impacts such as increased pressure on available social services due to immigration. It is recommended that the proponent implements all the mitigation measures suggested to address social issues so that the project is managed perfectly to a logical conclusion, the proponent should make the necessary budgetary provisions to ensure that mitigation commitments and monitoring programs stated herein are effectively implemented. In addition, public consultation and sensitization shall continue throughout the project cycle in order to capture any other issues that could have been left out during the consultation exercise.