

FEDERAL MINISTRY OF EDUCATION

# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE REHABILITATION AND RENOVATION OF 112 UNITY SCHOOLS IN NIGERIA UNDER THE AGILE PROJECT

# **DRAFT FINAL REPORT**

MARCH 2024



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# Abbreviations

| °C            | Degree Celsius   |
|---------------|--|
| °F            | Degree Fahrenheit  |
| ACHPR         | African Charter on Human and Peoples Rights                                    |
| AF            | Additional Financing   |
| AGILE         | Adolescent Girls Initiative for Learning and Empowerment                       |
| BESDA         | Better Education Service Delivery for All                                      |
| BOD           | Biological oxygen demand   |
| CAT           | Convention Against Torture   |
| CEDAW         | The Convention on the Elimination of All Forms of Discrimination against Women |
| CHSMP         | Community Health and Safety Management Plan                                    |
| CO            | Carbon monoxide  |
| $CO_2$        | Carbon dioxide,  |
| CoC           | Code of Conduct  |
| COD           | Chemical Oxygen Demand   |
| CRC           | Convention on the Rights of the Child  |
| CRPD          | Convention on the Rights of Persons with Disabilities                          |
| CSO           | Chief Security Officer   |
| dB            | Decibels   |
| DC            | Direct Current   |
| DO            | Dissolved Oxygen   |
| E&S           | Environmental and Social   |
| EHS           | Environment Health and Safety  |
| EIA           | Environmental Impact Assessment  |
| EPA           | Environmental Protection Agency  |
| ESF           | Environmental and Social Framework   |
| ESMF          | Environmental and Social Management Framework                                  |
| ESMP          | Environmental and Social Management Plan                                       |
| ESO           | Environmental Safeguard Officer  |
| ESS           | Environmental and Social Standards   |
| EST           | Environmental Science Teacher  |
| FAO           | Food and Agriculture Organization  |
| FCT           | Federal Capital Territory  |
| FEC           | Federal Executive Council  |
| FGBC          | Federal Government Boys College  |
| FGC           | Federal Government College   |
| FGD           | Focus Group Discussion   |
| FGGC          | Federal Government Girls College   |
| FGN           | Federal Government of Nigeria  |
| FMEnv         | Federal Ministry of Environment  |
| FMoH          | Federal Ministry of Health   |
| FMoL&E        | Federal Ministry of Labour and Employment                                      |
| FMWA          | Federal Ministry of Women Affairs  |
| FMWASD        | Federal Ministry of Women Affairs and Social Development                       |
| FRSC          | Federal Road Safety Corps  |
| FSTC          | Federal Science and Technical College  |
| FUC           | Federal Unity Schools  |
| $\sigma/m^2$  | Grams per meter square   |
| 6/ ***<br>GRV | Gender Based Violence  |
| CC            | Guidance Courselor   |
| GHG           | Green House Gas  |
|               |  |

| GM                 | Grievance Mechanism  |
|--------------------|--|
| GRC                | Grievance Redress Committees   |
| GRM                | Grievance Redress Mechanism  |
| GT                 | Geography Teacher  |
| GW                 | Groundwater  |
| H <sub>2</sub> S   | Hydrogen Sulphide  |
| HFR                | Health Facility Registry   |
| HSE                | Health Safety and Environment  |
| HUB                | Hydrocarbon Utilizing Bacteria   |
| HUF                | Hydrocarbon Utilizing Fungi  |
| IBSDLEIP           | Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Programme |
| ICCPR              | The International Covenant on Civil and Political Rights                         |
| ICESCR             | The International Covenant on Economic, Social and Cultural Rights               |
| IDEAS              | Innovation Development and Effectiveness in the Acquisition of Skills            |
| IDP                | Internally Displaced Persons   |
| ILO                | International Labor Organisation   |
| ISS                | Junior Secondary Schools   |
| Km                 | Kilometer  |
| Km <sup>2</sup>    | Kilometer Square   |
| LFD                | Light Emitting Diode   |
| LED                | Laws of the Federation of Nigeria  |
|                    | Local Covernment Areas   |
|                    | Labour Management Procedures   |
| m                  | Mater  |
| MQ.F               | Menitoring and Evaluation  |
| mal m <sup>3</sup> | Molitor ing and Evaluation   |
|                    | Meter Cube   |
| MDA                | Ministries Departments and Agencies  |
| MDAs               | Ministries Departments and Agencies  |
| mg/L               | Milligram per liter  |
| mm                 | Millimeter   |
| NBS                | National Bureau of Statistics  |
| NESREA             | National Environmental Standards and Regulations Enforcement Agency              |
| NFWP-SU            | Nigeria for Women Program Scale Up   |
| NGO                | Non-Governmental Organization  |
| NHIA               | National Health Insurance Act  |
| NPC                | National Population Council  |
| NPCU               | National Project Coordinating Unit   |
| NPCU GRM           | National Project Coordinating Unit Grievance Redress Mechanism                   |
| NPE                | National Policy on Education   |
| NSCDC              | Nigeria Security and Civil Defence Corps   |
| NTU                | Nephelometric Turbidity Units  |
| NYSC               | National Youth Service Corps,  |
| OHS                | Occupational Health and Safety   |
| PCBs               | polychlorinated biphenyls  |
| PDO                | Project Development Objective  |
| PforR              | Program for Results  |
| PIUs               | Project Implementation Units   |
| PM                 | Particulate Matter   |
| PPEs               | Personal Protective Equipment  |
| Ppm                | Part per million   |
| PTA                | Parent Teachers Association  |
| PVC                | Polyvinyl chloride   |
| PWD                | Persons With Disabilities  |
| SARC               | Sexual Assault Referral Center   |

| SBMC            | School Based Management Committee                                |
|-----------------|--|
| SEA             | Sexual Exploitation and Abuse                                    |
| SEP             | Stakeholder Engagement Plan                                      |
| SGBV            | Survivors of Sexual and Gender-Based Violence                    |
| SH              | Sexual Harassment  |
| SIG             | School Improvement Grant   |
| SIP             | School Improvement Plan  |
| SO <sub>2</sub> | Sulphur dioxide  |
| SPIU            | State Project Implementation Unit                                |
| SS              | Soil Samples   |
| SSO             | School Project Implementation Unit Social Officer                |
| SSS             | Senior Secondary Schools   |
| STDs            | Sexual Transmitted Diseases                                      |
| STIs            | Sexual Transmitted Infection                                     |
| SW              | Surface Water  |
| SWAG            | Stand with a Girl  |
| TBC             | Total Bacteria Count   |
| TCC             | Total Coliform Count   |
| THB             | Total Heterotrophic Bacteria                                     |
| THF             | Total Heterotrophic Fungi  |
| ТОС             | Total Organic Carbon   |
| ToR             | Terms of Reference   |
| TTL             | Task Team Leader   |
| TVOC            | Total volatile organic compound                                  |
| UDHR            | Universal Declaration on Human Rights                            |
| UN              | United Nations   |
| UNDP            | UN Development Program   |
| UNESCO          | United Nations Educational, Scientific and Cultural Organization |
| UNICEF          | United Nations Children Funds                                    |
| UNIDO           | UN Industrial Development Organization                           |
| USAID           | United States Agency for International Development               |
| UV              | Ultra-Violent  |
| VAPP            | Violence Against Persons Prohibition                             |
| VET             | Vehicle Emission Test  |
| VIP             | Very Important Persons   |
| VPSD            | Vice-principal Special Duties                                    |
| W               | Watt   |
| W.C             | Water Closet   |
| WASH            | Water Sanitation and Hygiene                                     |
| WHO             | World Health Organization  |

# **EXECUTIVE SUMMARY**

#### ES1 Introduction

The Federal Government of Nigeria, through the Federal Ministry of Education, launched the Adolescent Girls Initiative for Learning and Empowerment (AGILE) in collaboration with the World Bank, to effectively address the identified barriers to secondary education completion and access faced by adolescent girls, particularly in Northern Nigeria. The project aims to adequately address the significant barriers that adolescent girls encounter when enrolling in, retention, assessing, and completing secondary school education, as well as empowering them with marketable and relevant life skills through secondary school platforms in participating states nationwide.

AGILE is already being implemented in eighteen (18) states. The parent project consists of seven (7) participating states: Borno, Ekiti, Kaduna, Kano, Katsina, Kebbi and Plateau. With the successes of the Parent Project, the Federal Government of Nigeria requested Additional Financing (AF) to scale up the number of participating states under the project to include Adamawa, Bauchi, Gombe, Kogi, Kwara, Niger, Sokoto, Jigawa, Nasarawa, Yobe and Zamfara States. As part of the AF, the Federal Ministry of Education also intends to support interventions in one hundred and twelve (112) Federal Unity Colleges within the country (FUCs).

The Project consists of three components and seeks, among others, to improve the quality and efficiency of social service delivery. The components include Safe and Accessible Learning Spaces, Fostering an enabling environment for Girls and Project Management and System Strengthening.

#### ES2 Project Description

The FUCs across the country provide a major opportunity for children to attend secondary schools considering the spread and the number of students that can be accommodated. However, these schools suffer from dilapidated buildings, inadequate water sanitation and hygiene (WASH), poor hostel facilities amongst others. This situation has resulted in some students not returning to school due to the inconducive learning environment.

The planned intervention for the 112 Unity schools comprises of provision of WASH facilities and renovation of classrooms, hostels, multi-purpose hall and other school infrastructure to facilitate conducive learning experience.

The Project through the National Project Coordinating Unit (NPCU) will facilitate the interventions thorough the disbursement of 40% of \$60,000 being the grant size of the Large Grant (LG) to each of the Federal Unity Colleges (FUCs) for the provision of additional WASH facilities. The 40% would cater for borehole drilling powered preferably by a mix of manual (generator) and solar (subject regional comparative advantage), with two (2) 2,500 litres capacity black plastic tanks and water reticulation to one (1) block of six cubicles squat toilets plus one (1) cubicle sitting toilet with wall handholds for students with physical disabilities, and with adequate lightings around the toilet area.

The prototype designs, drawings and specifications for the WASH facilities to be adapted by all the FUCs in the provision of WASH facilities have been provided which states a combined water and pour flush system toilet as detailed in chapter 3.

The balance of the 60% would cater for renovation/rehabilitation activities in each of the FUCs. Renovation works will include repair of cracked walls (including painting), dilapidated floors, doors, windows, and leaking roofs/ceiling works for classrooms and administrative blocks. Rehabilitation/repair of perimeter fence in broken down sections in affected schools. Specific

works will differ amongst the schools with each delineating its priority through the School Improvement Plan (SIP).

All buildings and WASH facilities to be intervened in will be fitted with access ramps and handrails to support Persons with Disabilities. The use of solar panels as source of renewable energy for the WASH facilities, buildings and boreholes is part of resilient infrastructure and Green House Gases (GHG) emission reduction strategy that have been proposed as part of the design, this will also reduce power consumption in the schools.

#### ES3 Rationale for the ESMP

While the proposed rehabilitation works (rehabilitation of existing school buildings and upgrade of WASH facilities) is aimed at achieving the project objectives of creating safe and accessible learning spaces, some potential negative impacts are expected in relation to civil works activities. Such impacts may include generation of waste, noise/air pollution, traffic accident from movement of equipment and materials to site, occupational health & safety risks, risks associated with use of labor such as conflicts, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), increase in STIs/STDs amongst others.

However, the potential negative impacts are envisaged to be limited especially as the project activities will be within existing schools and does not contemplate constructing new buildings or school expansion, hence an Environmental and Social Management Plan (ESMP) is the appropriate instrument to manage the environmental and social risks and impacts of the project.

#### ES4 Potential Impacts and Mitigation

#### **Potential Positive Impacts**

- Renovation of the existing school buildings will lead to an improved and conducive learning environment.
- Provision of additional WASH facilities such as toilets and boreholes will promote hygiene and sanitation in the schools and thus preventing the spread of diseases such as cholera, diarrhoea, dysentery, shigellosis etc., and leading to retention of the girl child in school.
- School age children within the project communities/LGA/country-wide will benefit from the project.
- School staff will benefit from the improved WASH facilities and renovation works which will encourage staff retention.
- Learners and staff with disabilities will benefit from the design considerations to be included in the project such as access ramps, special toilets etc.
- Better environmental aesthetics in the schools from the presence of renovated buildings.
- Completion of fencing in schools will promote security in the schools.
- Temporary employment for locals within the community which will lead to income generation.

#### Potential Negative Impacts during Construction

There are potential negative impacts that may be associated with the proposed rehabilitation works such as pollution from poor waste management practices, community health & safety risks such as accidents, child labour, forced labor, Occupational Health & Safety (OHS) risks such as work accidents, traffic obstruction from movement of equipment and materials to site etc. while labor influx is expected to be minimal considering rehabilitation works will be done by local artisans coordinated by the Project Committees, a few workers may be foreign to the local community and may pose risks of Sexual Exploitation (SEA)/Sexual Harassment (SH) risks.

Mitigation measures include preparation and implementation of site-specific waste management plan, community health & safety plan to minimise disturbance & accidents, OHS

Plan to prevent workers accidents, signing of Code of Conducts by workers amongst other measures as detailed in section 5.3 of this ESMP, including a monitoring plan, responsibilities and costs for mitigation and monitoring.

#### Potential Negative Impacts during Operation

People with Disabilities (PWD) may further be disenfranchised if design considerations are not made to accommodate them. The number of teachers may be insufficient to cater for the rate of student enrolment, especially female teachers. Security issues in the schools such as kidnapping of students and school staff. Risk of vandalization & theft of equipment installed such as solar panels, water pumps, etc.

Mitigation measures include compliance with the proposed project design to provide access ramps to buildings and toilets with grab bars, better lightening, heights of furniture and electrical sockets, adequate turning radius for doors and walkways for those with walking disabilities, and using wheelchairs, provide brailles etc. AGILE can also institute special programs in these schools such as anti-bullying campaigns.

To ensure project environmental and social sustainability, the Federal Ministry of Education and the school management should plan and implement the following measures as stated in the operational phase of the ESMP matrix table 11:

- Provide color coded waste bins for segregation of waste in the schools and proper disposal of waste in liaison with the state EPAs/waste management agencies/ licensed waste vendors. E-waste to be sent to Material Recovery Facilities/ recycling centres through agreements with the state EPAs/waste management authorities.
- Sensitise students on good waste management practices and establish environmental clubs for waste reduction, reuse and recycle and planting of trees on a continuous basis at least annually.
- Old newspapers or recycled paper should be provided in the female toilets for girls to wrap their used pads. A covered waste bin should also be provided for collection in the female toilets to help curb clogging of toilets and damage from sanitary pads. Conduct Sensitisation programs for girls on the channels and importance of proper waste disposal and menstrual hygiene.
- Prepare and implement a WASH maintenance schedule to include provision of adequate human resources (cleaning staff), material resources (cleaning supplies and hygiene products), financial resources (budget for restocking and maintenance) and educational resources (hygiene education program).
- Promote rainwater harvesting, artificial recharge from boreholes to complement the AGILE project in schools especially in zones with very low aquifers, ground reservoirs should also be provided in such schools in addition to the elevated reservoirs, as the former can store more capacity.
- Construct drainages, flood control structures, landscaping in schools with flood and erosion issues. This can be done in liaison with the Federal/ state Ministries of environment.
- The water tanks should be adequately and sturdily mounted and be periodically (half yearly) washed out to remove sludge.
- Water filtration system UV/chlorination system should be included as part of the design and construction of the borehole systems. Use of pH correction filter which involves the

use of a neutralising media in schools with high acidity or alkalinity, include reverse osmosis filtration system (RO machines) in the design and apparatus for the borehole system for schools with values of high nitrate/heavy metals as stated in chapter 4 in this ESMP.

- The project is advised against using lead pipes in school projects.
- Conduct annual testing of borehole water to ensure water quality remains within acceptable limits, this can be done by independent water quality monitoring bodies or in liaison with the state ministries of environment/water resources.
- Ensure provision of access ramps to buildings and toilets with grab bars and institute special programs in schools such as anti-bullying campaigns.
- Implement strategies to recruit teachers especially female teachers to encourage girl child education and retention in schools. Incentives could be provided to encourage female teachers especially in girls' schools including deploying NCE teachers etc.
- Where an area or school is adjudged to be unsafe, it should be temporarily closed, and the students can be relocated to safer areas to continue their academic activities.
- Install flood lights and CCTV cameras as part of security measures to capture movement in and around the schools, The school management should sensitise the students on the use of the facilities and ensured proper security measure around the facilities.
- Liaise with security forces to ensure safeguarding of lives and property.
- Conduct regular security management trainings for students and staff including identifying security risks, seeking protection and response protocol.

#### ES6 Grievance Mechanism

The Grievance Mechanism (GM) is developed as a multiple-level design (project location, state, and national levels) and will address diverse suggestions & complaints, and involve activities like logging, tracking, and resolving project related grievances. Chapter 6 provides the GRM which has been prepared in a manner that integrates both the formal and informal/traditional approach to grievance redress mechanism. This includes the use of Grievance Redress Committees (GRCs), complaint boxes, dedicated phone lines to channel and resolve grievances. The GRCs will be constituted at the project site level, State Project Implementing Unit (SPIU) level, National Project Coordinating Unit (NPCU) level and Federal Ministry of Education level. A Gender Based Violence (GBV)-GM protocol is also included to provide a process for channeling GBV related complaints which is handled different from the non-GBV related grievances due to the confidential nature of the complaints.

| S/N | Item  | Responsibility                      | Estimated Cost (NGN)          |
|-----|---|-------------------------------------|-------------------------------|
| 1.  | Mitigation                                    | Project Committee                   | 188,160,000.00                |
| 2.  | Monitoring                                    | SPIU/NPCU/School<br>Management/MDAs | 84,400,000.00                 |
| 3.  | Capacity Building                             | NPCU                                | 8,100,000.00                  |
| 4.  | GRM Costs                                     | NPCU/Project Committee              | 8,848,000.00                  |
| 5.  | Disclosure Costs                              | NPCU                                | 6,390,000.00                  |
| 6.  | Total (Pre-rehabilitation and Rehabilitation) |                                     | 295,898,000.00<br>(\$333,970) |
| 7.  | Operational Phase                             | Federal Ministry of<br>Education    | 116,000,000.00<br>(\$130,925) |

#### ES7 ESMP Implementation Budget

The budget is for all the 112 unity schools across the 36 states CBN 1: N886, 11/12/2013

Consequently, the average cost allocated per school for implementation of the ESMP measures is Two Million, Five Hundred and Twelve Thousand, Five Hundred and Seventy-One Naira (N2,512,571.00) only, which was obtained by dividing the sum of mitigation + monitoring + GRM costs by 112 FUCs. The estimated budget for the operation phase is One Hundred and sixteen million naira (N116,000,000) which the Federal Ministry of Education should plan for to implement the actions in the operation phase to ensure project sustainability.

#### ES8 Stakeholder Consultations

As part of the ESMP requirement, stakeholder consultations were held between 23<sup>rd</sup> October to 5<sup>th</sup> December 2023 in 106 schools (excluding 6 schools that had insecurity concerns) across all the 36 states with the project committees, the principals, students, staff, learners with disabilities and staff with disabilities. 73 project communities spread across the 36 states (see annex 11 for the list of communities and locations) were consulted during the assessment, which included consultations with community leaders, women, youth, vulnerable groups (persons with disabilities, widows, elderly people above 70years) as were identified, to allow every group to express their opinions about the project. Detailed information from the stakeholder engagement is provided in Chapter 8.

# CHAPTER ONE INTRODUCTION

# 1.1 Background

The World Bank is supporting the Federal Government of Nigeria (FGN) through the Federal Ministry of Education to implement the Adolescent Girls Initiative for Learning and Empowerment (AGILE) Project. The project aims to support the FGN through a holistic and multi-sectorial approach to unlock binding demand and supply-side constraints to girls' empowerment, especially in northern Nigeria. The project will use secondary schools as a platform to empower girls through education, life skills; health education (e.g. nutrition, reproductive health), Gender Based Violence (GBV) awareness and prevention, negotiations skills; self- agency and digital literacy skills. The AGILE project was developed as part of the FGN's long- term education reform agenda, to adequately address the identified constraints of accessing and completing secondary education facing adolescent girls in Nigeria. The project is in line with the FGN's commitment to promote gender equality and girls' empowerment by introducing a number of initiatives including putting forward a set of prioritized policy and programmatic actions on doubling girls' secondary education enrolment and completion rates.

The Project, which consists of three components, seeks, among others, to improve the quality and efficiency of social service delivery at the state- level thereby promoting social inclusion and strengthening governance and public sector management, with gender equity and conflict sensitivity as essential elements of good governance. The project will work with the federal government and support the education programs of participating states to improve secondary education opportunities amongst girls.

**The Project Development Objective (PDO)** of the AGILE Project aims to improve secondary education opportunities among girls with particular attention to adolescent girls, in targeted areas in participating states. The project focuses on the human capital development for sustaining economic growth and poverty reduction through improvement in the quality and efficiency of social service delivery at the state level to promote social inclusion, strengthening governance, public sector management and gender equity.

The components are as follows:

## Component 1 - Safe and Accessible Learning Spaces

- ✓ Subcomponent 1.1. Creating new safe learning spaces in Secondary Schools
- ✓ Subcomponent 1.2. Improving existing infrastructure in Secondary Schools i.e., School Improvement Grant (SIG)

## **Component 2: Fostering an enabling environment for Girls**

- ✓ Subcomponent 2.1: Promoting social and behavioural change through communications campaigns, engagement with traditional rulers, and advocacy;
- ✓ Subcomponent 2.2a: Empowering girls with critical life skills and knowledge for navigating adulthood
- ✓ Subcomponent 2.2b. Digital Literacy Skills and Remote Learning Platforms
- ✓ Subcomponent 2.3: Providing financial incentives to the poorest households

## **Component 3: Project Management and System Strengthening**

- Sub-component 3.1: System strengthening for sustainability and technical Assistance
- Sub-component 3.2: Project Management, Monitoring and Evaluation (M&E)

The AGILE Project is already being implemented in eighteen (18) states. The Parent Project consists of seven (7) participating states: Borno, Ekiti, Kaduna, Kano, Katsina, Kebbi and Plateau. With the successes of the Parent Project, the Federal Government of Nigeria requested for Additional Financing (AF) to scale up the number of participating states under the project to include Adamawa, Bauchi, Gombe, Kogi, Kwara, Niger, Sokoto, Jigawa, Nasarawa, Yobe and Zamfara. As part of the AF, the Federal Ministry of Education also intends to support interventions in one hundred and twelve (112) Federal Unity Colleges (FUCs) spread across the 36 states of the country, with an average of two to six schools per state and the Federal Capital Territory having the highest number of schools at 6.

#### Achievements so far under the AGILE Project

Based on information from the National Project Coordinating Unit (NPCU)

| State   | Classrooms | Toilets | Borehole | Furniture | Sports | Teaching<br>and<br>Learning<br>Materials<br>(TLMs) |
|---------|------------|---------|----------|-----------|--------|--|
| Kano    | 1746       | 2683    | 477      | 36224     | -      | 42,227   |
| Kaduna  | 779        | 2629    | 290      | 46252     | 150    | 298  |
| Plateau | 1597       | 2093    | 416      | 1584      | -      | 177  |
| Borno   | 817        | 1,740   | 111      | 10,866    | 6      | 34,869   |
| Katsina | 1165       | 4986    | 342      | 10,840    | 188    | 341  |
| Kebbi   | 893        | 530     | 125      | 25,178    | -      | 5,225  |
| Ekiti   | 970        | 757     | 22       | 5,828     |        | 1,430  |
| Total   | 7,967      | 15,418  | 1,783    | 136,772   | 344    | 42,340   |

a) Rehabilitation/Renovation Works carried out in existing schools

#### b) New Construction

| SUB-COMPONENT 1.1 |             |                     |       |  |
|-------------------|-------------|---------------------|-------|--|
|                   | PHASE 1     |                     |       |  |
| STATE             | Number of   | Number of           | Total |  |
|                   | constructed | schools constructed |       |  |
| BORNO             | 15          | 10                  | 25    |  |
| KADUNA            | 36          | 26                  | 62    |  |
| KANO              | 27          | 25                  | 52    |  |
| KATSINA           | 43          | 32                  | 75    |  |
| KEBBI             |             |                     | 48    |  |
| PLATEAU           | 18          | 10                  | 28    |  |
|                   |             | TOTAL               | 290   |  |

# **1.2** Rationale for the AGILE Intervention in the FUCs

The FUCs across the country provide a major opportunity for children to attend secondary schools, considering the spread and the number of students that can be accommodated. However, these schools suffer from dilapidated buildings, inadequate water supply and of Water Sanitation and Hygiene (WASH) facilities, poor hostel facilities amongst others. This situation

has resulted in some students not returning to school due to the inconducive learning environment. In addition, in many schools there is a low female teachers ratio, due to several factors including absence of adequate WASH facilities. Some of the situations in the schools are depicted in pictures in annex 3. The project intends to provide additional WASH (toilets, water supply and water storage facilities to support good hygiene practices to supplement the existing ones.

# **1.3** Proposed AGILE Intervention in Unity Schools

The planned intervention for the 112 Unity schools comprises the provision of additional WASH facilities and renovation of classroom, hostels, multi-purpose hall and other school infrastructure that facilitate a conducive learning experience (see annex 10 for the list of FUCs), based on the project funding arrangements and in line with the project prototype design.

The Project through the National Project Coordinating Unit (NPCU) will facilitate the interventions through the disbursement of 40% of \$60,000 being the grant size of the Large Grant (LG) to each of the Federal Unity Colleges (FUCs) for the provision of WASH facilities. The 40% would cater for borehole drilling powered preferably by a mix of manual (generator) and solar (subject regional comparative advantage), with two (2) 2,500 litres capacity black plastic tanks and water reticulation to one (1) block of six cubicles squat toilets plus one (1) cubicle sitting toilet with wall handholds for students with physical disabilities, and with adequate lightings around the toilet area. Specific works will differ amongst the schools with each delineating its priority through the School Improvement Plan (SIP). The prototype designs, drawings and specifications for the WASH facilities to be adapted by all the FUCs in the provision of WASH facilities have been provided which states a combined water and pour flush system toilet as detailed in chapter 3 of this report.

The balance of the 60% would cater for renovation/rehabilitation activities in each of the FUCs. Renovation works will include repair of cracked walls (including painting), dilapidated floors, doors, windows, and leaking roofs/ceiling works for classrooms and administrative blocks. Rehabilitation/repair of perimeter fence in broken down sections in affected schools. Specific works will differ amongst the schools with each delineating its priority through the School Improvement Plan (SIP).

All buildings and WASH facilities to be intervened in will be fitted with access ramps and handrails to support Persons with Disabilities. The use of solar panels as source of renewable energy for the WASH facilities, buildings and boreholes is part of resilient infrastructure and Green House Gases (GHG) emission reduction strategy that have been proposed as part of the design, this will also reduce power consumption in the schools.

# 1.4 Description of the Project Beneficiary Schools

The beneficiary schools are of different types according to gender (girls only, boys only, coeducation), housing (day, boarding, both), however, they all comprise of Junior Secondary Schools (JSS) and Senior Secondary Schools (SSS). Details are provided below:

# i) Number of schools by urban/semi-urban/rural areas

74 of the FUCs are in Urban<sup>1</sup> areas<sup>2</sup>, 32 are in semi-urban, and 6 are in rural areas. Details of these schools are given in Annex 11.

# ii) Number of schools by type – Girls/Boys/Mixed

71 of the schools are mixed (boys and girls co-education), 38 are girls-only schools and 3 are boys-only schools, as shown in Annex 11.

# iii) Number of schools by Boarding/Day schools

62 of the FUCs accommodate both day and boarding students, though the numbers of day students are very low, while 50 are Boarding only schools.

# iv) Number of schools based on Fenced/Partly fenced

All the FUCs are fenced to some extent, however, a few have some portions which have collapsed due to flooding or structural failure; 97 of the FUCs are fully fenced while 15 are partly fenced.

# v) Number of Students

The number of students varies across all the schools with an average of about 2000 plus, however, the highest number recorded was 5253 students in FSTC YABA, Lagos state, while the lowest number was 150 students at FSTC MISAU, Bauchi state.

# vi) Availability of Teachers

In most of the schools, the number of teachers is not sufficient to cater for the students and some schools have resulted in the use of volunteer and temporary staff from National Youth Service Corp (NYSC), Parents Teachers Association (PTA) or other means. For instance, Federal Government College (FGC) Rubochi, FCT has 5800 students and only 100 teachers. FGC Sokoto has as high as 21 temporary/volunteer teachers, which poses a threat to learning activities in these schools (data from ESMP field assessment, AGILE Federal Unity Schools, 2023).

# **1.5 Project Beneficiaries**

The project beneficiaries include girls and boys school students in the FUCs, school-age students in the project communities/LGAs around the school and also country-wide (considering they are Federal schools and students are admitted from all over the country), school staff and management, learners and staff with physical disabilities.

# 1.6 Rationale for the Environmental and Social Management Plan

While the proposed rehabilitation works (rehabilitation of existing school buildings and upgrade of WASH facilities) is aimed at achieving the project objectives of creating safe and accessible learning spaces, some negative impacts are expected in relation to civil works activities. Such impacts may include generation of waste, noise/air pollution, traffic accident from movement of equipment and materials to site, occupational health & safety risks, risks

<sup>&</sup>lt;sup>1</sup> Inventory of official national-level statistical definitions for rural/urban areas

<sup>(</sup>https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/genericdocument/wcms\_389373.pdf) <sup>2</sup> National Urban Development Policy, 2006, United States Census Bureau, <u>https://gsdrc.org/publications/urban-expansion-in-nigeria</u> classified urban areas as having a population of over 20,000, in addition to state capitals and LGA headquarters. Urban areas are generally well developed with presence of modern infrastructure, semi-urban areas have limited modern infrastructure while rural areas mostly have absence of modern infrastructure, and predominantly farming (Journal of Human Ecology, March 2012).

associated with use of labor such as conflicts, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH), increase in STIs/STDs amongst others. The risks and impacts associated with the rehabilitation phase are expected to be manageable. However, the potential negative impacts for the operation and maintenance phase may be significant. This Environmental and Social Management Plan (ESMP) is the appropriate instrument to manage the environmental and social risks and impacts of the project.

# 1.7 Objectives of the ESMP

The specific objective of this ESMP is to identify the potential environmental and social risks impacts of the proposed works and develop appropriate avoidance and mitigation measures to address the negative risks and impacts. The ESMP also aims to enhance positive impacts through implementable recommendations and will promote the environmental and social sustainability of the project. This ESMP also outlines environmental and social (E&S) mitigation costs, responsibilities, and a monitoring plan which includes monitoring parameters, frequency, responsibility and costs.

# 1.8 ESMP Methodology

The methodology adopted for the ESMP includes the following:

- Review of applicable environmental and social regulations and statutory requirements including the World Bank's Environmental and Social Framework (ESF).
- Literature review and gathering of on-site information at the Unity schools
- Stakeholders consultations at the schools, host communities and relevant Ministries Departments and Agencies (MDAs).
- Review of environmental and social baseline of the project areas.
- Identification of potential environmental and social risks and impacts and associated mitigation measures.
- Development of avoidance and mitigation measures for negative risks and impacts, mitigation and monitoring responsibilities, and budgetary estimates for implementing this ESMP.

# CHAPTER TWO INSTITUTIONAL AND LEGAL FRAMEWORK

# 2.1 Introduction

The preparation of this ESMP was guided by the Environmental Impact Assessment Act No. 86, 1992 (as codified by EIA Act CAP E12 LFN 2004), relevant State and Federal Government environmental and social policies, laws, regulations, guidelines, and applicable World Bank ESF.

# 2.2 Applicable World Bank Environmental and Social Standards for the Project

There are eight (8) applicable ESSs for the project. The summary of these Environmental and Social Standards (ESSs) and applicability to the project are summarized in table 1 below.

| ESS  | Reason for Application of Standard to the Project  | How it will be addressed by the project   |
|--|--|---|
| ESS 1: Assessment<br>& Management of<br>Environmental &<br>Social Risks &<br>Impacts | Proposed project activities will entail civil<br>works in the selected schools to include<br>rehabilitation of existing classrooms,<br>replacement of roofs, windows, provision of<br>hygiene & sanitation facilities, etc.<br>Environmental concerns associated with<br>such rehabilitation works include waste<br>generation, debris from rehabilitation<br>activities, community health and safety,<br>occupational health and safety of workers,<br>noise, dust emissions etc. However, these<br>impacts are limited, site specific and can be<br>mitigated. | This ESMP provides avoidance mitigation<br>measures to the identified E&S<br>risks/impacts, and include other required<br>plans that would be implemented like waste<br>management plan, OHS plan, Community<br>Health & Safety Plan etc. |
|  | The project also poses some social risks,<br>including risks associated with use of labor,<br>grievances, social conflicts and exclusion of<br>vulnerable groups from operationalizing<br>the project.   |   |
| ESS 2:<br>Labour and<br>Working<br>Conditions  | The project will make use of various categories of workers as defined by ESS2, who may face unfavourable terms and conditions of employment, discrimination, child labour, forced labour, grievances and unsafe working conditions.  | Labour Management Procedures (LMP)<br>consistent with ESS2 and National Labour<br>Laws for all categories of workers has been<br>developed for AGILE. This ESMP contains a<br>mitigation measures against associated<br>risks             |
| ESS 3:<br>Resource<br>Efficiency and   | Proposed activities may lead to air, water<br>and land pollution from emissions, waste   | The ESMF identified environmentally friendly options to project activities.   |
| Pollution<br>Prevention.   | properly managed.<br>Project activities could also increase the<br>impacts of climate change from GHG<br>emissions, loss of vegetative cover etc.  | The project designs have considered the use<br>of environmentally friendly options such as<br>solar panels.<br>This ESMP includes mitigation measures to  |
|  | Inefficient use of resources like water and<br>energy, use of environmentally un-friendly<br>techniques during rehabilitation and<br>operation could also pose risks.  | minimize and manage the risks and impacts<br>associated with resource efficiency and<br>pollution management and also a waste<br>management plan in annex 5.  |
| ESS 4: Community   | Schools and project communities may be   | This ESMP has identified potential  |
| nearth and Safety  | exposed to risks from project activities   | community nearth & safety risks and   |

#### Table 1: Applicable World Bank ESS for the Project

| ESS   | Reason for Application of Standard to the Project  | How it will be addressed by the project   |
|---|--|---|
|   | during pre-rehabilitation, rehabilitation,<br>operation phases including<br>accidents/incidents, pollution, increase in<br>spread of diseases, GBV/SEA, security risks<br>etc.   | proffered mitigation measures in section<br>5.2. In addition, a Community Health &<br>Safety Plan is provided in annex 9 of this<br>ESMP.   |
|   |  | A SEA/SH Action Plan and Accountability<br>Framework has been prepared by the<br>Parent Project states and under the AF<br>which all the participating states will adopt.   |
| ESS5: Land<br>acquisition,<br>Restriction of land<br>use and<br>Involuntary<br>Resettlement           | Risks could arise as a result of the<br>possibility of displaced people or the<br>military occupying abandoned schools that<br>are identified for rehabilitation   | Prior to any refurbishment or renovation of<br>schools, the recipient will prepare, adopt,<br>and implement Resettlement Action Plans<br>(RAPs) in accordance with ESS 5 and<br>consistent with the requirements of the<br>Resettlement Policy Framework (RPF)                          |
| ESS6: Biodiversity<br>Conservation and<br>Sustainable<br>Management of<br>Living Natural<br>Resources | Project activities are not envisaged to pose<br>risks to biodiversity since they will occur<br>within the confines of schools. However,<br>potential risks could arise if there are<br>rivers, floodplains, wetlands and other<br>fragile ecological systems near the selected<br>schools. Project activities may also impact<br>on natural resources either through<br>material sourcing and clearing of<br>vegetation. | This ESMP contains mitigation measures to<br>minimize impacts to natural habitats such<br>as impacts on vegetation and material<br>sourcing.  |
| ESS 8: Cultural<br>Heritage   | Project activities may pose potential risks<br>and impacts to physical and cultural<br>resources including archaeological relics,<br>fossils, human graves, shrines, sacred trees<br>or groves etc.  | A Chance Find Procedure that will be<br>elaborated, adopted and implemented is<br>described in this ESMP (see annex 17)   |
| ESS 10:<br>Information<br>Disclosure and<br>Stakeholder<br>Engagement                                 | There are different categories of<br>stakeholders associated with the project<br>with varying degree of influence, who<br>should be consulted throughout the project<br>to improve environmental and social<br>sustainability of the project, enhance<br>acceptance, and make significant<br>contribution to successful project design<br>and implementation.  | A Stakeholder Engagement Plan (SEP) has<br>been prepared for AGILE Project as a stand-<br>alone document.<br>Stakeholder consultations were held during<br>the preparation of this ESMP to obtain their<br>views and concerns about the project.<br>The ESMP will be publicly disclosed |

# 2.3 World Bank Guidance Documents Applicable to the Project

The section contains additional World Bank guiding principles that can support environmental and social management on the project.

## 2.3.1 World Bank Group Environmental, Health, and Safety General Guidelines

These guidelines are technical reference documents with general and industry-specific examples of good international industry practice. The Environment, Health and Safety (EHS) guidelines contain the performance levels and measures that are normally acceptable to the World Bank Group and that are generally considered to be achievable for infrastructural developments.

https://www.ifc.org/content/dam/ifc/doc/2000/2007-general-ehs-guidelines-en.pdf

# 2.3.2 Environmental, Health, and Safety Guidelines for Construction Materials Extraction

This document includes information relevant to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite, as well as to the extraction of dimension stone. It addresses stand-alone projects and extraction activities supporting construction, civil works, and cement projects. Although the construction materials extraction guidelines emphasize major and complex extraction schemes, the concepts are also applicable to small operations.

https://www.ifc.org/content/dam/ifc/doc/2000/2007-construction-materials-extraction-ehs-guidelines-en.pdf

# 2.3.3 Environmental, Health, and Safety Guidelines for Water and Sanitation

The EHS Guidelines for Water and Sanitation include information relevant to the operation and maintenance of (i) potable water treatment and distribution systems. Provisions relevant to this project include water withdrawal, water treatment, water distribution and sanitation. https://www.ifc.org/content/dam/ifc/doc/2000/2007-water-and-sanitation-ehs-guidelines-en.pdf

This ESMP was prepared in accordance with the relevant Federal Government of Nigeria and Kaduna state environmental and social regulations policies, laws and in consonant with the World Bank's ESF. It also considers the administrative structures for project management and implementation in Nigeria.

# 2.4 Applicable Nigerian policies, laws, regulations

The federal laws, policies and regulations which will guide the implementation of this project are stated below:

## 2.4.1 Environmental Policies, Laws and Regulations

**National Policy on the Environment, 1989 (Revised 2016):** The policy identifies key sectors requiring integration of environmental concerns and sustainability with development and presents their specific guidelines. The various states have domesticated this policy and it guides environmental management in the states. Details on the available environmental laws for each state is provided in the AGILE ESMF for Additional Financing, 2023).

**Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004:** The Environmental Impact Assessment (EIA) Act CAP E12 LFN 2004 provides guidelines for activities of development projects for which EIA is mandatory in Nigeria. According to the act, category II projects such as the AGILE Project may require only a partial EIA/EMP, which will focus on mitigation and Environmental planning measures. Upon completion of the ESMP and obtaining a clearance from the World Bank, the ESMP will be registered with the Federal Ministry of Environment (FMEnv) and the project will obtain an authorized public disclosure letter to allow for a 21 days in-country disclosure process in National Dailies and radio announcement respectively in all the concerned states/Local Governments, the Federal/States Ministry of Environment and the Federal Ministry of Education, in line with the EIA Act and the instructions to be provided in the

disclosure letter by the FMEnv at the point of disclosure<sup>3</sup>. During the disclosure process, a panel review on the ESMP will be conducted by the FMEnv and concerned parties can also make comments on the ESMP, which will all be collated at the end of the disclosure period and addressed either in the document by the consultant in conjunction with the NPCU Environment Officer or direct responses provided to the inquiring stakeholders. At the end of the feedback and update process, a further review is conducted, including an Impact Mitigation and Monitoring (IMM) by the FMEnv and an EIA approval can be issued to the project when all requirements as stated are met.

**National Environmental (Sanitation and Wastes Control) Regulations (2009):** The purpose of the Regulation is the adoption of sustainable and environment friendly practices in environmental sanitation and waste management to minimize pollution. The Instrument amongst others makes provisions for the control of solid wastes and hazardous wastes.

**National Environmental Standards and Regulations Enforcement Agency (NESREA) Act, 2007:** NESREA was established by NESREA Act No 25 of 2007 as a parastatal of the Federal Ministry of Environment (FMEnv). The Act was reviewed in 2018 to strengthen limiting gaps and enable effective operations. The Agency has developed several regulations and guidelines for environmental protection for various sectors including noise, waste, sanitation, construction.

**National Environmental (Noise Standards and Control) Regulations, 2009:** The objective of the Regulations is to ensure maintenance of a healthy environment for all people in Nigeria, the tranquility of their surroundings and their psychological wellbeing by regulating noise levels. The Instrument prescribes maximum permissible noise levels for construction as 60dB (A) and 40Db (A) for day and night respectively.

**National Environmental (Air Quality Control) Regulations, 2021** Includes recommended measures to prevent, minimize, and control air emissions from combustion processes fueled by gaseous, liquid, and solid fossil fuels designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel type, and stipulates limits for various parameters.

**National Environmental (Surface water and Groundwater Quality Control) Regulations** (2011): The purpose of these regulations is to restore, enhance, and preserve purpose. The physical, chemical, and biological integrity of the nation's surface waters, and to maintain existing waters.

**National Environmental (Ozone Layer Protection) Regulations, (2009):** Specific provisions with respect to this project includes prohibition of the release of ozone-depleting substances from any equipment or machinery. Measures to achieve this has been adequately captured in the ESMP.

**National Environmental (Construction Sector) Regulations (S.I No. 19), 2011:** The purpose of these regulations is to prevent and minimize pollution from rehabilitation, decommissioning

<sup>&</sup>lt;sup>3</sup> This process will be coordinated by the Environmental Officer of the National Office, who is also a staff of the FMENv.

and demolition activities in the Nigerian environment. It stipulates that new projects in the construction sector shall apply cost-effective, up-to-date, efficient, best available technology, to minimize pollution to the barest degree practicable. In addition, every operator or facility shall carry out an EIA and submit an EMP for new projects or modification including expansion of existing ones before commencement of activity.

#### 2.4.2 Social Policies, Laws and Regulations

**National Gender Policy (Revised 2022):** The revised National Gender Policy 2021 – 2026 approved in March 2022, promotes gender equality, good governance, and accountability across the three tiers of government in the country. Provides a framework for ensuring gender inclusion and sensitivity in developmental plans and programs at the national and sub-national levels. It sets standards for good governance, accountability and being socially responsive to the needs of vulnerable groups. The goal includes the elimination of cultural/ religions genderbased biases and harmful cultural and religious practices which rise to inequalities in genderrole relations in the Nigerian society, by ensuring: ensure equal access to women, boys and girls to both formal and informal education; ensure that women have access to critical resources and invest in their human capital as a means of reducing extreme poverty in families; and eliminate the high risks linked to many harmful traditional cultural practices, which still put threaten the health of women.

**National Policy on Education (NPE), 2013:** The Policy is established to ensure proper administration, management, and implementation of the educational system in all areas of the society. It provides the direction for educational activities with the aim of achieving three (3) major objectives which are as follows: (a) to equalise educational opportunities for all children, (b) to provide adequate education for all handicapped children, and (c) to provide opportunities for exceptionally gifted.

**National Policy on Gender in Basic Education (2006):** The specific objectives as relates to this project includes increasing girls access to education -To increase girls' enrolment in schools, retention, completion, and performance of girls.

**Violence Against Persons Prohibition (VAPP) Act (2018):** This act prohibits all forms of violence against private and public life and provides maximum protection and effective remedies for victims and punishment of offenders. The institutional champion of women's and children's rights and GBV issues within the government is the Federal Ministry of Women Affairs (FMWA).

**Child Rights Act (2003):** The Child's right Act provides a platform for protection of children against child labour, exploitation, and other forms of social vices. It codifies the rights of children in Nigeria (a person below the age of 18 years), consolidates all laws relating to children into a single law and specifies the duties and obligations of government, parents and other authorities, organizations, and bodies. More particularly, the Act gives full protection to privacy, honour, reputation, health, and prevention from indecent and inhuman treatment through sexual exploitation, drug abuse, child labour, torture, maltreatment and neglect to a Nigerian Child.

## 2.4.3 Workers Welfare Policies, Laws and Regulations

**National Policy on Occupational Safety and Health, revised 2020:** This policy was approved by the Federal Executive Council (FEC) in September 2020. It provides a guide for voluntary compliance and serves as a basis for occupational health and safety (OHS) programs for workers even under such development projects.

Nigeria Labour Law (2004): The Labour Act of 2004 set the standard for the minimum amount (wage) of naira a worker in Nigeria is supposed to make. In 2020, the National Minimum Wage was set to ₦30,000.00 per month.

**Workers Compensation Act (2010):** The Workmen's Compensation Act makes provisions for the payment of compensation to workmen for injuries suffered in the course of their employment

# 2.5 International Human Protection Laws

**The Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (1985):** Discourages the discrimination against women by any distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field.

**The Convention on the Rights of Persons with Disabilities (CRPD) (2012):** Adopts a broad categorization of persons with disabilities and reaffirms that all persons with all types of disabilities must enjoy all human rights and fundamental freedoms. It clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights and areas where their rights have been violated, and where protection of rights must be reinforced.

# Regional Treaties Relevant to Gender Based Violence (GBV)

- The African Charter on Human and Peoples' Rights (ACHPR) (1982).
- The African Charter on the Rights and Welfare of the Child (ACRWC) (2007).
- The Protocol to the ACHPR on the Rights of Women in Africa (the "Maputo Protocol") (2007).
- The National Action Plan for the Implementation of United Nations Security Council Resolution 1325 (2009).
- The Convention on the Rights of the Child [CRC] 1990
- Discrimination Against Persons with Disability (prohibition) Act, 2018

# International Treaties Relevant to Gender Based Violence (GBV)

- The International Covenant on Civil and Political Rights (ICCPR) (2004).
- The International Covenant on Economic, Social and Cultural Rights (ICESCR) (2004).
- The Convention on the Rights of the Child (CRC) (1990), and the Convention on the Rights of Persons with Disabilities (CRPD) (2012).
- International Convention on the Elimination of all forms of Racial Discrimination (1976).

- Convention Against Torture & other Cruel, Inhuman or Degrading Treatment or Punishment [CAT] 2001
- Social Development Act [1974]

# 2.6 Administrative Frameworks Relevant to the ESMP

The relevant administrative frameworks that are applicable to the Environmental and Social Management Plan (ESMP) are listed below:

## 2.6.1 Federal Ministries

#### The Federal Ministry of Environment (FMEnv)

The Ministry has a responsibility of ensuring that all development and industry activities, operations and emissions are within limits prescribed in National Guidelines and Standards and comply with relevant regulations for environmental protection management in Nigeria as these may be released by the Ministry.

#### **Federal Ministry of Education**

The ministry has a mandate to use education for fostering development of all Nigerian Citizens to their full potentials. FMEnv is the supervisory ministry for AGILE project. The Ministry is in charge of the affairs of the unity schools.

#### **Federal Ministry of Women Affairs**

The broad mandate of the Ministry is to advise the government on gender and children's issues and issues affecting persons with disabilities and the elderly The Ministry also initiates policy guidelines and leads the process of ensuring gender equality and mainstreaming at both the national and state levels. The Ministry is also the institutional champion of women's and children's rights and GBV issues within the government is the Federal Ministry of Women Affairs (FMWA).

#### Federal Ministry of Labour and Employment (FMoL&E)

The mandate of the Ministry is to ensure appropriate labour management in Nigeria. The Ministry is also charged with ensuring compliance with the Worker's compensation act of 2010.

#### 2.6.2 State Ministries

#### **State Ministries of Environment**

Created in each state to back up the mandates of Federal Ministry of Environment at the State level with the objective of protecting public health and safety, restore and enhance environmental quality and efficient implementation of environmental programs. The ministries operate within the ambits of the National Policy of Environment.

#### **State Environmental Protection Agencies**

The agencies are charged with the responsibility of addressing environmental problems in the state including waste management, environmental pollution and monitoring of environmental parameters. The EPAs operate within the ambits of the National Policy on Environment and National environmental regulations.

#### **State Ministries of Health**

The state ministries of health have a public health department which conducts health surveillance surveys and sensitization programs on reproductive health. They promote hygiene and sanitation campaigns in schools and sometimes distribute hygiene kits such as sanitary pads and toiletries to students. The ministry is also in charge of coordinating primary healthcare centres across the LGAs and state hospitals.

#### **State Ministries of Women Affairs**

The state ministries of women affairs have a mandate to support the development and protection of women. They provide channels and programs that support women educational development and livelihoods. They also have a mandate on GBV prevention and response mechanisms including channels through which the survivors can report to such as caregivers, aid workers and focal person, provide shelters, psycho-social support and financial assistance for business. The capacities of this ministry in each state varies depending on the adequacy of staffing, government funding and support and activities being implemented.

# 2.7 Institutional Arrangement for the ESMP Implementation on the Project

#### **Federal Level Coordination**

The NPCU) is responsible for the overall coordination of the AGILE project activities. The NPCU is under the Federal Ministry of Education and provides oversight on behalf of the Ministry and provides updates on project development to the Ministry and the World Bank. The NPCU has an Environmental and Social Unit which coordinates environmental and social (E&S) compliance across all project states and periodic monitoring and supervision visits to the states. The NPCU relates with the World Bank team for guidance on E&S matters.

## State Project Implementation Units (SPIUs)

The SPIUs in the eighteen states<sup>4</sup> that are currently implementing AGILE will support the implementation of the ESMP in the unity schools. The SPIU E&S team will support the unity schools in ensuring the project complies with the ESMP and E&S management requirements for the project.

## **School Project Committees**

A committee of four (4) persons have been established in each of the Federal Unity Schools (FUCs) comprising of the Vice-principal (Special Duties) as the Chairman with two senior staff of the college and one (1) School Based Management Committee (SBMC) member. The Committee is answerable to the Principal of the college.

In addition, science/geography teachers and guidance counsellors have been identified in each school as part of the committee to support the mitigation for environmental and social risks and impacts respectively. These committees will be supported by the NPCU, and the SPIUs where the FUCs are domiciled.

<sup>&</sup>lt;sup>4</sup> Borno, Ekiti, Kaduna, Kano, Katsina, Kebbi, Plateau, Adamawa, Bauchi, Gombe, Kogi, Kwara, Niger, Sokoto, Jigawa, Nasarawa, Yobe and Zamfara.

# 2.8 Gaps between the Nigeria Laws and the Environmental and Social Framework (ESF)

This section provides a summary of the similarities and differences between the Nigeria Laws and the World Bank ESF

| ESF  | Nigeria Laws   | Similarities/ GAPs  | Intervention Measures   |
|--|--|---|---|
|  |  |   |   |
| <b>ESS1</b><br>Assessment and<br>Management of<br>Environmental<br>and Social Risks<br>and Impacts | Environmental Impact<br>Assessment Act.  | EIA regulatory framework aligns<br>well with the basic ESF Principles.<br>However, ESF has additional<br>requirements on assessment of<br>associated facilities, climate<br>change issues, gender, more<br>extensive consultation, more<br>intensive assessment of health<br>issues etc.  | This ESMP is a site-specific plan<br>prepared to address the identified<br>risks and includes other plans like<br>waste management plan,<br>Occupational Health & Safety<br>(OHS) plan (see annex 6),<br>community health & safety plan<br>(annex 9) general Environmental<br>Management Conditions for<br>Construction and Renovation<br>Contracts (annex 4) amongst<br>others. The SPIUs and school<br>project committees should be<br>trained on the principles of the ESF<br>and inclusion of the requirements<br>in project implementation |
| <b>ESS 2</b> Labor and<br>Working<br>Condition   | Labor Act, Chapter 198,<br>Laws of the Federation of<br>Nigeria (LFN) 2004, on<br>promoting fair treatment<br>and equal opportunities of<br>project workers.<br>Child Labor Act. 2019<br>prohibit child labor or<br>their engagement under<br>certain conditions | Gaps include emerging issues on<br>contractor's requirement in the<br>bidding documents. separate<br>requirements for direct workers,<br>contracted workers, primary<br>supply workers, and community<br>workers.<br>The ESF places responsibility on<br>the proponent (borrower) to take<br>responsibility for ensuring<br>requirements for managing all<br>categories of workers involved in<br>the project. While the Labor Act.<br>places responsibility only for<br>direct workers (permanent or<br>casual) employed within or<br>outside the community.<br>The child labor Act. 2019<br>essentially satisfy requirements<br>of International Labor<br>Organisation (ILO) on child labor<br>and consistent with ESS 2. | AGILE has prepared a Labour<br>Management Procedures (LMP)<br>which is a framework to guide<br>implementation of all subprojects<br>including the FUCs. Labor<br>management measures have also<br>been embedded in this ESMP. The<br>SPIU, School Project committees<br>should be trained on the various<br>Labor Management Procedures in<br>this ESMP   |
| <b>ESS3</b> Resource<br>Efficiency and<br>Pollution<br>Prevention and<br>Management                | Environmental Impact<br>Assessment (Act 86, 1992)<br>to avoid or minimize waste<br>generation and ensure<br>effective management to<br>avoid, minimis or mitigate<br>adverse impacts on human<br>health and the  | Requirements for pollution<br>prevention and waste<br>management are similar, but the<br>ESF contain additional<br>requirements for improving<br>efficient consumption of energy,<br>water and raw materials, as well<br>as other resources   | This ESMP includes a waste<br>management plan in annex 4 with<br>measures to minimize and manage<br>the risks and impacts associated<br>with resource efficiency and<br>pollution management. In<br>addition, the project proposes the<br>use of solar power as a renewable   |

# Table 2: Similarities and Differences between Nigeria Laws and the ESF

| ESF   | Nigeria Laws  | Similarities/ GAPs  | Intervention Measures   |
|---|---|---|---|
|   |   |   |   |
|   | environment.<br>National Environmental<br>Regulations has<br>requirements for pollution<br>prevention, discharge<br>permits, etc.   |   | energy source. The SPIUs and<br>project committees to be trained<br>on ESMP implementation including<br>the waste management plan,<br>climate change considerations, use<br>and protection of natural resources<br>etc.   |
| <b>ESS4</b><br>Community<br>Health and<br>Safety  | Nil   | Other frameworks such as the<br>Petroleum Act, Cap P10, LFN<br>2004, Quarantine Act, Cap Q2,<br>LFN 204 provide for issues on<br>ESS4 Community Health and<br>Safety, however, these issues are<br>not adequately covered in the EIA<br>Act 86, 1992, and not often<br>comprehensively assessed<br>because the fragmentation of<br>requirements into various laws | This ESMP has identified potential<br>community health & safety risks<br>and provided mitigation measures<br>in line with the World Bank<br>Environmental, Health & Safety<br>Guidelines (EHSG). AGILE has a<br>GBV Action Plan and Responsibility<br>Framework which will be adopted<br>by the FUCs for the<br>implementation of the project. The<br>SPIUs and project committees to be<br>trained on ESMP implementation<br>including the community health<br>and safety plan, traffic<br>management plan in annex 7, code<br>of conducts in annex 8 etc. |
| <b>ESS 5</b> Land<br>Acquisition,<br>Restrictions on<br>Land Use and<br>Involuntary<br>Resettlement     | Chapter 202 of Nigeria<br>Land Use Act, 1990 is the<br>legal basis for land<br>acquisition and<br>resettlement in Nigeria.  | The issues on Land Acquisition,<br>Restrictions on Land Use and<br>Involuntary Resettlement are not<br>adequately covered in the Land<br>Use Act. In addition, the Land Use<br>Act is obsolete and the rates for<br>compensation and eligible<br>categories of affected persons will<br>need to be reviewed by the<br>Government                                  | Comply with the provisions of the<br>AGILE Resettlement Policy<br>Framework (RPF) which outlines<br>procedures to address issues<br>related to ESS5.  |
| ESS 6:<br>Biodiversity<br>Conservation &<br>Sustainable<br>Management of<br>Living Natural<br>Resources | The Forestry Act 2006 has<br>provisions to restore,<br>maintain and enhance the<br>ecosystems and ecological<br>processes essential for the<br>functioning of the<br>biosphere to preserve<br>biological diversity and the<br>principle of optimum<br>sustainable yield in the use<br>of these natural resources<br>and ecosystems. | There are similarities as ESS6<br>aims to conserve biological<br>diversity and promote the<br>sustainable use of natural<br>resources.  | This ESMP provides mitigation<br>measures to address these risks.<br>The Project committees will be<br>sensitized on the relevant<br>provisions in this ESMP.   |
| ESS8: Cultural<br>Heritage  | National Cultural Policy,<br>1988 sets directions for<br>the following: affirmation<br>of the authentic cultural<br>values and cultural<br>heritage. Federal Ministry<br>of Information & Culture<br>has a mandate to promote<br>the nation's rich cultural<br>heritage.<br>National Commission for                                 | There are many similarities,<br>however, these policies have not<br>been adequately domesticated at<br>the state levels, hence compliance<br>to the national frameworks is<br>weak.   | In the absence of an associated<br>robust law at the state level, ESS8<br>provides a more robust framework<br>for implementation of this project<br>at the state level. A Physical and<br>Cultural Resources/ Chance Find<br>Plan is provided in annex 17.  |

| ESF  | Nigeria Laws   | Similarities/ GAPs  | Intervention Measures  |
|--|--|---|--|
|  |  |   |  |
| <b>ESS10</b><br>Stakeholder<br>Engagement and<br>Information<br>Disclosure | Museums and Monuments<br>has a mandate to manage<br>the collection,<br>documentation,<br>conservation and<br>presentation of the<br>National Cultural<br>properties<br>EIA Act, No. 86 1992<br>requires consultation of<br>affected people, State or<br>Local Government of the<br>proposed activity, contains<br>requirements for public<br>disclosure of reports | Gaps include guidelines on the<br>identification of stakeholders and<br>focus groups including the<br>preparation of stakeholders'<br>engagement plans and Grievance<br>Redress Mechanisms, and<br>entrenches stakeholder<br>engagement throughout the life<br>cycle of the project | The NPCU, SPIUs and project<br>committees to ensure<br>implementation of the AGILE<br>Stakeholder Engagement Plan and<br>Grievance Redress Mechanism in<br>this ESMP |

Therefore, in all cases the more stringent laws will be adopted, which is the World Bank ESF as detailed in table 1 above.

# CHAPTER THREE PROJECT DESCRIPTION

#### 3.1 Introduction

AGILE intends to support rehabilitation/renovation works to be implemented across the entire country consisting of the 36 States and the Federal Capital Territory (FCT), with each state having an average of 2-3 schools as depicted in figure 1 below. The school environments are characterized by poor conditions of infrastructure, WASH, absence of perimeter fence, inadequate teachers, exclusion of access for Persons with Disabilities, absence of adequate waste management practices, etc.



Figure 1:Map showing the locations of all the FUCs

The general scope of works are renovation and rehabilitation of WASH facilities including provision of boreholes, water tanks, toilet facilities, renovation of existing classrooms, administrative blocks, multi-purpose, fence etc. Specific works will differ amongst the schools with each delineating its priority through the School Improvement Plans (SIPs) and will be submitted for final approval to the NPCU. The SIPs will be reviewed by the officers at the National Office, including the Component lead and the Environment and Social unit at the NPCU, which will ensure that recommendations in the ESMP are embedded in these plans. All schools will implement the WASH component as stated above and rehabilitate/renovate an average of 4 to 7 buildings as stated above, per school depending on the scope of works for each and available funding. In addition, 15 of the schools with partial fencing as listed in annex 10 will be repairing/completing the school fence. Detailed description of designs and standards of the civil works are presented in section 3.2 below. This ESMP was prepared using the extreme scenario

(implementing all components of the WASH facilities, renovating up to 10 buildings in each school with all components of ceiling, roofing, painting, walls etc. and fence completion.

# 3.2 Proposed Designs

The rehabilitation works will be carried out in accordance with the submissions made by each of the participating schools in the SIP, in accordance with the designs and standards provided by the NPCU in the Federal Ministry of Education, Abuja. The School Project Committees (as defined in section 2.7) will be responsible for the rehabilitation activities and would engage a contractor and where necessary. The Committee will also acquire technical assistance from a local Engineer, Architect or Quantity Surveyor for quality control and to monitor overall performance. The Committee will make use of local contractors/artisans.

Based on the prototype design provided by the NPCU there is inclusion of access ramps in all building designs and renovations.

# 3.2.1 Water Sanitation and Hygiene Facilities

The prototype designs, drawings and specifications for the WASH facilities to be adapted by all the FUCs in the provision of WASH facilities consist of combined water and pour flush system toilet, borehole drilling powered preferably by a mix of manual (generator) and solar (subject regional comparative advantage), with two (2) 2,500 litres capacity black plastic tanks and water reticulation to one (1) block of six cubicles squat toilets plus one (1) cubicle sitting toilet with wall handholds for physically challenged learners, and with adequate lightings around the toilet area. The SIPs will include rainwater harvesting in their proposals if the borewell yields are inadequate.

## 3.2.1.1 Toilet Building

## Substructure

- Excavation of topsoil to an average depth of 150mm deep, trenches not exceeding 1m maximum depth; commencing from ground level.
- Surface Treatments by applying Dieldrex anti-termite solution to sides and bottom of excavation
- Use excavated topsoil to backfill. Filling to make up level with laterite obtained off site and compacted in 150mm thick layers
- Install foundation with 150mm thick bed, Step and Ramp

Brick/Block Walling

• Hollow sandcrete blockwork in cement mortar (1:6) filled solid with concrete, Walls 230mm thick and 150mm thick

Water Proofing

- Clear polythene sheet damp proof membrane (1000g/m<sup>2</sup>)
- 0.26mm damp proof membrane laid with welted joints; measured nett with minimum 150mm lap at joints

Ceiling Finishes

- Hardboard ceiling 8mm thick fixed to ceiling nogging
- Painting/Clear Finishing

Roof Work

• Carcassing metal, timber, Sawn hardwood, well-seasoned to required building quality

• 0.55mm gauge longspan Aluminium roofing sheet of approved colour laid on timber purlins (measured separately) and fixed in accordance with manufacturer's details Brick/Block Walling

• Hollow sandcrete blockwork in cement mortar (1:6)

• Perforated bricks with insect screen

Doors

- Purpose made steel doors complete with frame and architraves, including all accessories size 900 x 2100mm high
- M60 Painting/Clear Finishing
- Metal work surface

**Fittings And Fixtures** 

• High quality steel handrail with approved design with 900mm high balusters fix to block or concrete work

Wall Finishes

- Surface Finishes
- Plastered/Rendered/Rough Cast Coatings
- Cement and sand (1:3); 15mm thick rendering
- Stone/Concrete/Quarry/Ceramic Tiling
- Painting/Clear Finishing

Floor Finishes

- Lining/Sheating/Dry Partitioning
- Surface Finishes
- Sand Cement/Concrete/Granolithic/Screeds/Flooring
- Terrazzo Floor

**Electrical Installations** 

- Solar power system consisting of approved solar panel cells complete with Inverter System Equipment and Batteries with all necessary interconnection DC cables
- Installation of a Cut-out fuse with and including fixing to hardwood board
- PVC conduit pipes
- PVC insulated and colour coded cables
- 10W LED Anti splash ceiling mounted toilet fitting
- 25W Damp/Moisture proof LED light
- 30W all-in-one Solar street light complete with pole

Mechanical Installation

- Twyford low level W.C. suit complete with 9 liters cistern and other accessories
- Pour Flush Toilet (squat type)
- Twyford wash hand basin to B.S. 1188 complete with 2nos
- 13mm chrome plate pillar tap
- Floor drain, stainless steel
- Septic Tank/Soakaway Pit (Pits not exceeding 2m 4m maximum depth)

Septic Tank/Soakaway Systems

- Inspection chamber size 900 x 900 x 600mm deep overall
- Excavating Pits not exceeding 2m 4m maximum depth; commencing
- from ground level
- Reinforcement For Insitu Concrete High yield bar reinforcement to BS 4449 grade 250



Figure 2: Drawings for the Septic Tank/Soakaway Designs

Disposal of excavated material off site (44m<sup>3</sup>)

#### 3.2.1.2 WASH Facilities

- Reservoir
  - ✓ Excavating pits not exceeding 2m maximum depth
  - ✓ Level and compact bottom of excavations
  - ✓ Disposal of Excavated material off site (3m<sup>3</sup>)
  - ✓ Vibrated reinforced Concrete Grade 25 in tank base and stub column
  - ✓ High yield bar reinforcement to BS 4449 grade 250
- Steel tank stanchion all properly welded or bolted together including one coat red oxide paint and overall height 5.1m high from the ground floor level
- Mechanical installations 2mm thick chequered plate flooring, 5mm thick Gusset plate, M16 Grade 8.8 bolts
- Storage Tanks 2500 Litre Capacity Plastic storage tank (1.30m diameter x 1.90m high)
- Pipework associated with the external water connection from borehole storage tank fetch point toilet building
- Construction of external water fetch point of concrete and blockwork complete with associated pipework with tap heads at about 600mm centres as per Architect's detail design
- Conduct Geophysical survey and Drilling of borehole to the depth specified on the geophysical report with complete installation of casings, riser pipes and 'solar powered' submersible pump
- Solar panel cells of approved wattage
- Fabricated steel solar panel rack mounted on steel stanchion



Figure 3:Prototype Design of Toilet Facility showing the toilet building containing 6 cubicles, external water points, solar lightning.



Figure 4: Design Layout for the Borehole System

## 3.2.2 Renovation Works

Renovation activities will include classrooms, hostels, multi-purpose halls and other school infrastructure within all schools. Typically, renovation works would include the following:

- Repair of cracked walls (including painting), dilapidated floors, doors, windows, and leaking roofs/ceiling works for classrooms and administrative blocks.
- Provision of perimeter fence in some selected schools

## 3.2.2.1 Ceiling & Roof works Prototype

Roof covering is 0.55mm oven baked coloured long span corrugated aluminum sheets. The benefits of using the corrugated aluminum sheets includes being lightweight (this reduces the overall roof-weight on the structure), anti-rust properties, and properties to withstand unfavourable weather conditions such as storms & torrential rainfalls. Roofing trusses will be made of sawn treated hard wood timber.

PVC ceiling panels of 200mm x 5950mm is proposed for the ceiling activities and is proposed to be joined with clips and tacking nails.

## 3.2.2.2 Walls and paintings

Proposed civil works for cracked or dilapidated walls will be carried out using cement blocks, with plastering of 12mm thick cement-sand plaster, with finishing using two coats of acrylic paint.

# 3.3 Design Recommendations

The school investment plans (SIPs) will ensure that the following recommendations are included in their plans.

- Only non-toxic building materials will be used for civil works. Chemical exposures such as lead, mercury and polychlorinated biphenyls (PCBs), asbestos building materials is strictly prohibited.
- Access ramps should be constructed to all buildings to be rehabilitated with attached railings for support.
- Include the use of mini onsite water disinfection systems as part of the borehole system. Another option is chlorination which is most commonly used in Nigeria as part of the borehole filtration system, this will help prevent the growth of micro-organisms in the tanks.
- The minimum allowable distance between the septic tank and borehole water according to WHO standard is 18 meters (WHO, 2016).
- Areas with low aquifer recharge as stated in table 8 should be provided with alternatives such as rainwater harvesting, artificial recharge through 'borewell recharge structures and additional ground reservoirs to be filled with rainwater harvesting.
- Ensure usage of plastic tanks which should be periodically (half yearly) washed out to remove sludge.
- Water filtration system UV/chlorination system should be included as part of the design and construction of the borehole systems.
- Use of pH correction filter which involves the use of a neutralising media in schools with high acidity or alkalinity as section 4.3 of this ESMP.
- Include reverse osmosis filtration system (RO machines) in the design and apparatus for the borehole system for schools with values of high nitrate/heavy metals as stated in section 4.3 in this ESMP.
- Designs should make provisions for fire prevention and management equipment such as fire-resistant ceilings, extinguishers, smoke detectors, sand buckets, emergency exits etc.
- It is also recommended that vegetative areas/green areas and tree planting should be included in the design for the buildings to help promote a green environment and emission reduction. Based on the huge problem of waste management, Environmental clubs should be constituted for students in the schools to promote good waste management practices, practice waste reduction/reuse/recycling and planting of trees. The schools as part of this project should install industrial recycling bins, promote recycling amongst students, demarcate areas for recycling and liaise with the state environmental protection agencies to evacuate recyclable waste from the schools.
- The NPCU E&S unit should ensure that the School Improvement Plans should reflect these recommendations in their plans and designs.

# 3.4 Climate Change and Environmentally Friendly Considerations

The following considerations should be made in the design for the intervention in the FUCs

# i. Building codes and design

- The use of solar panels as source of renewable energy for the WASH facilities, buildings and boreholes is part of resilient infrastructure and Green House Gases (GHG) emission reduction strategy. This will also reduce power consumption in the schools
- Optimized day lighting and use of solar panels were technically and financially feasible and use of LED Lights which are up to 80% more efficient than traditional lighting such as fluorescent and incandescent lights.
- Use of diesel generators should be avoided to eliminate emission of CO2 during service life
- It is recommended to use concrete blocks as they have a much higher water resistance than bricks, and their compressive strength is higher. It is also durable and can be painted more easily than brick, which secretes metallic salts that can cause paint to peel off. Concrete blocks offer outstanding fire resistance and the very highest fire safety rating.
- Planting of trees: tree planting within the school vicinity to serve as carbon-sinks for carbon sequestration should be carried out. However, consideration should be given for trees with less tap roots so as not to threaten foundation of nearby buildings and also indigenous species.

# ii Flood Protection and Adaptation

- Sighting of borewells and toilets should be on higher ground to avoid the flood zones
- In flood prone areas there should be invert level considerations by raising the foundation to about 750mm-900mm for bungalow and 900mm-1.2m for storey building.
- Plinth level should be incorporated in the buildings. The plinth helps in moving the superstructure's heap to the establishment. It likewise offers security to the structure against infiltration of dampness and a decent engineering appearance. The basic role of giving a plinth is to forestall the section of water and stormwater into the structure. The soggy confirmation course is additionally presented at the highest point of the plinth, which helps stop dampness development through dividers.
- Finished Floor Level (Ffl) should be done with tiles, marble, stone to create resistant to floods.
- FFL is 150 to 450 mm over the regular ground level with the goal that water and stormwater don't enter inside the structure. Assuming that the structure is situated in a huge precipitation region and slant, this stature might go up to a meter.
- Raise the borewell casing and toilet facilities above the expected flood level to prevent inundation.
- Reinforce the borewell casing and toilet structures to withstand floodwaters, including the use of watertight seals and backflow preventers.
- Enhance the drainage around the borewell and toilet areas to facilitate the quick removal of floodwaters.
## iii Water Resources Conservation

Promote Water Supply Rainwater Harvesting especially in areas that have water scarcity, low aquifer and water stress with the following recommendations:

## **Technology Description**

Harvested rainwater can provide a source of alternative water to the FUCs. Rainwater harvesting captures, diverts, and stores rainwater from rooftops for later use. Typical uses of rainwater include landscape irrigation, wash applications, ornamental pond and fountain filling, cooling tower make-up water, and toilet and urinal flushing. With additional filtration and disinfection, harvested rainwater can also be treated to potable standards to supplement municipal <u>potable</u> <u>water</u> supplies to facilities.

# **Technology Considerations**

The following are important considerations when planning for a rainwater harvesting project.

End Use: The intended end use of the harvested rainwater will determine the type of treatment equipment that the system will need.

Size of catchment area (roof size): A larger roof area can capture significant amounts of precipitation, even in areas of low rainfall availability.

Rainwater storage capacity: Areas with less frequent precipitation may require larger tanks to provide more storage capacity between water recharge.

Roof pitch and type: Roof material and pitch influence the amount of water that can be harvested. Lower-pitched roofs tend to catch more water than steeply pitched roofs. Smoother roof textures will facilitate runoff better than textured roofs.

Water rates: Areas with higher water rates will make rainwater harvesting projects more economically viable.

## iv Complementary Actions

- Eco-clubs can be formed in schools to empower teachers and students to participate and take up meaningful environmental activities and projects to include:
  - ✓ Recycling materials: install recycling bins around the school and in classrooms or have a recycling area and promote recycling culture amongst the students
  - $\checkmark$  Tree planting and vegetation of areas in the school
- Bamboo chalkboards should be used and this will save the trees.

# 3.5 **Project Implementation Arrangements**

• The rehabilitation works will be carried out across all schools simultaneously by the various project committees established in all the schools including who will monitor implementation of environmental and social mitigation measures respectively.

# FUCs in Current AGILE Participating States

• The SPIUs in the current 18 AGILE participating states will support the implementation of the project in those state with respect to E&S compliance, while the NPCU will directly support these states through monthly E&S reporting and periodic monitoring visits (half yearly).

- The states have been pre-informed, however, following the approval of this ESMP, the NPCU will officially introduce the project committees in these 18 AGILE participating states to the SPIUs for onward implementation support in line with this ESMP. In addition, an official group will be set up by the NPCU E&S unit which will include these SPIUs, the project committees, the science/geography teachers and guidance counsellors in the FUCs, for the purpose of trainings and information dissemination.
- Independent monitoring will also be provided by the state MDAs as will be communicated officially to them by the NPCU following the clearance of this ESMP. Additional guidance is provided in section 9.2 Recommendations of this ESMP. In addition, relationship with the state ministries have already been established in the 18 AGILE participating states under the parent project and the AF by the SPIUs as part of the project ESMPs and implementation arrangements, thus as part of their mandate, they will be contacted by the SPIUs/NPCU to extend their support to the FUCs.

## FUCs in Non-AGILE Participating States

- The NPCU will directly support implementation of the project in the schools in the FUCs in the FCT and conduct periodic site monitoring visits during the implementation. The State Ministries of Environment, Environmental Agencies, Women Affairs will support the Unity schools with E&S compliance, while the NPCU E&S team will conduct monitoring visits quarterly.
  - ✓ 31 of these MDAs were consulted in 14 states across the 6 geopolitical regions during the preparation of this ESMP to discuss their roles in supporting environmental and social management on the project (see chapter 8).
  - ✓ The ESMFs prepared for the parent project and AF of the project also established communication with these MDAs, thus following the clearance of this ESMP, the state ministries of environment will be part of the disclosure process and further explanation on the roles of the state MDAs will be provided by the NPCU as part of the official communication.
  - ✓ Where feasible, the NPCU will create working groups for the project which will include key staff from these MDAs that will support the project, this will be done through official communication letters with these MDAs.

# 3.6 Phases of Project Activities

The project activities will be divided into three phases namely pre-rehabilitation, rehabilitation and operation phases.

## 3.6.1 Pre-Rehabilitation Phase

This phase typically takes between 1-2 months and involves the following activities:

- Mobilization of equipment and workers to site
- Establishing of staging area
- Site clearing, pegging, boundary marking
- Use of labor (2 skilled, 10 unskilled workers) per school
- Potable water for drinking and food
- Provision of sanitary facilities Personal Protective Equipment (PPEs) and First Aid kits for workers

# 3.6.2 Rehabilitation Phase

This phase typically will take between 2 to 3 months for the provision of WASH facilities and 3 to 5 months for the renovation activities in each school, and involves the following activities:

- Installation of traffic signage and cautions on site
- Partial demolition/ removal of dilapidated structures
- Removal of waste from site
- Transportation of materials to site
- Rehabilitation works
- Installation of WASH facilities toilet buildings, borehole drilling, tanks and tank stand etc
- Solar paneling and lightening
- Demobilisation from site
- Dismantling of staging area
- Use of labor (4 skilled, 30 unskilled workers)
- Potable water for drinking and food
- Provision of sanitary facilities Personal Protective Equipment (PPEs) and First Aid kits for workers

# 3.6.3 Operation Phase

- Use of rehabilitated/renovated facilities by the students and staff of the school
- Building maintenance by the school management and the Federal Ministry of Education. This will be part of the school's routine maintenance activities funded through the operational budget or other avenues such as the School Based Management Committee, Parent Teachers Association etc. which is a current practice for unity schools.
- Maintenance of WASH facilities and sewage management by the school management, the Federal Ministry of Education. Sewage management to be supported by the state environmental protection agencies and waste management authorities. The school principals liaise with these agencies for maintenance support. This will be funded as part of the school's operational cost and allocated budget from the Federal Ministry of Education.
- Water for WASH facilities to be provided from the water systems available in the school or those provided by the AGILE project such as the boreholes, water storage or rainwater harvesting.

Maintenance workshop and maintenance equipment for maintenance works such as plastering, painting, fixing broken parts of windows, doors, fittings etc. electrical fixtures, plumbing fixtures etc. to be coordinated by the school principals and project committees.

# 3.7 Use of Labor

The project committees could engage a contractor or hire direct local labor and where necessary, also acquire technical assistance from a local Engineer, Architect or Quantity Surveyor for quality control and to monitor overall performance. The average numbers of workers for each phase are stated in sections 3.61 and 3.6.2 above. Considering the project committees will make use of direct labour, and labor influx is not envisaged on this project, there will be no establishment of campsites, workers will come from their homes or lodge in the cities.

# 3.8 Sourcing of Materials

The project committee shall ensure that contractors/workers source materials for the rehabilitation works within safe and licensed zones/vendors. Woods are not to be sourced from environmentally protected areas/ nature reserves; rather they should buy from licensed vendors/ sites. Laterite will not be sourced from un-reclaimed borrow pits or areas that could lead to land degradation or sand mining. This will be included in the bidding documents/terms of engagement for workers in accordance with the General Environmental Management Conditions for Construction and Renovation Contracts in annex 4.

Considering the level of water scarcity in most schools it is advised that the proposed boreholes intervention is amongst the initial works to be implemented so that it can serve as source of water for the civil works and as the school borehole for the operation phase. Alternatively, the project committee should liaise with the state ministry of water resources/LGAs on provision of water for civil works to be delivered to site through water tankers and offloaded to tanks provided on-site (which can be used as the tanks for the project boreholes subsequently).

# 3.9 Staging Area

Though the nature of civil works is minor and may not require establishing staging area, however for storage of equipment and material on site, workstations for rest period for workers and basic amenities, mini staging areas may be required. These spaces will be identified by the project committees within the schools. The potential impacts that may be associated with the siting and operation of the staging area have been identified alongside mitigation measures and included in the ESMP Matrix of this ESMP. The following criteria will be adopted in identifying and managing the staging area:

- Not to be located along or near major student pathway.
- Be located within an acceptable distance from existing residential areas.
- Not located in areas with intact vegetation.
- The site must be cordoned off and access restricted to prevent accidents and unsupervised visitors.
- Where the staging area will be outside the school compound, the project committee must first obtain the necessary licenses and consents from the local authorities or from the owner of the needed area, including agreement on how the site should be handed over after use.
- The committee will ensure that all necessary sanitary facilities shall be provided for workers expected on site:
  - ✓ Conducive office space with tables, chairs, potable drinking water, good aeration, food etc.
  - ✓ Separate toilets for male and female with concrete and covered septic tanks.
  - ✓ Wash basins and First aid kits

# CHAPTER FOUR DESCRIPTION OF PROJECT AREA OF INFLUENCE

## 4.1 **Project Locations**

The FUCs are spread across the 36 states and the FCT in the country as shown in figure 1 in chapter 3 of this ESMP. As indicated in Chapter One, 74 of the FUCs are in Urban areas (developed areas marked with modern infrastructure such as roads, modern buildings, presence of socio-economic activities besides agriculture), 32 are in semi-urban areas, while rural 6 are in completely rural areas (minimal infrastructure, poor access roads, predominantly agricultural communities). Considering the spread of the project across the entire country, it is important to present country specific information, while specific information is further disaggregated into the north and the south regions in subsequent sections below for better analysis.

## 4.2 Country Description - Environment

#### **Physical Setting of Nigeria**

Nigeria is located on the western coast of Africa bordered to the north by Niger, to the east by Chad and Cameroon, to the south by the Gulf of Guinea of the Atlantic Ocean, and to the west by Benin, it covers an area of 923,768 square kilometres<sup>5</sup> with a population of over 200 million (National Bureau of Statistics, 2022). Marked differences exist between north and south of the country in terms of physical landscape, climate, vegetation, biodiversity as well as socio-cultural differences. These differences form the basis of the division of Nigeria into three geographic regions: the south, or Guinea coastlands; the central region; and the north, or Nigerian Sudan. Figure 5 below shows a map of Nigeria depicting the six geopolitical regions and the states within each region.



<sup>&</sup>lt;sup>5</sup> Climate Change Knowledge Portal; World Bank.org, 2021 https://climateknowledgeportal.worldbank.org/country/nigeria

## Topography

The topography of Nigeria consists of plains in the north and south interrupted by plateaus and hills in the centre of the country. The Sokoto Plains lie in the northwestern corner of the country, while the Borno Plains in the northeastern corner extend as far as the Lake Chad basin. Nigeria's most expansive topographical region is that of the valleys of the Niger and Benue River valleys which merge into each other and form a "y" shaped confluence at Lokoja. To the southwest of the Niger there is "rugged" highland, and to the southeast of the Benue hills and mountains are found all the way to the border with Cameroon. Coastal plains are found in both the southwest and the southeast. The riverine area of the Niger Delta is a coastal belt of swamps bordering the Atlantic ocean, the swamps are vegetated tidal flats formed by a reticulate pattern of interconnected meandering creeks and tributaries of the Niger River. (Steemit<sup>6</sup>, Geography, 2020).

## Geology

The geology of Nigeria is made up of three major litho-petrological components, namely the Basement Complex, Younger Granites and Sedimentary Basins. The Basement Complex, which is Precambrian in age, is made up of the Migmatite–Gneiss Complex, the Schist Belts and the Older Granites (Moshood 2023).

The Precambrian rocks of southern part of Nigeria is part of the Precambrian Basement complex of Nigeria, the Basement complex itself is made up of Gneiss-migmatite complex and the Pan African older Granite rocks (Ayodele, 2015). Geologically, Northern Nigeria the area is characterized by porphyritic granite, coarse grained granite and medium to fine grained granite, with the Northeast region having broad valleys, rolling hills, and low mountains (Geological Society Publications, 2023).

The country has extensive mineral deposits, Gold can be found in commercial quantity in states like Osun, Zamfara and Cross River states in Nigeria. The states of Anambra, Benue, Plateau and Taraba have small-scale lead and zinc mining, from deposits that also have large quantities of cadmium, arsenic and antimony. Barite veins commonly contain lead and zinc in Plateau State and other parts of eastern Nigeria. Kwara State has iron ore in Agbaja Plateau and Itakpe Hills (Ministry of Foreign Affairs, 2023<sup>7</sup>).

#### Hydrogeology

Most of Nigeria's large sedimentary basins have intergranular flow, rainwater recharge and few water quality issues. Within the Chad Basin, the Chad Formation is unconfined in some locations, with artesian flow from some deeper layers and a water table depth of 10 to 15 meters (Wikipedia, Geology of Nigeria). c. Within the Sokoto Group, the Wurno Formation has moderate yields and limited recharge, while the Gundumi Formation conglomerates are good aquifers, with artesian conditions, bounded by deeper clay layers (Hamidu and Co, 2017). Other sedimentary aquifers include the Nupe Basin, Upper Benue Basin and Lower Benue Basin (Wikipedia, Geology of Nigeria).

<sup>&</sup>lt;sup>6</sup> https://steemit.com/hive-119812/@yaroharuna68/nigeria-topography

<sup>&</sup>lt;sup>7</sup> https://foreignaffairs.gov.ng/nigeria/natural-resources/

Groundwater is widely used for domestic, agricultural and industrial supplies. Most rural areas are dependent on groundwater, and a number of towns and cities. Recharge is variable across Nigeria, controlled largely by climate. For example, in northern Nigeria, recharge is low, due to low rainfall and high evapotranspiration. The worth of an aquifer as a source of water depends largely on two inherent characteristics: its ability to store and to transmit water. According to a study on the determination of hydraulic characteristic of the aquifers of some local Government Areas of Benue State (Akpen G.D and Co, 2019) showed that the aquifers of some areas including Otukpo, Vandekiya and Otobi are of moderate to low or limited yield, such aquifers will not yield enough water for supply and use. Rainfall remains the major contributing factor of groundwater recharge. Annual hydrological parameters in Otukpo basin from 2008 to 2018 shows an annual decline in rainfall from 1,608mm in 2008 to 1,298mm in 2018 (Adaudu, 2017), thus a corresponding decline in groundwater recharge.

Similarly in Enugu state, based on the scope of this ESMP, it was found that the inadequacy of surface water, proper knowledge of the aquifer and increasing population has affected the extraction and development of groundwater in some areas, where good borehole yields starts from a depth within the fourth and fifth layer (aquifer unit) about 150m (Ossai, M N), hence leading to reliance on alternatives such as rain water harvesting.

## **Climatic conditions**

Nigeria is characterized by three distinct climate zones, a tropical monsoon climate in the south, a tropical savannah climate for most of the central regions, and a Sahelian hot and semi-arid climate in the north of the country. This leads to a gradient of declining precipitation amounts from south to north<sup>8</sup>. Nigeria has a tropical climate with variable rainy and dry seasons, depending on location. It is hot and wet most of the year in the southeast but dry in the southwest and farther inland. A savanna climate, with marked wet and dry seasons, prevails in the north and west, while a steppe climate with little precipitation is found in the far north (Britannica.com).

- Southwest and Southsouth Nigeria are one of the cooler regions in Nigeria, high humidity and hot temperatures make the weather pleasant at times but also tropical humid.
- Southeast Nigeria is the coldest region in Nigeria.
- The climate in the Northeast is very warm and hot all year long but has few truly tropical and muggy months.
- Northwest Nigeria is one of the warmer regions in Nigeria.
- The climate of the Northcentral is very warm with an annual average of 34 degrees but has few truly tropical and muggy months<sup>9</sup>.

## Rainfall

The length of the rainy season decreases from south to north. In the south the rainy season lasts from March to November, whereas in the far north it lasts only from mid-May to September.

• June to September offers the most rain days, while December has the fewest in both the Southwest and Southeast of Nigeria.

<sup>&</sup>lt;sup>8</sup> Climate Change Knowledge Portal; World Bank.org, 2021

https://climateknowledgeportal.worldbank.org/country/nigeria

<sup>&</sup>lt;sup>9</sup> https://www.worlddata.info/africa/nigeria/climate-north-central.php

- In the Southsouth most precipitation falls from May to October with the highest in August, while there are less rains in from November to March, with the lowest in December.
- In the Northeast the rainy season is from June to September, with the highest in August, while November to March usually has no/few rains especially in January and February.
- In the Northwest, August offers the most rain days, the least amount of rain falls in December.
- In the Northcentral, rainy season is intense from May to October, August and September offers the most rain days, while December has the fewest<sup>8</sup>.

Precipitation is heavier in the south, especially in the southeast, which receives more than 120 inches (3,000 mm) of rain a year, compared with about 70 inches (1,800 mm) in the southwest. Rainfall decreases progressively away from the coast; the far north receives no more than 20 inches (500 mm) a year. (World Bank.Org: Climate Change Knowledge Portal).







## **Temperature**<sup>10</sup>

Temperature and humidity remain relatively constant throughout the year in the south, while the seasons vary considerably in the north; during the northern dry season the daily temperature range becomes great as well.

- November is the sunniest month in the greater region of Southwest Nigeria, in August, the sun shines the least and the warmest water temperatures in Southwest Nigeria are in April.
- Southeast and Southsouth Nigeria has an average daily maximum temperature of only 31 degrees, high humidity and hot temperatures make the weather pleasant at times but also tropical humid, while December is the sunniest month in the greater region of Southeast and Southsouth Nigeria and in August the sun shines the least.
- The Northeast and Northwest has an annual average of 36 degrees. November is the sunniest month in the greater region of Northwest Nigeria, while in August, the sun shines the least.
- July to August has lower temperatures in the Northcentral, November is the sunniest month in the greater region of North Central and in August, the sun shines the least.

On the coast the mean monthly maximum temperatures are steady throughout the year, remaining about 90 °F (32 °C) at Lagos and about 91 °F (33 °C) at Port Harcourt; the mean monthly minimum temperatures are approximately 72 °F (22 °C) for Lagos and 68 °F (20 °C) for Port Harcourt. In general, mean maximum temperatures are higher in the north, while mean minimum temperatures are lower. In the northeastern city of Maiduguri, for example, the mean monthly maximum temperature may exceed 100 °F (38 °C) during the hot months of April and May, while in the same season frosts may occur at night. The humidity generally is high in the north, but it falls during the harmattan (the hot, dry northeast trade wind), which blows for more than three months in the north but rarely for more than two weeks along the coast. The temperature chart for each region are shown in figures 12 to 17 below.

<sup>&</sup>lt;sup>10</sup> WorldData.info 2023: https://www.worlddata.info/africa/nigeria/climate-south-west.php

|                               |          | C     | limat | te in      | Sou          | th V               | Vest           | Nige      | ria     |          |          |
|-------------------------------|----------|-------|-------|------------|--------------|--------------------|----------------|-----------|---------|----------|----------|
| 40<br>35<br>30<br>25<br>20    | _•_      | _•    |       | Average di | e vitime and | nightume<br>•<br>• | temperati<br>• | •<br>•    | •       | •        | -•       |
| 15<br>10<br>5<br>0<br>January | February | March | April | May        | June         | July               | August         | September | October | November | December |

Figure 12: Temperature Chart for Southwest Nigeria

Source: WorldData.info



Figure 13:Temperature Chart for Southeast Nigeria

Source: WorldData.info



Figure 14:Temperature Chart for Southsouth Nigeria

Source: WorldData.info



Figure 15:Temperature Chart for North East Nigeria

Source: WorldData.info



Figure 16:Temperature Chart for Northwest Nigeria

Source: WorldData.info

|                                  |         |          | Cli   | mate  | e in<br>Average d | Nort | h Ce |        | l Nigo    | eria    |          |          |
|----------------------------------|---------|----------|-------|-------|-------------------|------|------|--------|-----------|---------|----------|----------|
| 40<br>35<br>30<br>25<br>20<br>15 | •       |          | _•-   | -•-   | •                 | •    | •    | •      | •         | _•-     | _•-      | -•       |
| 10<br>5<br>0                     | January | February | March | April | Мау               | June | July | August | September | October | November | December |

Figure 17:Temperature Chart for Northcentral Nigeria

Source: WorldData.info

#### Soil

Nigeria's major soil zones conform to geographic location: loose sandy soils consisting of windborne deposits and riverine sands are found in the northern regions, although, in areas where there is a marked dry season, a dense surface layer of laterite develops, making these soils difficult to cultivate. The soils in the northern states of Kano and Sokoto, however, are not subject to leaching and are therefore easily farmed. The middle two-thirds of the country, the savanna regions, contain reddish, laterite soils. The forest soils represent the third zone where the vegetation provides humus and protects it from erosion by heavy rainfall, although these soils can readily be leached and lose their fertility, they are the most productive agriculturally<sup>11</sup>.

<sup>&</sup>lt;sup>11</sup> https://www.britannica.com/place/Nigeria/Cultural-institutions

# Hydrology

Nigeria has large freshwater resources; surface and groundwater sources. The country has four river drainage systems with a lot of dams and four major aquifer formations spread over eight Hydrological areas cutting across the thirty-six states of the federation (fao.org). Within Nigeria the River Niger is fed by rivers flowing into it from all directions with headwaters originating from the central plateau in the north, from the Yoruba highlands in the south, from Benin Republic to the west and from the eastern highlands. A significant flow from outside Nigeria comes from the watersheds stretching westwards right up to the Fouta Djallon mountains of Guinea. The River Benue is fed by rivers emanating both from the high central plateau and also from the Cameroon mountains and Ogoja hills.

## Vegetation

Mangrove and freshwater swamps occur along the coast and in the Niger delta. A short way inland, the swamps give way to dense tropical rainforests. In the more densely populated parts of the southeast, the original forest vegetation has been replaced by open palm bush. In the southwest large areas of forest have been replaced by cocoa and rubber plantations. Tropical grassland occupies the area north of the forest belt and is studded with baobab, tamarind, and locust bean trees. The savanna is prominent in the far north and is characterized by scattered stunted trees and short grasses. In densely populated areas of the savanna, such as those around the towns of Sokoto, Kano, and Katsina, the vegetation has been removed by continuous cropping, overgrazing, and bush burning. In the far northern areas, the nearly total disappearance of plant life has facilitated a gradual southward advance of the Sahara (fao.org)<sup>12</sup>.

## 4.3 Environmental Baseline of the Project Locations

## Methodology for sampling

An assessment of environmental parameters including air, noise, soil, surface water and ground water was conducted using both in-situ (for air and noise quality) and ex-situ (laboratory analysis for soil and water samples at Biometrics Geo Lab in Abuja) as described in the relevant sections below. Information on flora and fauna were also determined for the various project areas based on observation and interviews with stakeholders. A total of 106 schools were visited and an assessment of air quality parameters, surface water, ground water, soil parameters were conducted, while 6 schools Federal Science and Technical College (FSTC) Kafanchan in Kaduna, FSTC Zuru in Kebbi, Federal Government College (FGC) Birnin Yawuri in Kebbi, FGC Wukari in Taraba state, Federal Government Girls College (FGC) Buni Yadi in Yobe state and FGGC Anka in Zamfara State) could not be visited physically due to insecurity concerns, however, a checklist was sent to the Principals/project committees to provide critical information and findings were included in this ESMP.

## Air quality

Air quality measurements were conducted in-situ in 106 schools using MultiRAE Pro Model PGM-6248, ToxiRAE Model PGM-1130, Temtop M2000C and Extech Sound Level Meter. This was to establish the existing baseline pre-project activities. Parameters measured include Carbon

<sup>&</sup>lt;sup>12</sup> <u>https://www.fao.org/3/T1230E/T1230E02.htm</u>

dioxide (CO<sub>2</sub>), Carbon monoxide (CO), Sulphur dioxide (SO<sub>2</sub>), Hydrogen Sulphide (H<sub>2</sub>S), Particulate Matter (PM2.5), Particulate Matter (PM10), Total volatile organic compound (TVOC) and noise levels. Measurements were taken in at least 3 locations within the schools and the average value was recorded for each site. Detailed results are provided in annex 12, however, a summary is provided below.

- All values of CO<sub>2</sub> across the schools were within the FMEnv maximum permissible limit of 1000ppm.
- CO values were within the FMEnv maximum permissible limit of 10ppm, however, Federal Government Boys College (FGBC) Apo and FGGC Abaji recorded the highest values at 4.25ppm and 3.75ppm respectively, though this is still within the permissible limit but can be attributed to the presence of high vehicular movements as both schools are close to expressway with a lot of movement of heavy-duty trucks.
- SO<sub>2</sub> values were all within the FMEnv permissible limit of 0.06ppm, however, a few values were slightly higher than expected in FGC Odogbolu at 0.06ppm, FGC Keffi 0.05ppm and FSTC Doma 0.05ppm. Odogbolu has several factories in the area which could be the contributory cause of SO<sub>2</sub> in the atmosphere, while Jos has the presence of some industries such as cement, agro-allied.
- H<sub>2</sub>S values were all within the FMEnv permissible limts of 0.006ppm.
- Total Volatile organic compounds (TVOC) values were higher than the FMEnv permissible limit of 0.1ppm in almost all locations. Volatile organic compounds can come from an array of sources, including human-made and natural sources, manufacturers utilize VOCs as inorganic solvents in paints, solvents, cleaners and disinfectants, hence no particular source can be held liable.
- The recorded minimum and maximum ambient noise levels within and around the vicinity of the schools ranged from 30.8dB in FGC Ikole Ekiti to 69.6dB in FGC Warri. Areas with values higher than the FMEnv prescribed 55dB are FGC Ohafia 68.4dB, FGGC Owerri 67.4dB, FSTC Umuaka 60.5dB, FGC Nise 61.2dB, FSTC Awka 66.2dB, and FGC Warri 69.6dB. High noise levels may be difficult to attribute to a particular source because activities within each school varied during the time of measurement, use of generators, movement of vehicles and operation of machinery. Notably, FGC Warri is in a built-up area and very close to a busy traffic route.

## **Surface Water Quality**

A total of ten (10) samples of surface water which were identified within 2km radius of 10 schools were collected in sterilized bottles and stored in a refrigerator for onward laboratory analysis. Other schools did not have surface water bodies within a 2km radius. As shown below:

- 1. FSTC Tungbo, Bayelsa Tungbo River
- 2. FGC Odi, Bayelsa Odi River
- 3. FGGC Onitsha, Anambra Ezu River
- 4. FSTC Akwa, Anambra Omambala River
- 5. FGC Okigwe, Imo State Obaho River
- 6. FGC Ikirun, Osun State River Eko Ende
- 7. FGC Bida, Niger State Bida River
- 8. FGC Minna, Niger State River Chanchaga

- 9. FGA Suleja, Niger State Iku River
- 10. FGC New Bussa, Niger State River Niger

Detailed results are presented in annex 14, however, a summary is presented below.

- The lowest recorded pH value was 4.47 at Omambala River (FSTC Awka, Anambra), which is acidic in nature. Conversely, the highest recorded pH value is 7.67 at FSTC Tungbo River (Tungbo Bayelsa State) which is within the FMEnv permissible range of 6.0-9.0. The significant variation in pH values across different sampling points underscores the diverse nature of surface water quality.
- The conductivity value of 90.2  $\mu$ S/cm at Odi River (FGC Odi, Bayelsa State) represents the lowest value among the 10 surface water samples analysed. This suggests relatively low levels of dissolved ions or salts in the water at this location. The highest conductivity value of 376.0  $\mu$ S/cm is recorded at Omambala River (FSTC Awka, Anambra State). While this value is the highest among the sampled locations, it falls within the permissible limit set by the Federal Ministry of Environment (FMEnv) at 2000  $\mu$ S/cm. The observed range of conductivity values indicates variability in the solute content of the surface water across different locations. Low conductivity may suggest lower levels of dissolved ions, while higher conductivity could indicate a greater concentration of dissolved salts.
- The analysis of turbidity values in the surface water samples revealed that Omambala River (FSTC Awka, Anambra State) has a turbidity value of 0.00 NTU, while all other 9 samples have turbidity values above the permissible FMEnv limit of 10NTU. The highest turbidity value of 34.1 NTU, is recorded at Ezu River (FGGC Onitsha, Anambra state) which may be attributed to various factors, such as soil erosion, runoff, or human activities, contributing to increased turbidity levels.
- Nitrate concentration at all locations were within the FMEnv maximum permissible limit of 10 mg/L, except at Tungbo River (FSTC Tungbo, Bayelsa) which was 10.33 mg/L, though the value is not significantly alarming as the level of deviation is low.
- The presence of heavy metals above the permissible FMEnv limits can be attributed to natural or anthropogenic activities. In natural activities, weathering of rocks that contain metals, wastewater discharged from urban, industrial, and agricultural facilities.
- Elevated zinc concentration of 1.16 mg/L is recorded at Obaho River (FGC Okigwe, Imo State) exceeding the FMEnv permissible limit of <1.0 mg/L.
- Elevated iron concentrations at Omambala river (FSTC Awka, Anambra State) 0.492mg/l, Odi River (FGC Odi, Bayelsa State) 4.250mg/l, and River Niger (FGC New Bussa, Niger State) 0.310mg/l exceeding the FMEnv permissible limit of 0.3mg/l.
- All samples had the presence of one or more organisms. The presence of Total Coliform Count (TCC) and Bacillus Specie in surface water samples signifies the presence of specific bacteria associated with the decomposition of organic matter. Coliform bacteria can act as indicators of potential faecal contamination. The presence of Bacillus Specie suggests a microbial community with diverse metabolic capabilities, including the breakdown of organic substances. Faecal Coliform is often linked to contamination from human or animal waste, while Pseudomonas Specie may indicate organic matter degradation.

## **Ground Water Quality**

104 groundwater samples<sup>13</sup> from 104 boreholes within, one in each of the schools were collected in sterilized bottles and stored in a refrigerator for onward laboratory analysis.

- The result shows that the pH of the ground water across the entire study area falls within the range of 3.49 to 8.49. This indicates a variability in the acidity or alkalinity levels among different locations. The lowest recorded pH was observed at FGC Portharcourt, Rivers State (GW33) 4.37, FGGC Abuloma (GW52), 3.49, FGGC, Lejja 4.37 and FGGC Bakori (GW106) 4.7 suggesting relatively acidic conditions at that location. Conversely, the highest pH was recorded at FSTC Uyo, Akwa-Ibom State (GW4) 8.49, FSTC Michika (GW44) 8.49 and FGGC Zaria (GW 104) 8.25 indicating more alkaline conditions.
- Turbidity levels of 0.00 nephelometric turbidity units (NTU was recorded for a substantial number of samples, which suggest that the water at these locations exhibits high clarity and low levels of suspended solids, indicating minimal interference with the transmission of light. However, a notable exception is observed at FGGC Gusau in Zamfara State (GW38) and FGC Minna, Niger State (GW27) where a turbidity value of 4.2 NTU and 4.0 NTU are recorded respectively. This elevated turbidity level implies a higher concentration of suspended particles in the water at this particular location, leading to reduced clarity. The absence or low levels of turbidity in water are advantageous, as clearer water is generally associated with lower levels of suspended solids.
- The concentrations of Nitrates at FGC Kano in Kano State (GW22), with a value of 16.38 mg/L, FGGC Kazaure (GW19) 14.08mg/l, FSTC Hadejia (GW20) 11.92mg/l, FGC New-Bussa (GW28) 15.77mg/l, FSTC Lassa (GW55)18.28mg/l, FGGC, Jalingo (GW58) 14.37 mg/l, Kings College Lagos (GW70) 15.97mg/l, FSTC Ikare-Akoko (GW78) 14.37 mg/l, FGGC Ipetumodu (GW79) 14.08mg/l and FGGC Abaji (GW94) 15.22mg/l surpass the maximum permissible limits set by both the Federal Ministry of Environment (FMEnv), This deviation from the recommended limits raises concerns about potential sources of nitrate contamination in these specific areas which could be due to leachate from farmlands with fertilisers, sewage discharges, or other sources of organic matter.
- The highest recorded values for cadmium was observed at FGC Calabar in Cross Rivers State (GW11) 0.08mg/l, FGC Ijanikan (GW71) 0.08mg/l and FSC Sokoto (GW109) 0.08mg/l. Cadmium is a toxic heavy metal, and even low concentrations can pose risks to human health and the environment.
- The highest lead values, both 0.07mg/l, are recorded at FGC Minna in Niger State (GW27), FGC Azare in Bauchi State (GW7), FGGC Yola (GW42), FGGC Oyo (GW82), FGBC Apo (GW93), FGC Jos (GW102) and FSTC Dayi (GW107). These concentrations, while noteworthy, are within the maximum permissible limit of FMEnv of <1.0mg/l.
- Zinc values above the FMEnv permissible limit of <1.0mg/l was recorded at FGC Kano (GW22) at 1.61mg/l, FSTC Hadejia (GW20) 1.43mg/l, FSTC Ilesa (GW80) 1.43mg/l.
- The detection of Total Bacteria Count (TBC) in groundwater samples implies the presence of bacteria in those specific locations. The detection of Total Coliform Count and Bacillus Spp in groundwater samples indicates the presence of specific bacteria associated with the decomposition of organic matter which serve as indicators of

<sup>&</sup>lt;sup>13</sup> FGC Otobi and FSTC Otukpo ground water could not be gotten as there is no water due to very low aquifer. While 6 schools as earlier stated were not visited.

potential fecal contamination. Feacal Coliform is often associated with contamination from human or animal waste.

## **Soil Analysis**

A total of 106 composite samples of soil (composite soil to a depth of 3m) were collected using a dutch hand auger from all the 106 schools visited for laboratory analysis.

The samples from most states were refrigerated and transported to the laboratory in ice packs within 24 – 48 hrs after collection.

The pH levels ranged from 6.1 to 8.27. Specifically, FGC Ikot Ekpene, Awka-Ibom State) and FGGC Gwandu, Kebbi State) exhibited slightly acidic characteristics, while SS21 (Kano, Kano State) where the highest pH value was recorded displayed slightly alkaline properties.

According to the Food and Agriculture Organisation (FAO), Sand has a low Electrical Conductivity (EC) (1-10  $\mu$ S/cm), silt has a medium EC (8-80  $\mu$ S/cm) and clay has a high EC (20-800  $\mu$ S/cm). This means that sandy soils have a poor capacity to store and hold onto cations and lose nutrients easier than silty and clayey soils. The EC of Soils samples were higher than 200.00  $\mu$ S/cm in the following schools FGGC Abaji, FCT (263.00  $\mu$ S/cm), FGC Kano, Kano State (284.00  $\mu$ S/cm), FGGC Sagamu, Ogun State (290.00  $\mu$ S/cm), FGGC Gwandu, Kebbi State (338.00  $\mu$ S/cm), Kings College, Lagos state (421  $\mu$ S/cm), Queens College, Lagos state (252  $\mu$ S/cm), FSTC Yaba, Lagos state (268  $\mu$ S/cm), FGC Idoani, Ondo state (420  $\mu$ S/cm), FGGC Akure, Ondo state (590  $\mu$ S/cm), FSTC Ikare-Akoko, Ondo state (591  $\mu$ S/cm), FGC Ohiafia, Abia state (220.28  $\mu$ S/cm). while schools like FGGC Umuahia, Abia State (22.90  $\mu$ S/cm) and FGGC Bauchi, Bauchi State (25.10  $\mu$ S/cm) had the lowest conductivity values.

The analysis revealed notable variations in the Total Organic Matter of the soil. For instance, FGC Daura, Katsina State recorded the lowest Total Organic Matter value at 0.11%, while FGC Sokoto, Sokoto State recorded the highest value at 4.90% among all the samples analyzed. Total Organic Matter provides information about the presence of organic materials in the soil, contributing to its fertility and overall health. The observed variations between sampling points underscore the diversity in soil types and environmental conditions at each location. Factors such as climate, vegetation, and land use can influence these variations, highlighting the intricate interplay between soil and environmental dynamics.

Nitrate (NO3-) was present across all soil sampling locations and exhibited a range from 2.24mg/kg in FGC New Bussa, Niger State to 40mg/kg in FGC Maiduguri, Borno State. Notably, significant values were recorded in FGC Minna, Niger State (20.41 mg/kg), FSTC Igangan, Oyo State (23.40 mg/kg) and FGC Maiduguri, Borno State (40 mg/kg). Nitrate (NO3-), an indicator of contamination from fertilizers and organic waste, is crucial in evaluating water quality.

The heavy metals scrutinized in the analysis include Iron, Lead, Copper, and Zinc. Iron exhibited a range from the lowest value of 0.11mk/kg at FGGC Udi, Delta State to the highest value of 1069mg/kg at FGC Odi, Bayelsa state. The highest values were recorded in FGC Ikole-Ekiti, Ekiti State (133mg/kg), FGGC Efon-Alaye, Ekiti State (157.6mg/kg), FSTC Usi-Ekiti, Ekiti State (14.26mg/kg), Kings College, Lagos state (359.3mg/kg), FGC Odogbolu, Ogun state (439.41mg/kg), FSTC Ijebu Imushin, Ogun state (456.65mg/kg), FGC Idoani, Ondo state (333mg/kg), FSTC Ikare-Akoko, Ondo state (131mg/kg), FGC Okigwe, Imo State (558.3mg/kg), FSTC, Umuaka, Imo state (516.16mg/kg), FSTC Tungho, Bayelsa State (878mg/kg), FGC Warri,

Delta State (628mg/kg), FSTC Uromi, Edo State (524mg/kg). Iron is usually present in most soils.

Lead values ranged from the lowest recorded value of 0.01mg/kg at FGGC Gboko, Benue State and FGC Ikirun, Osun State, while the highest values were recorded in FGGC Akure, Ondo state (9.18mg/kg), FSTC Ikare-Akoko, Ondo state (12.82mg/kg), FSTC Oguta, Imo state (17.4mg/kg), FGC Okposi, Ebonyi State (21.6mg/kg).

Various microbiological parameters were assessed in the study, encompassing Total Heterotrophic Bacteria (THB), Total Heterotrophic Fungi (THF), Hydrocarbon Utilizing Bacteria (HUB), Hydrocarbon Utilizing Fungi (HUF). Results show that all samples had one specie of micro-organism or the other, which could indicate natural/biological processes like decomposition and nutrient cycling.

Based on observation during the ESMP preparation, the soil type in some schools are susceptible to erosion and flooding, coupled with the poor drainage layout, which has resulted in eroded areas in the following schools:

- FSTC Ogugu and FGC Ugwolawo in Kogi state
- FGC Vandekiya in Benue
- FGC Birnin Yauri in Kebbi
- FGC Ijanikan in Lagos- Water retention in some areas during rainfall
- FSTC Shiroro in Niger
- FGGC Keana and FGC Keffi in Nasarawa erosion at the foundation of the laboratory and flooding in 2021 lead to fallen portion of school fence
- FGGC Lejja, Enugu State erosion and flooding threatens the dining area and caused failed sewage system along access road to classes
- FGGC Jalingo in Taraba
- FGC Ganye in Adamawa
- FGGC Akure and FGC Ido-Ani in Ondo
- FGC Ibilo in Edo
- FGGC Abuloma in Rivers
- FGGC Onitsha and FGC Nise in Anambra
- FGGC Efon-Alaye and FSTC Usi-Ekiti in Ekiti
- FGC Sokoto
- FGC Kaduna
- FGGC Abaji in FCT

## Flora and Fauna

Information on flora and fauna were obtained through direct observation, information from stakeholders and literature review. Significant vegetation and animals were absent in almost all schools visited except for a few schools that showed evidence of minor crops grown by teachers such as maize and vegetables for subsistence. A few trees such as Neem, tamarind, mango and shrubs were observed in the Northern schools/communities, while Palm trees, oak trees and dense bushes were observed in the southern schools/communities.

A few domestic animals like chickens and goats were found within the school compounds kept by staff of the schools for subsistence, the presence of cows, goats, sheep were observed in the rural areas in the northern communities, while goats and dogs were observed in the south. However, there are no endangered species, areas of biodiversity value or protected areas in any of the project locations.

#### Waste Management

The most common type of waste management practice in the schools is burning of waste either in a defined location of the school or a local incinerator within the schools. In both cases, smoke are directly released into the air and inhaled by students/staff, which is not environmentally and health friendly. Waste is also littered indiscriminately within the schools. Sanitary pads are usually burnt in the local incinerators as well or disposed of indiscriminately.

#### 4.4 Country Baseline - Social and Socio-economic Environment

A combination of quantitative and qualitative data techniques where utilized. Qualitative employed literature review and consultations with stakeholders in the state, FUCs and host communities across all 36 states. Quantitative data was obtained from the use of structured questionnaires and subsequent analysis of the responses to produce statistics.

#### **Demography and Population**

Nigeria is one of the most densely populated countries in Africa, with approximately 218.5 million people in an area of 923,768 km<sup>2</sup> (356,669 sq mi). 54.3% of Nigerians are urban dwellers, with the annual rate of urbanisation being estimated at 3.92% (The World Fact Book, 2023). Nigeria is home to over 250 ethnic groups with over 500 languages and the variety of customs and traditions among them gives the country great cultural diversity.

According to the World Population live chart, the current population of Nigeria is 226,039,805 based on projections as shown in figure 18 below.



Figure 18: Population Chart of Nigeria

Source: https://worldpopulationreview.com/countries/nigeria-population

Of this population, almost three-fourths are younger than 30 years of age as shown in figure 19 below, which contains the age bracket for school-age girls, which is the target of the AGILE project.



Figure 19: Age Chart of Population in Nigeria

## Population of Major Cities where the Federal Unity Schools are Located

The estimated population for the various cities which the FUCs are located are as stated in tables 3 and 4 below (based on available data<sup>14</sup>)

|       | Table 3: Population of |        |            | S/N | CI  | ТҮ    | POPUI        | LATIO    | N      |     | S/N      | CITY |     | POPULATION |        |         |
|-------|------------------------|--------|------------|-----|-----|-------|--------------|----------|--------|-----|----------|------|-----|------------|--------|---------|
|       | Major Fl               | JC CIT | TIES IN    |     |     | 10    | Ał           | peokuta  | 593,10 | 00  |          |      | 19  | Efon-Ala   | laye   | 279,319 |
| C /N  |                        | SOUT   |            |     |     | 11    | 01           | nitsha   | 561,   | 066 |          |      | 20  | Ilesa      |        | 277,904 |
| 5/N   |                        |        | POPULATION |     |     | 12    | W            | arri     | 536,   | 023 |          |      | 21  | Umuahia    | a      | 264,662 |
| 1     | Lagos                  |        | 9,000,000  |     |     | 13    | Ca           | labar    | 461.   | 796 |          |      | 22  | Ondo       |        | 257.005 |
| 2     | Ibadan                 |        | 3,565,108  |     |     | 11.   | II           | 70       | 436    | 606 |          | -    | 22  | Ilvot Flyn | ono    | 254.806 |
| 3     | Port Harcou            | ırt    | 1,148,665  |     |     | 17    |              |          | +30,   | 000 |          | -    | 23  |            | ene    | 234,800 |
| 4     | Benin City             |        | 1,125,058  |     |     | 15    | A            | lo-Ekiti | 424,   | 340 |          | _    | 24  | Ikire      |        | 222,160 |
| 5     | Ilorin                 |        | 814 192    |     |     | 16    | Al           | kure     | 420,   | 594 |          |      | 25  | Owerri     |        | 215,038 |
| 6     |                        |        | 726.072    |     |     | 17    | Ik           | eja      | 313,   | 196 |          |      | 26  | Shagam     | u      | 214,558 |
| 0     | Oyo Town               |        | / 30,0/2   |     |     | 18    | 3 Osogbo 156 |          | 156,   | 694 |          |      | 27  | Ijebu-Oc   | le     | 209,175 |
| 7     | Enugu                  |        | 688,862    |     |     |       |              |          |        |     |          |      | 28  | Ise-Ekiti  |        | 190,063 |
| 8     | Awka                   |        | 167,738    |     |     |       |              |          |        |     |          |      |     |            |        |         |
| 9     | Ikirun                 |        | 134,240    |     |     |       |              |          |        |     |          |      |     |            |        |         |
| Tabla | A.Dopulatio            | nof    |            |     | S/N | CITY  |              | POPULA   | ΓION   |     |          | S/N  | CI  | ГҮ         | POPUI  | LATION  |
| Major | FUC Cities I           | n The  | •          |     | 8   | Abuja | 1            | 590,400  |        |     |          | 14   | Ma  | ıkurdi     | 292,64 | 45      |
| North |                        | 1      |            |     | 9   | Sokot | .0           | 563,861  |        |     |          | 15   | Mi  | nna        | 291,90 | )5      |
| S/N   | CITY                   | POP    | PULATION   |     | 10  | Oken  | ρ            | 479 178  |        |     |          | 16   | Go  | mhe        | 250.25 | 58      |
| 1     | Kano                   | 3,62   | 6,068      |     | 10  |       | с<br>—       | 400.1.40 |        |     | $\vdash$ | 10   |     |            | 230,2  | 10      |
| 2     | Kaduna                 | 1,58   | 1,582,102  |     | 11  | Katsi | na           | 432,149  |        |     |          | 17   | Jin | ieta       | 248,14 | łS      |
| 3     | Maiduguri              | 1,11   | 2,449      |     | 12  | Baucl | ni           | 316,149  |        |     |          | 18   | Gu  | sau        | 226,85 | 57      |

<sup>14</sup> Source: https://worldpopulationreview.com/countries/nigeria-population

| 4 | Zaria  | 975,153 | 13 | Lafia | 127,236 | 19 | Mubi    | 225,705 |  |
|---|--------|---------|----|-------|---------|----|---------|---------|--|
| 5 | Jos    | 816,824 |    |       |         | 20 | Bida    | 171,656 |  |
| 6 | Funtua | 136,811 |    |       |         | 21 | Suleja  | 162,135 |  |
| 7 | Gashua | 125,817 |    |       |         | 22 | Rubochi |         |  |

#### **Population Density of the Regions**

The South-West region has the highest population density which includes states such as Lagos Ogun Oyo Osun Ekiti and Ondo and lowest population densities is in the northeast region as shown in figure 20 below.



Figure 20: Map of Nigeria showing population density by the six geopolitical regions

#### **Economic Activities**

Agriculture is a sector of the Nigerian economy accounting for up to 35% of total employment in 2020. According to the FAO, agriculture remains the foundation of the Nigerian economy, providing livelihoods for most Nigerians and generating millions of jobs. Along with crude oil, Nigeria relies on the agricultural products it exports to generate most of its national revenue. The agricultural sector in Nigeria comprises four sub-sectors: crop production, livestock, forestry, and fishing. Livestock production is a part of Nigeria's agriculture system; the keeping of cattle, small ruminants, and poultry as well as equines is common throughout northern Nigeria, while pig farming is more prominent in the south. The north also has vast irrigation fields especially for rice production with the largest in states like Kano, Jigawa, Niger and Kebbi amongst others. Coastal fishing, cocoa, palm oil, and kola nut

• The people of the South-South zone are predominantly engaged in subsistence agriculture and exploitation of marine economy in addition to handcraft (Nigerian Export-Import Bank, 2020)

- In the south east zone, the main agricultural products in the zone are yam, cassava, rice, cocoyam etc. The zone has solid minerals and nature resources such as Crude oil, natural gas, bauxite, iron ore, sandstone, lignite, clay, coal, tin and columbite.
- In the southwest, apart from agriculture as the mainstay of economic activities for the majority in the rural communities, the zone is also known for its commerce and trading activities with a preponderance of micro, small and medium indigenous industries that are into manufacturing, fabrication and agro-allied produce (CIRDOCC, 2016).
- The North Central geopolitical zone is primarily agricultural, producing crops such as cotton, peanuts, and millet, with many solid mineral deposits boosting the economy of the states.
- The economic activities of the Northwest zone are mainly farming, fishing, livestock rearing especially in cattle, sheep and goat. Groundnut, leather and cotton industries in the province of Kano provided the main source of revenue for Northern Nigeria. Cement industries in Sokoto contributes to its economy.
- The major economic activities in the northeast include farming, fishing, livestock production especially in cattle, sheep and goat. The main crops grown in the region are millet, sorghum, and cowpea, while groundnut and sesame are significant minor crops. They are equally involved in minor mining activities.

## **Access to Health Care**

There have been various reforms to increase the provision of health to the Nigerian people, however, health access is only 43.3% (National Library of Medicine, 2011). The inadequacy of the health care delivery system in Nigeria could be attributed to the peculiar demographics of the Nigerian populace. The most common barriers to accessing health services by the population are the cost of services, distance to the health facility, and the attitude of health workers.

There is a great disparity in the level of healthcare services available to people at both ends of the socioeconomic spectrum in Nigeria, the root-cause of which being the chasm between the social strata of the elite and the common man, according to Ichoku et al.

Based on this ESMP assessment, the cities in the north have less access to standard healthcare facilities especially in the rural areas where the major facilities are the Primary Healthcare centres which are usually inadequate in terms of amenities and staff to cater for the population, while the cities in the urban areas have better access to well-equipped clinics and hospitals. Conversely, the cities in the south, generally have better access to well-equipped clinics and hospitals.

The Nigerian government has implemented policies to achieve universal health coverage. The Nigerian government signed into law the new National Health Insurance Act (NHIA) 2022. The NHIA replaces the seeks to promote, regulate and integrate health insurance schemes. It aims to secure mandatory health insurance for every Nigerian and legal resident, and establishes a fund for the vulnerable groups, which will provide 'subsidy for health insurance coverage for vulnerable persons and payment of health insurance premiums for indigents. A link to the list of NIGERIA Health Facility Registry (HFR) is provided in annex 4 and annex 18.

#### **Access to Education**

In the national literacy survey done by the Nigerian Bureau of Statistics (NBS) in 2019, states with the lowest literacy levels have been from the North. Most northern states, with the exception of Taraba, Plateau and Nasarawa, have lower than 50% literacy rate, compared with the southern regions where no state had a literacy rate below 70%, the six states in Nigeria that have the lowest literacy rates are Bauchi, Gombe, Jigawa, Sokoto, Yobe, and Zamfara, and these states are also among the ten states with the highest poverty rates in Nigeria. In contrast, Imo, Lagos, Ekiti, Rivers, Abia, Anambra States has the highest literacy level (Ajibola Amzat,2019).

Inadequate funding, inadequate professional teachers, inadequate infrastructural facilities, poor supervision, corruption, weak administrators, poor quality education, overcrowding, braindrain and insecurity problem were identified as the problems facing the educational system in Nigeria.

As more people get a better education, Nigeria's literacy rate has improved. Between 2010-2021, the literacy rate was highest in the year 2021. Between 2010 to 2021, the literacy rate of Nigeria grew by 13.9% (GlobalData, 2021). The literacy rate by zone and gender as at 2018 is presented in figure 21 below:



Figure 21: Literacy rate in Nigeria in 2018, by zone and gender

#### Source: Statista, 2023

Female literacy rate in Nigeria is among the highest in West Africa at 53% (Statista, 2018<sup>15</sup>). However, as shown in figure 22 below, the difference between male and female literacy rates are substantial in both urban and rural areas. As of 2018, the rate among men living in rural areas of Nigeria reached roughly 60 percent, whereas female literacy rates in the same areas was 35 percent. The gap in urban Nigeria amounted to about ten percentage points.

<sup>&</sup>lt;sup>15</sup> Statista, 2016: Female adult literacy rate in West Africa in 2018, by country





Source: Statista, 2023

#### School aged girls

According to UNICEF, June 2022, 7.6 million girls are out of school in Nigeria: 3.9 million at the primary and 3.7 million at the junior secondary level. Adolescents (10-19 years old) constitute 23% of Nigeria's population. Supporting girls through increased secondary education and skills development is necessary to delay early marriage, child-birth, improve health and empowerment and drive economic growth.

- Poor retention in school is a major challenge: 11% of learners—and even more girls drop out of school at each grade level.
- Poverty is among the most significant barriers as school fees are prohibitive. and contributes to families' decisions to keep girls' home from school.
- Social and gender norms place a low value on education, especially for girls and promote boy-child preference.
- Insecurity, including attacks on schools and abduction of school children, as well as gender-based violence at school place girls at even greater risk of harm.
- Poor learning outcomes contribute to drop out, and girls who marry or have children lack support and pathways to return to school.
- Lack of WASH facilities, including sex-segregated toilets and menstrual hygiene management, as well as long distances to schools, exclude girls.
- Insufficient recruitment and supply of trained female teachers especially at junior secondary level.

## 4.5 Socio-Economic Baseline Statistics of the Project Locations

A total of 2,920 questionnaires were administered to 73 host communities within a 2km radius (in some cases up to 5km radius to the school in the absence of a closer one) in 36 states across the country. The sampling technique was purposive because of the intention to represent all groups, to avoid the risk of under-representation considering the wide scope of this ESMP across the entire country; the target/respondents was 40 persons per location (10 men, 10

women, 10youths, 10 for vulnerable groups<sup>16</sup>). A list of all schools and all communities visited per state is provided in annex 10 and 11 respectively.

A summary of Socioeconomic Statistics in the project communities in the north and south are represented in table 5 and 6 below.

| Description                     | Category                  | Percentage | Findings                                  |  |  |  |
|---------------------------------|---------------------------|------------|---|--|--|--|
| Gender Characteristics          | Male                      | 59         | With the purposive sampling technique     |  |  |  |
|                                 | Female                    | 41         | employed, it enabled adequate female      |  |  |  |
|                                 |                           |            | participation in the survey.              |  |  |  |
| Age Profile                     | 14-17                     | 7          | The most predominant age group is         |  |  |  |
|                                 | 18-30                     | 33         | between 31 – 59 which is 41% of the total |  |  |  |
|                                 | 31-59                     | 41         | age profile; and 18-30 which is 33%,      |  |  |  |
|                                 | 60-70                     | 12         | these could form active labour force for  |  |  |  |
|                                 | 71+                       | 7          | the project.                              |  |  |  |
| Length of Stay in Community     | From Birth                | 43         | A good number of the respondents are      |  |  |  |
|                                 | Above 15 years            | 31         | natives which implies that they have good |  |  |  |
|                                 | 10-14 years               | 12         | knowledge of the community information.   |  |  |  |
|                                 | 5-9 years                 | 6          | In addition, there are also significant   |  |  |  |
|                                 | Below 5 years             | 8          | number of immigrants into these areas     |  |  |  |
|                                 |                           |            | either for marriage, work or education.   |  |  |  |
| Marital Status of Respondents   | Married                   | 61         | The survey shows that there are more      |  |  |  |
|                                 | Single                    | 23         | married people across the locations       |  |  |  |
|                                 | Widowed                   | 12         | which denotes prevalence of a family      |  |  |  |
|                                 | Divorced/Separated        | 4          | system within these communities           |  |  |  |
| Main occupation of              | Public sector             | 14         | Farming has the highest primary source    |  |  |  |
| Respondents                     | Fishermen                 | 12         | of income of the respondents, this could  |  |  |  |
|                                 | Farmers                   | 44         | be because most of the FUCs are not       |  |  |  |
|                                 | Self                      | 11         | located in the heart of town, hence the   |  |  |  |
|                                 | employed/Artisans         |            | adjoining communities are more            |  |  |  |
|                                 | /Others                   |            | agricultural and trade oriented that than |  |  |  |
|                                 | Traders/Industrial        | 10         | public sector oriented                    |  |  |  |
|                                 | Unemployed                | 9          |   |  |  |  |
| Monthly Income in Naira         | N0 - N30,000              | 11         | The predominant monthly income among      |  |  |  |
|                                 | N31,000 - N60,000         | 46         | the respondents is N31,000 – N60,000.00   |  |  |  |
|                                 | N61,000 -                 | 24         | which is 46%. The results indicate a low- |  |  |  |
|                                 | N100,000                  |            | average income level, though this varies  |  |  |  |
|                                 | N101,000 -                | 11         | significantly across the regions with the |  |  |  |
|                                 | N200,000                  |            | lowest in the Northeast, seconded by the  |  |  |  |
|                                 | Above N200,000            | 8          | NorthWest and then the North Central.     |  |  |  |
| Size of immediate family of the | Large (above 7)           | 36         | The common family size within the         |  |  |  |
| respondents                     | Medium (4 to 7)           | 46         | project communities is medium 4-          |  |  |  |
|                                 | Small $(2 \text{ to } 4)$ | 18         | 7 persons in a household.                 |  |  |  |
| Access to Education             | Primary Education         | 10         | All of the FIIC's host communities have   |  |  |  |
| necess to Education             | Secondary                 | 70         | access to primary schools within the area |  |  |  |
|                                 | Education                 | 70         | About 70% have access to other forms of   |  |  |  |
|                                 | Higher Institution        | 65         | secondary school education excluding the  |  |  |  |
|                                 | inglier institution       | 05         | FUC, while 65% have access to higher      |  |  |  |
|                                 |                           |            | institutions within the LGA.              |  |  |  |
| Condition of roads to the       | Verv Good                 | 18         | The majority of the respondents (32%)     |  |  |  |
| community                       | Good                      | 22         | disclosed that the condition of the roads |  |  |  |
|                                 | Fair                      | 32         | to the communities are fair while 18% of  |  |  |  |

Table 5: Socioeconomic Statistics for the Northern Communities

<sup>16</sup> Vulnerable group used in this report refers to people with disabilities, elderly above 70, widows

| Description                             | Category          | Percentage | Findings                                   |
|---|-------------------|------------|--|
|   | Poor              | 28         | the respondents agreed that the roads are  |
|   |                   |            | very good. The later are those in          |
|   |                   |            | developed urban areas while the former     |
|   |                   |            | are those in rural and some semi-urban     |
|   |                   | Fo         | areas                                      |
| Access to good healthcare               | Very Good         | 52         | For the communities in the urban areas     |
|   | Average           | 35         | they affirmed that they can access state   |
|   | Poor              | 13         | the LCA these in semi-urban areas make     |
|   |                   |            | use of private clinics more due to the     |
|   |                   |            | distance of Government hospitals while     |
|   |                   |            | the semi urban areas and rural areas rely  |
|   |                   |            | on the primary health care centres which   |
|   |                   |            | usually does not have an adequate          |
|   |                   |            | number of doctors, medications, and        |
|   |                   |            | available bed spaces.                      |
| Access to Potable Water within          | Government Pipe   | 13         | Most respondents indicated high reliance   |
| the communities                         | Borne Water       |            | on boreholes for domestic use within the   |
|   | Borehole          | 61         | communities. However, these boreholes      |
|   | Well              | 9          | and wells are not treated in most cases,   |
|   | Water             | 17         | and only the Government piped borne        |
|   | vendors/Others    |            | water is treated.                          |
|   |                   |            |  |
| Drinking Water Source                   | Bottled           | 5          | About 55% stated they also drink the       |
|   | Water/Dispenser   | -          | borehole water, 5% drink well water, 35%   |
|   | Borehole          | 55         | drink sachet water while 5% drink          |
|   | Well              | 5          | bottled water/dispenser.                   |
|   | Sachet Water      | 35         |  |
| Access to electricity within the        | National Grid     | 24         | The National grid is epileptic and satisfy |
| communities                             | Generator         | 85         | just about 24% of respondents. Most        |
|   | Solar             | 12         | people rely on generators for power        |
|   | Others            | -          | Including those that are connected to      |
|   |                   |            | have solar papels /access to solar         |
|   |                   |            | nowered boreholes. However all             |
|   |                   |            | communities visited had access to at least |
|   |                   |            | one form of electricity                    |
| Main fuel you use for cooking           | Firewood/charcoal | 37         | Firewood and charcoal are used in many     |
|   | Gas               | 28         | of the households due to the high cost of  |
|   | Kerosene          | 18         | gas and kerosene and unreliability of the  |
|   | Electricity       | 9          | national grid. There is a huge opportunity |
|   | Clean stoves      | 8          | for clean cook stoves in these areas.      |
|   | Saw Dust          | -          | 4  |
|   | Others            | -          |  |
| Type of toilet facility you use         | Bush              | 6          | Many homes are replacing the traditional   |
|   | Water Closet      | 34         | pit latrines with the VIP mostly from      |
|   | Traditional Pit   | 10         | Water closets are common in the urban      |
|   | Ventilated        | 50         | areas However a few respondents            |
|   | Others            |            | affirmed to open defecation in the hushes  |
|   | oulers            | -          | especially when there is no water          |
| Waste disposal method                   | Bush              | 9          | Open burning of refuse is the common       |
| • | Open Burning      | 46         | waste management practice within the       |
|   | Indiscriminate    | 19         | communities while 17% depend on            |
|   | dumping           |            | private waste collectors which they pay a  |
|   | Incinerator       | 9          | fee to or to Government waste collector    |

| Description                  | Category         | Percentage | Findings  |  |  |
|------------------------------|------------------|------------|---|--|--|
|                              | Organized        | 17         | trucks.   |  |  |
|                              | Collection       |            |   |  |  |
|                              | Burying          | -          |   |  |  |
| Common diseases in your area | Malaria          | 83         | Malaria is most prevalent amongst the   |  |  |
|                              | Typhoid          | 65         | respondents, water borne diseases are   |  |  |
|                              | Diarrhea/Cholera | 48         | also common such as Diarrhea, typhoid,  |  |  |
|                              | Respiratory      | 52         | cholera. Respiratory infections include   |  |  |
|                              | Infections       |            | cough, tuberculosis, sore throat etc.   |  |  |
|                              | Stomach ache     | 28         |   |  |  |
|                              | Others           | -          | ]   |  |  |
| Are you aware of the AGILE   | Yes              | 22         | Larger percentage (78%) of the  |  |  |
| project before now           | No               | 78         | respondents stated that they were<br>unaware of the project while 22% are<br>aware either because they are members<br>of the SBMC or PTA. This is<br>understandable as the schools are run<br>directly by the Federal Government and<br>not community owned |  |  |

# Table 6:Socio-economic Statistics for the Southern Region

| Description     | Category                 | Percentage | Findings  |
|-----------------|--------------------------|------------|---|
| Gender          | Male                     | 43         | With the purposive sampling technique employed, it        |
| Characteristics | Female                   | 57         | enabled adequate female participation in the survey.      |
| Age Profile     | 14-17                    | 4          | The most predominant age group is between 31 – 59         |
|                 | 18-30                    | 28         | which is 37% of the total age profile; and 18-30 which is |
|                 | 31-59                    | 37         | 28%, these could form active labour force for the         |
|                 | 60-70                    | 22         | project.  |
|                 | 71+                      | 9          |   |
| Length of Stay  | From Birth               | 27         | It was gathered that many of the youths emigrate in       |
| in Community    | Above 15 years           | 22         | search of gainful employment in the cities. There is also |
|                 | 10-14 years              | 35         | significant number of immigrants into these areas either  |
|                 | 5-9 years                | 10         | for work, business, or education.                         |
|                 | Below 5 years            | 6          |   |
| Marital Status  | Married                  | 49         | The survey shows that there are more married people       |
| of              | Single                   | 31         | across the locations which denotes prevalence of a        |
| Respondents     | Widowed                  | 15         | family system within these communities                    |
|                 | Divorced/Separated       | 5          |   |
| Main            | Public sector            | 27         | Self-employed/Artisans/ Traders/Industrial/business       |
| occupation of   | Fishermen                | 11         | forms the largest group 40% especially in the south-east  |
| Respondents     | Farmers                  | 16         | and south south zones. Notably, the fishermen were        |
|                 | Self employed/Artisans/  | 42         | more in the south south states while the farmers were     |
|                 | Traders/Industrial/busin |            | more in the southwest states. Public sector and           |
|                 | ess                      |            | unemployment was almost evenly spread across all 3        |
|                 | Unemployed               | 4          | zones.  |
| Monthly         | N0 - N30,000             | 7          | The predominant monthly income among the                  |
| Income in       | N31,000 – N60,000        | 24         | respondents is N61,000 - N1000,000.00 which is 27%,       |
| Naira           | N61,000 – N100,000       | 27         | closely followed by N31,000 - N60,000 at 24%. It is       |
|                 | N101,000 – N200,000      | 17         | noteworthy to state that the South-East had a slightly    |
|                 | Above N200,000           | 21         | higher income average than the South-west, while the      |
|                 |                          |            | south south had the lowest average income in the south    |
|                 |                          |            | based on this assessment.                                 |
| Size of         | Large (above 7)          | 27         | The most common family size indicated within the          |
| immediate       | Medium (4 to 7)          | 59         | project communities is medium 4-7persons in a             |
| tamily of the   | Small (2 to 4)           | 14         | household.  |
| respondents     |                          |            |   |

| Description                | Category                | Percentage | Findings  |
|----------------------------|-------------------------|------------|---|
| Access to                  | Primary Education       | Very       | All of the FUC's host communities have access to            |
| Education                  | -                       | good       | primary schools and secondary schools within the area,      |
|                            | Secondary Education     | Very       | both government and private schools, while access to        |
|                            |                         | good       | higher institutions is also within close proximities.       |
|                            | Higher Institution      | Very       | Hence generally there is access to education, except in a   |
|                            |                         | good       | few cases where some persons do not attend school           |
|                            |                         | 0          | because they cannot afford school fees.                     |
| Condition of               | Very Good               | 12         | The majority of the respondents (39%) disclosed that        |
| roads to the               | Good                    | 21         | the condition of the roads to the communities are poor.     |
| community                  | Fair                    | 28         | This was evident due to observed erosion on many of         |
|                            | Poor                    | 39         | the earth roads and potholes on many of the tarred          |
|                            |                         |            | roads which has dilapidated many of the roads.              |
| Access to                  | Very Good               | 75         | Most of the respondents stated very good access to good     |
| good                       | Average                 | 17         | hospitals especially the private hospitals, which were      |
| healthcare                 | Poor                    | 8          | also many across the communities. Though some               |
|                            |                         |            | indicated average due to the high costs of treatment.       |
|                            |                         |            | Those that stated poor indicated absence of good            |
|                            |                         |            | maternity care within close proximity and also absence      |
|                            | Covernment Dine Devre   | 10         | of uoctors for emergencies at night.                        |
| ALLESS IU<br>Dotable Water | Water                   | 10         | for domestic use within the communities                     |
| within the                 | Borehole                | 72         |   |
| communities                | Well                    | 4          |   |
|                            | Water Vendors / Others  | 14         |   |
| Drinking                   | Bottled Water/Dispenser | 14         | Most respondents 67% rely on sachet water for drinking      |
| Water Source               | Borehole                | 19         | as they stated that usually the borehole water is not too   |
|                            | Well                    | -          | fit for drinking because it is not treated.                 |
|                            | Sachet Water            | 67         |   |
| Access to                  | National Grid           | 20         | The National grid is epileptic and satisfy just about 20%   |
| electricity                | Generator               | 82         | of respondents. Most people rely on generators for          |
| within the                 | Solar                   | 23         | power including those that are connected to National        |
| communities                | Others                  | -          | grid. About 23% of respondents have solar panels            |
|                            |                         |            | especially for their businesses.                            |
| Main fuel you              | Fire wood/charcoal      | 7          | Gas and kerosene are the most used because the              |
| use for                    | Gas                     | 36         | national grid is epileptic. There is a huge opportunity for |
| cooking                    | Kerosene                | 27         | clean cook stoves in these areas.                           |
|                            | Electricity             | 12         |   |
|                            | Clean stoves            | 18         |   |
|                            | Saw Dust                | -          |   |
| <b>m e e e e</b>           | Others                  | -          |   |
| Type of toilet             | Bush                    | 3          | Water closet system is the most used. Many homes have       |
| lacinty you                | water Lloset            | 52         | replaced the traditional pit latrines with the VIP toilets. |
| use                        | I raditional Pit        | -          |   |
|                            | Othera                  | 45         |   |
| Wasta                      | Buch                    | -          | Indiggriminate dumning of values is the most service        |
| disposal                   | Open Burning            | ד<br>רי    | muscimmate unippling of refuse is the most common           |
| method                     | Indiscriminate dumning  | 20         | 39% while about 25% depend on private waste                 |
| memou                      | Incinerator             | 57<br>5    | collectors especially from the Local Government             |
|                            | Organized Collection    | 25         | Authorities.  |
|                            | Rurving                 |            |   |
| Common                     | Malaria                 | 78         | Malaria is most prevalent amongst the respondents           |
| diseases in                | Typhoid                 | 49         | 78%, followed by typhoid 49%                                |
| vour area                  | Diarrhea/Cholera        | 19         | , o, o, ionowed by typnola 1970.                            |
| , our ur ou                | Respiratory Infections  | 24         |   |
|                            | Stomach ache            | 43         |   |

| Description    | Category              | Percentage | Findings   |
|----------------|-----------------------|------------|--|
|                | Headache/eye problems | 35         |  |
| Are you aware  | Yes                   | 14         | Larger percentage (86%) of the respondents stated that   |
| of the AGILE   | No                    | 86         | they were unaware of the project while 14% are aware     |
| project before |                       |            | either because they are members of the School Based      |
| now            |                       |            | Management Committee (SBMC) or Parents Teachers          |
|                |                       |            | Association (PTA). This is understandable as the schools |
|                |                       |            | are run directly by the Federal Government and not       |
|                |                       |            | community owned  |

# 4.6 Social and Socio-economic Baseline for Women in Nigeria

Nigeria has a Current female population of 111,374,345 about 49.4% of Nigeria's population (Nigeria Population Clock – November 2023). The country has a long history of gender inequality and discrimination against women. Women in Nigeria face a number of challenges, including limited access to education, health care, and economic opportunities. Women are also disproportionately affected by poverty, violence, and other forms of discrimination.

## 4.6.1 Women Roles in the Society

The social role of women in Nigeria varies according to religious, cultural and geographic factors.

- For instance, women in Northern Nigeria are more likely to be secluded in the home than women in Southern Nigeria, who tend to participate more in public life. (Usman Alamin 2018). Northern women in Nigeria face a variety of challenges, including limited access to education, health care, and economic opportunities. They are also subject to gender-based violence, including early and forced marriage, female genital mutilation, and honor killings. In addition, they are often excluded from decision-making processes and lack representation in government. Despite these challenges, northern women are increasingly advocating for their rights and working to improve their lives and the lives of their communities. They are engaging in grassroots activism, forming networks and organizations to support each other, and advocating for policy change. However, in the last few years, the rate of women's employment has apparently increased as more women have been employed in the modern sector.
- In the south, women traditionally have economically important positions in interregional trade and the markets, worked on farms as major labour sources, and have influential positions in traditional systems of local organization. There are also more women headed households in the south, which is now been seriously considered in Nigeria's development plans. In Southern Nigeria, widows experience different forms of treatment from family which is not a common practice experienced in the north.

## 4.6.2 Challenges for Girls in Nigeria

Some challenges for the girls and women of Nigeria include child marriage, girl child labor, rape and domestic violence<sup>17</sup>

• Child marriage<sup>18</sup> is quite common in Nigeria, an estimated 44% of girls in Nigeria are married before their 18<sup>th</sup> birthday and the country, also, records the 11<sup>th</sup> highest rate of

<sup>&</sup>lt;sup>17</sup> "Rape Culture - Women's & Gender Center". www.marshall.edu. Retrieved 2022-12-12.

<sup>&</sup>lt;sup>18</sup> Child marriage is a marriage or union between two people in which one or both parties are under the age of 18.

child marriage (UNICEF 2013). The prevalence, however, varies greatly by region, with a higher prevalence in the north. The country has a number of laws at various levels meant to tackle this problem, which requires enforcement. Sociocultural/religious leaders are being enlisted in the fight against child marriage especially across Northern Nigeria. There is also increasing community awareness of the impact of the problem through continuous advocacy for the rights of the girl child, girls empowerment programs and parents' education.

- Domestic violence<sup>19</sup> takes many forms including physical, sexual, emotional, and mental. Traditionally, domestic violence is committed against females. Common forms of violence against women in Nigeria are rape, acid attacks, molestation, wife beating, and corporal punishment. The Nigerian government has taken legal proceedings to prosecute those who abuse women in many states. There is currently a push in Nigeria for federal laws concerning domestic violence and for a stronger national response and support for domestic violence issues.
- Girl child labour in Nigeria refers to the high incidence in this nation of girls aged 5–14 ٠ who are involved in economic activities outside education and leisure. The prevalence of girl child labour in Nigeria is driven by social, demographic, and economic factors such as poverty, loss of parental employment, loss of a parent or family guardian, rural-urban migration, large family size, and cultural norms such as polygamy. Other drivers include the mal-distribution of schools, poor accessibility, and the high cost of tuition. Recently, conflicts and terrorism have caused internal displacements of people and damage to school facilities, pushing more children into child labour. Moreover, the mass killings of communities by bandits in northern Nigeria have created more orphans and potential victims of child labour. (Bhalotra, Sonia. "Child labour in Africa"). The use of young girls in economic activities exposes them to dangers that sometimes result in sexual assault, loneliness, anger, and exploitation. The Child's right Act 2003, provides a platform for protection of children against child labour, exploitation, and other forms of social vices, while the National Gender Policy (Revised 2022) includes the elimination of cultural/ religions gender-based biases and harmful cultural and religious practices which rise to inequalities in gender-role by ensuring: ensure equal access to women, boys and girls to both formal and informal education eliminate the high risks linked to many harmful traditional cultural practices, which still put threaten the health of women.

#### 4.6.3 Women's Health

Nigerian women and girls are disproportionately affected by Nigeria's healthcare system. One reason for this is the prevalence of patriarchal norms that give men jurisdiction over women's medical decisions. This is exacerbated by poverty, lack of education, and the resources required in order to visit medical facilities. The Nigeria Demographic and Health Survey conducted in 2018 reveals that nearly 52% of Nigerian women experience at least one issue when trying seek healthcare services, with financial insecurity being the biggest hindrance. Government has initiated several programmes to help bridge these gaps including the New Health Care Model in Nigeria to improve women and children's health, through the World Bank supported Saving One Million Lives Program for Results (PforR). The World Health Organization (WHO) also

<sup>&</sup>lt;sup>19</sup> Domestic violence is a pattern of behavior in which one person in an intimate relationship or marriage uses physical violence, coercion, threats, intimidation, isolation, stalking, emotional abuse, sexual abuse, or economic deprivation to control and/or harm the other person.

supported the Federal Ministry of Health (FMOH) to develop guidelines and policies that will aid in addressing key gender gaps in access to good healthcare. In addition, there are several campaigns and support programs at the Primary Healthcare Centre levels, which are more accessible to women and girls.

## 4.6.4 Income Generating Activities

Women play a major role in livelihood activities such as subsistence food production, food processing, home crafts market trade etc. (FAO, 2011). Women activities mainly include petty trading, vocational enterprises, handicraft, farming and agro-processing, producing agricultural raw materials for our industries. Many women in the Northern States are engaged in some form of agriculture, processing and trade as well as raising livestock, and also activities like hair dressing, tailoring, petty trading, while some women are not gainfully employed either due to socio-cultural and religious beliefs or lack of education and competency. Conversely, some women are still not gainfully employed either due to socio-cultural and religious beliefs or lack of skills and education. Conversely in the south, women are also engaged in active agriculture are also engaged in agriculture (especially in the rural areas) and those in the urban areas are engaged in businesses and are found in more professional spheres and institutions (government and private).

Across board, constraints to women's livelihood activities include institutional factors, poor access to training and capacity building programs, limited access to infrastructure facilities, poor access to credit and farm inputs, limited access/use of technology etc. The Government of Nigeria is advancing several programs to support women economic empowerment in the country including the following:

- Nigeria for Women Program Scale Up (NFWP-SU) supported by the World Bank, the scale-up financing will further support the government of Nigeria to invest in improving the livelihoods of women in Nigeria.
- Government initiated the Women's Fund for Economic Empowerment and Business Development for women entrepreneurs.
- Thousands of women farmers are receiving the tools, information, and resources they need to increase their incomes and the lives of their families and communities thanks to a partnership between Feed the Future and the Nigerian Trade Hub (USAID).
- Partnership programmes with UN Women, other UN agencies, Food and Agricultural Organization (FAO), UN Industrial Development Organization (UNIDO), the UN Development Program (UNDP) amongst others.

# 4.6.5 Women Education

According to UNESCO (2015), Lack of government's commitment and poor funding of the education sector has a negative impact on educating the girl-child. The number of girls who completed their primary education is about 66% compared to more than 80% for boys. In terms of the out-of-school rate, 32% of girls are not enrolled in school which is higher than 28% for boys (World Bank, 2018).

According to Stand With A Girl (SWAG) Program, the number of children not in school in Nigeria is between 18.5 to 20 million, and 2 out of every 3 out-of-school children in Nigeria is a girl, making up 62% of the number of out-of-school children. This reality is partly a product of the

civil unrest and crisis plaguing Northeast Nigeria, resulting in over 2.8 children out of school. As a result, 2.8 million children in the area are in need of education, with 75 percent of children in IDP camps not attending school.

Females in Nigeria have a basic human right to be educated and this right has been recognized since the 1948 adoption of the Universal Declaration on Human Rights (UDHR). Female education has an important impact on the development of a stable, prosperous and healthy nation state resulting in active, productive and empowered citizens. Educating girls develop growth rates, encourages independence of the girl child and reduces social disparities. In 2009, the Nigerian Population Council (NPC) observed that women with higher educational qualifications are more likely to be in formal wage employment than those at the level of primary school education.

To ensure equal access to education the following measures have been put in place by the Nigerian Government:

- The National Policy on Education states that access to education is a right for all Nigerian children regardless of gender, religion and disability.
- The National Policy on Gender in Basic Education includes increasing girls access to education by increasing girls' enrolment in schools, retention, completion, and performance of girls.
- The Nigerian Government is also working to improve the education of girls by recruiting more female teachers, creating skill acquisition programmes for girls and women, and providing textbooks at subsidized rates, among other measures.
- Developmental support programmes are being implemented across the country including the Adolescent Girls Initiative for Learning and Empowerment (AGILE) Project, Better Education Service Delivery for All (BESDA) Operation Project for Nigeria, Innovation Development and Effectiveness in the Acquisition of Skills (IDEAS), Inclusive Basic Service Delivery and Livelihood Empowerment Integrated Programme (IBSDLEIP) amongst others.
- The Spotlight Initiative, through UNESCO, launched the Accelerated Second Chance Education Programme meant to re-introduce dropped-out women due to pregnancy back to school.
- Programs aimed at educating girls in Internally Displaced Camps (IDPs) include Stand With A Girl (SWAG) Education project to send more adolescent Girls from Internally displaced persons camp back to school;

# 4.6.6 Gender Based Violence

Nigeria ranks 118 out of 134 countries on the Gender Equality Index. Women's disadvantaged position and lack of decision-making power in the social, economic and political spheres is reflected in policies, laws and resource allocation that thwart progress towards gender equality in the country. More than 70 percent of women live below the poverty line, and maternal mortality ratio is among the highest in the world at 576 per 100,000<sup>20</sup>. The unequal distribution of power between men and women, along with engrained norms and rigid expectations on gender roles are the core drivers of GBV. GBV cuts across culture, level of education and income,

<sup>&</sup>lt;sup>20</sup> The 2013 Nigeria Demographic and Health Survey <u>https://dhsprogram.com/pubs/pdf/PR41/PR41.pdf.</u>

religion, ethnicity, and other demographic indicators. GBV is directed at an individual based on his or her biological sex or gender identity. It includes physical, sexual, verbal, emotional, and psychological abuse, threats, coercion, and economic or educational deprivation, whether occurring in public or private life.

Nigeria's national government has taken steps to penalize and address GBV and SEA, the institutional champion of women's and children's rights and GBV issues within the government is the Federal Ministry of Women Affairs. The regulatory framework to address both GBV, SEA and VAC is uneven because the Nigerian legal system is plural, and different legal systems coexist, namely, the statutory law, Sharia law in the northern regions, and customary law in rural areas. The simultaneous application of this three-tier system creates differentiated degrees of protection to women's and children's rights which varies in every state and its enforcement is weak.

Insufficient budget allocation both at national and state levels, coupled with inadequately trained and staffed structures to provide social welfare, justice, education and health services that are women, child and survivor centred.

## Measures Taken by Nigerian Government and Partners to address GBV

Two key national laws address GBV: the Child Rights Act (CRA, 2003), and the Violence Against Persons Prohibition Act (VAPP, 2015).), which is binding on the Federal Unity Schools considering they are directly under the Federal Government.

The World Health Organisation (WHO) has also put in place, health sector plans for responding to GBV in Borno and Adamawa states as well as trained over 150 WHO hard-to-reach mobile team members to provide first line services mainstreamed into other essential services.

Governors of Nigeria's 36 states unanimously declared a state of emergency on GBV in June 2020. As part of their declaration, the governors also called on all states to immediately launch sex offender registries and push for tougher federal punishment for abuse and violence against women. There has been other high-level engagement with the legislature to put in place strong laws against Gender-based violence in Nigeria.

However, efforts are lacking in the health sector, which is often times, the first entry point for most survivors of Sexual violence. Many of the Primary Healthcare Centres are able to provide reproductive health services, however, they lack basic amenities such as drugs, qualified personnel, treatment for sexually transmitted diseases, rape kits including post-exposure prophylactics and emergency contraception etc. The need therefore exists for mainstreaming GBV services within the healthcare system and linking survivors to other services, build capacity of health workers on how to adequately respond to survivors, ensure optimal referral to other services including legal and social/protection services remain the main challenges in GBV response.

Sexual assault referral centres - commonly known as SARCs - provide crucial services for survivors of sexual and gender-based violence (SGBV). As of November 2021, there were 29 Sexual Assault Referral Centres (SARCs) in Nigeria established within hospitals and clinics across various states in the country (British Council, 2021). Victims can 'walk-in' to the SARC or

can be referred by any number of agencies including the Police, Ministries of Gender / Women Affairs, Hospitals, CSO/NGOs, etc.

ReportGBV is a National Gender-Based Violence dashboard of the Federal Ministry of Women Affairs (FMWA) to report on violence against women and girls in Nigeria<sup>21</sup>. It is supported by the EU-UN Spotlight Initiative project. Currently reported cases as of November 2023 are 29,525 as shown in figure 23 below according to the ratio per state, while a total of 865 GBV-associated Civil Society Organisations/ Service providers have been mapped across the country, with Niger state having the highest number at 188 while Zamfara and Yobe have the least numbers at 2 each as shown in figure 23 below.



Figure 23:Reported GBV Cases in Nigeria November 2023

■ 0 ■ 1 - 199 ■ 200 - 299 ■ 300 - 399 ■ 400 - 599 ■ 600 - 799 ■ 800 - 999 ■ Above 1000 Source: FMWA GBV: National Gender Based Violence Dashboard



Figure 24: GBV-associated Civil Society Organisations/ Service providers

■ 0 ■ 1 - 9 ■ 10 - 49 ■ 50 - 99 ■ 100 - 199 ■ 200 - 299 ■ 300 - 399 ■ 400 - 499 ■ Above 500 Source: FMWA GBV: National Gender Based Violence Dashboard

Baseline information obtained from consultations with students, school staff and community women/girls during the preparation of this ESMP revealed that most of them are not aware of the existence of GBV services. Furthermore, they may also not be able to access these services if it is not within their immediate communities because of lack of transportation and also they are

<sup>&</sup>lt;sup>21</sup> https://reportgbv.ng/#/home

not sure if they can trust such services to be discreet and help them. However, many of them are willing to access these services if they are available at the Primary Healthcare Centres due to proximity and familiarity with the staff.

# 4.7 Socio-economic statistics for the Federal Unity Colleges

## Access to Water

All the schools have boreholes either as primary sources of water or secondary source, however this is not sufficient because the capacity of the boreholes cannot cater for the entire school population. In addition, in some cases, there is difficulty in getting water during the dry season because the aquifer is too low and they have to depend on other sources such as purchase from water tankers such as FSTC Otukpo. Some schools have access to Government reticulated water, though supply is often erratic. Rainwater harvesting is practiced by some schools in the southeast such as FGC Enugu. It is also advised that other schools practice the same such as those in Benue state (FSTC Otukpo, FGC Vandekiya and FGC Otobi where the aquifer is very low. Schools like FGGC Kabba face difficulties with borehole drilling, which is usually unsuccessful and requires modern geophysical equipment for high accuracy in groundwater prospecting. Lack of access to water is a major challenge for the maintenance of WASH Facilities.

## Access to WASH Facilities

About 35% of the schools have a combination of water closet and squat toilets, 49% have VIP/Pour flush systems, 8% use traditional pit systems alone, while about 8% use mainly water closet systems. The number of WASH facilities are inadequate to cater for the number of staff and students, and lack of access to water is a major challenge for the use and maintenance of these toilets which has resulted in open defecation in about 90% of the schools visited. The poor WASH situation has led to some students being discouraged to attend school especially girls and also female teachers.

## Access to Hygiene and WASH programs

Only about 12% of schools stated they receive periodic hygiene and sanitation programs either from the Ministry of Health, partner NGOs, old students association and PTA. Others do not receive such programs. The absence of such programs has contributed to the poor state of hygiene in these schools where open defecation, indiscriminate disposal of pads and blockage of toilets with pads are observed. Such programs need to be embedded in the sustainability plan for WASH interventions in the FUCs.

#### Access to Healthcare

All the schools have a sick bay/infirmary/dedicated room for first aid treatment. Almost 90% of these do not have resident doctors, many have nurses or health attendants, with limited supply of drugs and treatment facilities. When the cases go beyond the capacity of the school the students are taken to the nearest Government hospital in the areas/LGA.

#### Access to Electricity

Power is a major challenge facing all the schools. 82% of all schools depend on generator as their primary source of power. With the increment in fuel price, many schools go for days without power. A further 14% depend on the national grid as primary source, which is erratic and sometimes the transformers could spoil for months without been fixed, and those that have

generators have to depend on them for that period. The schools need to be encouraged to start installing solar panels as alternative energy source and this can be supported by AGILE.

## Vulnerable Groups – Learners and Staff

There is a significant number of learners with disabilities and also teachers with disabilities across the FUCs. An estimated 130 learners have one form of disability, while an estimated 39 number of teachers have one form of disability. This is disaggregated in table 7 below:

| School                | Type of Disability             | Student | Teachers |
|-----------------------|--------------------------------|---------|----------|
| FGC Rubochi FCT       | Albinism                       | 1       |          |
|                       | Partial blindness              | 1       |          |
| FGGC Minjibar Kano    | Fully Blind                    |         | 1        |
|                       | Partially Deaf                 |         | 1        |
| FGC Tambuwal Sokoto   | Limp                           |         | 1        |
|                       | Physically impaired (Crawling) |         | 1        |
| FSC Sokoto            | Physically impaired            |         | 1        |
| FGC Ibilo             | Physically impaired            |         | 1        |
|                       | Dwarfism                       |         | 1        |
| FGC Ijanikan          | Visually impaired              | 40      | 2        |
| FGC Keffi             | Albinism                       | 1       |          |
|                       | Limp                           | 3       |          |
| FGC Odogbolu          | Limp                           | 1       |          |
| _                     | Hearing impairment             |         | 2        |
|                       | visual impairment              |         | 1        |
| FGGC Sagamu           | disability using a wheelchair  |         | 1        |
| Queens college Lagos  | visual impairment              |         | 2        |
| FGGC Bauchi           | Blind and armless              |         | 3        |
| FSTC Yaba Lagos       | Deafmute                       | 17      |          |
|                       | Deaf and visually impaired     |         | 2        |
| FGGC Gusau Zamfara    | Limp                           |         | 1        |
| FGC Jos Plateau       | Blind                          |         | 1        |
|                       | Deaf                           |         | 1        |
| FGGC Akure            | Limp                           |         | 1        |
|                       | Blind                          |         | 1        |
| FGC Port Harcourt     | Blind                          | 1       |          |
|                       | Limp                           | 1       |          |
| FGGC Ibusa Delta      | Deafmute                       |         | 1        |
| FGC Kwali FCT         | Physically impaired            |         | 2        |
| FGC Orozo Nasarawa    | Amputee                        | 1       |          |
|                       | Albinism                       |         | 1        |
| FGGC Imiringi Bayelsa | Limp                           |         | 2        |
| FGGC Benin            | Juvenile Arthritis             | 39      |          |
|                       | Limp                           | 1       |          |
|                       | Impaired hearing               |         | 1        |
| FSTC Uromi            | Limp                           | 5       |          |
| FGGC Ipetumodu        | Limp                           | 4       | 6        |
| Kings College Lagos   | Visually impaired              | 14      | 2        |
|                       |                                |         |          |
| Total                 |                                | 130     | 39       |

| Table 7. Tumor | of Wulnoro | hilition | Notod | 0.020.00 | the | FUC  |
|----------------|------------|----------|-------|----------|-----|------|
| rable / Types  | or vumera  | Dillues  | Noteu | aci 055  | uie | rucs |

For the learners, the most prominent challenges are visual impairment, hearing impairment and walking challenge, while for the teachers, challenge with walking is the most prominent.

Consultations with these groups are provided in chapter 8 of this ESMP which includes their challenges.

The AGILE Project intervention includes designs to support persons with disabilities such as creating access ramps, building special toilets and rail supports. However, more considerations should be made such as good lightening, heights of furniture and electrical sockets, adequate turning radius for doors and walkways, provision of braille, etc. AGILE can also institute special programs in these schools.

## **Security Concerns**

Insecurity is a threat to some states and it also affects academic activities in some schools. This concern is more prominent in some northern states including Adamawa, Sokoto, Yobe, Niger, Zamfara, Kebbi and Kaduna. Specifically, 6 of the FUCs could not be physically accessed due to insecurity in the areas (FSTC Kafanchan in Kaduna, FSTC Zuru in Kebbi, FGC Birnin Yawuri in Kebbi, FGC Wukari in Taraba state, FGGC Buni Yadi in Yobe state and FGGC Anka in Zamfara State).

FGC Birnin Yawuri has currently been temporarily relocated to share another school in Birnin Kebbi until the security situation is addressed, FGC Buni Yadi are currently operating from FGGC Potiskum premises, while FSTC Zuru and FGC Wukari the schools are temporarily closed.

Other schools with notable security concerns include FGC Ibillo in Edo, FGC New Bussa in Niger and FGGC Bida in Niger, FGGC Gusau in Zamfara and FGC Jos in Plateau. Though it was gathered during the visits that the insecurity situation in these 5 areas have been brought under control by the Government and security agents.

Federal, state and local governments have taken several steps to combat insecurity across the country including the following measures:

- Increase in annual security budget to help fight insecurity.
- Purchase of arms and security equipment to fight insecurity
- Close-down order to schools in security risk areas especially boarding schools. In some instance the students are merged with other schools in relatively safer areas.
- Nigeria Security and Civil Defence Corps (NSCDC) operatives are usually assigned to schools
- Police and NSCDC provide security surveillance and quick response in case of emergencies
- Department of Secret Service (DSS) to provide secret security information to the Minister of Education
- Local governments use local vigilantes to ensure security is provided including schools within their jurisdiction
- The Federal Ministry of education collaborates with security apparatuses and stakeholders including vigilante groups and LGA chairpersons to ensure security for the students.
- The Federal Ministry of Education has implemented a policy on safe schools initiatives (https://education.gov.ng/wp-content/uploads/2021/09/National-Policy-on-SSVFSN.pdf)
- The AGILE Parent SPIUs have prepared and will implement Security Management Plans (SMPs).
## 4.8 Baseline of a Typical Federal Unity College

## Location and Setting

- The FUC is usually in a secluded location some kilometers away from the community, usually a bit on the outskirts of town, and is fenced all round with a controlled double carriage entrance/exit gate as shown below for FGGC Ipetumodu in Osun State.
- All the FUCs are fenced, however, a few have some portions which have collapsed due to flooding or structural failure as stated in section 1.4 on description of the project beneficiary schools, an example is shown below.

## **Characteristics of the FUCs**

- Using FGGC Ipetumodu as a sample, the school (FGGC Ipetumodu) is a girls' school and comprises of both day and boarding facilities (hostels and kitchen).
- There are about 2000 students in 2023 (based on information from the principal), 134 teachers (65 male and 69 female) out of which 98 are full time while 38 are part time (volunteers or NYSC).
- The distance from the entrance gate to the classrooms in the FUCs is typically between 20m to 100m depending on the size of the school and structural arrangements.
- The administrative building is usually located closer to the entrance gate and accommodates the school management and administrative staff.
- There are no notable areas of traffic issues around this school due to the secluded nature of this school and is typical of many FUCs except in a few places as mentioned in Table 8.

#### State of facilities

- The school (FGGC Ipetumodu) like most FUCs primarily consists of administrative buildings, classrooms, laboratories, library, hostels, multipurpose hall and clinic.
- Some schools have up to 2000 students to about 120 teachers and about 30 classrooms (though this varies significantly as shown in annex 10: Baseline description of the FUCs), which is inadequate leading to overcrowding of the classrooms, whilst about 10 of these require renovations.
- In FGGC Ipetumodu, there are 30 toilets for the students and 12 toilets for the teachers. The toilets in the school are semi pit in nature meaning that though it is not the traditional hole pit latrine, students still have to squat. The toilets are not adequate to cater for the population and need to be modernised. More than half of the toilets were in bad condition either broken down or due to lack of water, thus resulting in open defecation as alluded by students during consultations. Some pictures are depicted in annex 3.
- There are two mechanical boreholes in the school, but it is not always in use as the school depends on electricity to pump water, which is very erratic, and the high cost of diesel. Furthermore, the numbers of the boreholes are not sufficient leading to queue by students for water. Average boreholes number across the FUCs is 4 mechanically powered, with about 2 tanks each with varying capacities across the schools, averagely 250L, some metal and some are plastic tanks.
- There is generally poor maintenance of facilities due to inadequate budget and lack of water for cleaning.

- There is poor waste management in the schools, with a lot of indiscriminate dumping of waste. Waste is managed through incineration and open burning in designated locations in the school behind the hostel which often causes air pollution and soot. (picture of a typical school incinerator is provided in annex 3)
- The school has a clinic which has one visiting doctor, one nurse and one social worker which was opined by the students to be sufficient, however, drugs are not always available. For escalated health issues, students are taken to Our Lady Catholic Hospital, Ipetumodu.



# CHAPTER FIVE POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION

## 5.1 Introduction

The AGILE project in the Federal Unity Colleges is expected to have beneficial impacts to students, parents, schools and the education sector at large. The environmental and social risk and impacts of the proposed rehabilitations works were assessed based on the potential interactions of the proposed project activities with the project environment and people, through site visit assessments, interactions with stakeholders at the schools and communities, analysis of physio-chemical properties in the project environment and socio-economic survey as reported in chapter 4 above.

## 5.2 Potential Positive Impacts

- Renovation of the existing school buildings will lead to an improved, conducive and safe learning environment.
- Provision of additional WASH facilities such as toilets and boreholes will promote hygiene and sanitation in the schools and thus preventing the spread of diseases such as cholera, diarrhoea, dysentery, shigellosis etc and also leading to retention of the girl child in school.
- School-age students in the project communities/LGAs/Country-wide will benefit from the project
- Renovation efforts can extend the lifespan of school buildings, ensuring that educational facilities remain functional and well-maintained.
- School staff will benefit from the WASH facilities and renovation works which will encourage staff retention.
- Learners and staff with disabilities will benefit from the design considerations to be included in the project such as access ramps, special toilets etc.
- Better environmental aesthetics in the schools from the presence of renovated buildings.
- Completion of fencing in schools will promote security in the schools.
- Temporary employment for locals within the community which will lead to income generation opportunities.

## **5.3 Potential Negative Risks and Impacts**

Although the proposed works have potential positive impacts, there are potential negative risks and impacts that may be triggered by the proposed works due to the nature of civil works and the use of labor. The potential negative impacts are presented for environmental & OHS impacts and social impacts by phases (pre rehabilitation, rehabilitation and post rehabilitation) as shown in table 8 below alongside mitigation measures.

| Table 8: Potentia | <b>Negative</b> | Impacts ar | nd Mitigation | Measures |
|-------------------|-----------------|------------|---------------|----------|
|-------------------|-----------------|------------|---------------|----------|

| Pre-Rehabilitation Phase Environmental Impacts                                   |  |   |  |
|--|--|---|--|
| Project Activity   | Potential Impacts  | Mitigation Measures   |  |
| Mobilization of<br>materials,<br>equipment and<br>vehicles                       | Pollution of ambient air from increased dust<br>generation from untarred road especially during dry<br>season and vehicular emissionsIncreased suspended particles from mobilization of<br>sand to siteIncreased noise levels/noise pollution within the<br>project school and communities   | <ul> <li>Ensure wetting of earth roads</li> <li>Ensure regular maintenance of vehicles</li> <li>Maintain a speed limit of 40kph or less on earth roads</li> <li>Ensure mobilization of materials such as gravels, sand, etc. are carried out using properly covered trucks</li> <li>Sensitize communities about unusual activities.</li> <li>Maximise activities during weekends, holidays and off academic periods as much as possible</li> </ul>  |  |
| Setting up of<br>staging area for<br>temporary &<br>short-term<br>onsite storage | Minimal loss of vegetation during land clearing and vegetative waste generation  | <ul> <li>Limit land clearing to the specific zone needed for the rehabilitation and WASH facilities.</li> <li>Protect all vegetation not required to be removed against damage. Replant or revegetate trees/shrubs with same species with a ratio of 3:1 for replant: removed.</li> <li>Vegetal waste can be given to farmers, however, if they contain other pollutants (the project committees should liaise with the State Ministries of Environment/EPA to test the waste) they should be evacuated by the state environmental protection/waste management authorities or licensed waste vendors</li> </ul> |  |
|  | Pre - Rehabili   | tation Phase – Social Impacts   |  |
| Mobilization of<br>materials,<br>equipment and<br>vehicles                       | Restriction of access within and around the school<br>during renovation works, including restricted access<br>to classrooms, administrative blocks etc.<br>Increase in traffic along major routes that are prone<br>to congestion from mobilization of equipment and<br>materials to site:<br>• FSTC Orozo at Nyaya junction and Jikwoy<br>market<br>• FGC Kano<br>• FSTC Ganduje<br>• FGC Bwari<br>• FGC Kaduna | <ul> <li>Adequate sensitization of students and staff of schools, as well as community members of the proposed works</li> <li>Clearly mark our areas for renovation and use caution tapes where necessary.</li> <li>Liaise with Road Safety Officers, State Road Traffic Agencies, police and community vigilante groups to help in control of traffic in hotspot zones</li> <li>Limit movement of materials and equipment to off peak periods; avoid market days, work resumption and closing hours.</li> <li>Implement the traffic management plan (TMP) in annex 7</li> </ul>                                |  |

|  | <ul> <li>Queens college - Traffic congestion<br/>sometimes on Iwaya - Onike road</li> <li>FGC Kiyawa</li> <li>FSTC Yaba -Traffic congestions on Morris<br/>Road</li> <li>FSTC Michika - Traffic Issues along Yola<br/>Maiduguri Road and Gazma market operates<br/>on Fridays</li> <li>FSTC Misau in Bauchi</li> </ul> |   |
|--|--|---|
|  | Potential vehicular and operational accidents for<br>students, staff and community members from<br>movement of equipment and materials to site   | <ul> <li>Use of adequately trained drivers</li> <li>Limit movement of materials and equipment to off peak periods; avoid market days, work and school resumption and closing hours.</li> <li>Delineate work areas with caution tapes</li> </ul>   |
|  | Increase in noise levels which will disturb school activities, communities, religious activities.  | <ul> <li>Adequate sensitization of students and staff of schools, as well as community members of the proposed works.</li> <li>Maximise off peak hours for movement and rehabilitation works</li> </ul>   |
|  | Conflicts between the contractors/workers and the<br>host communities or students and staff during<br>mobilization of equipment and materials to site  | <ul> <li>Workers to sign code of conducts and ensure good behavior. See annex 8 for samples</li> <li>Establish a grievance redress mechanism for complaints to be channeled and effectively addressed. See chapter 6</li> </ul>                   |
|  | Grievance from poor recruitment of local labour for semi- & unskilled labour by the project committee  | • Ensure compliance with the AGILE LMP which includes a transparent, fair and inclusive recruitment process.  |
|  | Transactional issues and grievances for burrow pits, staging areas/rental sites  | <ul> <li>Ensure well documented transactional agreements for such areas</li> <li>Establish effective GRM in the project areas to enable complaint uptake and redress</li> </ul>   |
|  | Project workers and drivers could be exposed to occupational health and safety risks such as accidents, injuries etc.  | Ensure workers implement occupational health and safety procedures including use of appropriate personnel protective equipment, safe work procedures, first aid box on site etc. see annex 6  |
| Engagement of<br>workers   | <ul> <li>Potential for SEA/SH/GBV</li> <li>Potential for spread of STDs, sexual relations with community members, female students and staff</li> </ul>   | <ul> <li>Sensitise students, school staff, Community leaders, women group, youth group on GBV prevention, response and reporting channels.</li> <li>All workers to be sensitized and sign Code of Conduct (CoC) and zero tolerance for</li> </ul> |
| Setting up of<br>construction<br>staging area for<br>temporary &<br>short-term | • Abuse of cultural norms if workers are foreign to the communities  | sexual integration with students, staff, community  |
| onsite storage<br>Potential  | Project workers including NPCU, SPIU, Consultants,   | <ul> <li>Avoid areas of high security risks untill the situation has been diffused as adjudged</li> </ul>   |

| exposure to<br>insecurity risks<br>such as<br>kidnapping,<br>banditry, etc. | could fall victim of kidnap, banditry, insurgency,<br>social conflicts etc. especially in the following areas:<br>FSTC Kafanchan in Kaduna, FSTC Zuru in Kebbi, FGC<br>Birnin Yawuri in Kebbi, FGC Wukari in Taraba state,<br>FGGC Buni Yadi in Yobe state, FGGC Anka in Zamfara,<br>FGC Ibilo in Edo, FGC New Bussa and FGGC Bida in<br>Niger, FGGC Gusau in Zamfara and FGC Jos in Plateau | <ul> <li>by security forces</li> <li>Liaise with the state security apparatus such as police, Nigeria Security and Civil Defence Corps (NSCDC) to provide security information and protection</li> <li>Appropriate security measures should be in place to prevent harassment or kidnapping of workers by domesticating and implementing the AGILE Security Management Plan (SMP)</li> <li>Adequate training on the SMP should be provided to all project workers and those engaged by the project</li> <li>Use of innovative monitoring and supervision methods such as the Geo-Enabling Initiative for Monitoring and Supervision (GEMS), Mapilliary, drones by the NPCU to monitor the ESMP implementation</li> </ul> |
|---|--|--|
|   | Rehabilitation   | n Phase – Environmental Impacts  |
| Project Activity  | Potential Impacts  | Mitigation Measures  |
| Demolition. Civil   | Increased generation of solid waste such as  | • Ensure proper sorting: storage and final disposal of waste, state environmental  |
| Works, Use of   | demolition waste can cause pollution to the  | protection/waste management authorities or licensed waste vendors  |
| Resources,<br>Labor   | environment and public health concerns if not properly managed   | Implement Waste Management Plan (see Annex 5)  |
|   | Hazardous waste generation especially in locations   | Hazardous waste should be handled with care using the right PPEs including nose masks,   |
|   | were ceilings to be renabilitated contains asbestos<br>such as FGGC Bwari and FGC Rubochi could lead to  | overalls, eye protection etc. to avoid/minimize exposure to the fibres, properly contained and segregated and handed over to the state environmental protection/waste  |
|   | air pollution, health risk from inhalation of asbestos   | management authorities for onward disposal. See annex 5 for guidelines.  |
|   | to asbestos material   | Where feasible, schedule removal of asbestos containing materials during the summer  |
|   |  | holidays, when the schools are completely closed, to minimize health risks from asbestos   |
|   |  | fibre inhalation, however, where this is not feasible, the area should be restricted   |
|   |  | temporarily for the period of removal, and affected materials should be properly   |
|   |  | contained and covered to avoid exposure of the fibre materials   |
|   | Human waste, indiscriminate defecation or open   | Provision of WASH & toilet facilities for workers either mobile toilets or constructed   |
|   | defecation by workers  | toilets which can be handed over to menial workers in school such as security, gardner etc. post project activities  |
|   | Risk of surface water pollution from dumping of  | Avoid tapping or sourcing materials (water) from nearby waterbody/river.   |
|   | waste or other contaminants such as chemicals, used  | • Drilling of borehole in the schools can be prioritized as initial activities and the water   |
|   | UIIS etc.  | can be used for the renabilitation works and handed over as part of the WASH   |

| Continuous         Waste and other materials should not be dumped into any surface water bodies           Continuous and myoement<br>of vehicles         Vehicular emissions and fugitive dusts from unstared<br>diseases for workers         Ensure regular maintenance of vehicles<br>insure regular maintenance of vehicles           Information<br>of vehicles         Risk of vehicular accidents for school staff, students,<br>communities and road users         Insure regular maintenance of vehicles           Land use -<br>burrow pits         Land degradation and increased susceptibility to<br>erosion due to excavation of earth materials around<br>and in burrow pits         Insure respleration of traffic in hotspot zones           Civil works,<br>material<br>handling,<br>machinery usage         • Workers' accidents such as Injuries, explosions,<br>electrical fires, leakages, fails from height, slips,<br>release of hazardous senergy, deaths etc.         • Ensure workers implement occupational health and safety procedures including use<br>of appropriate personnel protective equipment, safe work procedures, first aid box<br>on site etc.           Drilling of<br>boreholes         Risk of aquifer over-exploitation and pollution of<br>ground water resources due to borehole drilling,<br>finishing,<br>nobilization (WHO). Use of sanitary seal.         • Drilling of borehole should comply minimum specifications, World Health<br>Or as a decign from the NPCU.           Civil works -<br>Block work, wall<br>finishing,<br>nobilization of<br>materials and<br>equipment to<br>sepecially for school students and community<br>members         • Clearly mark our areas for renovation and use caution tapes where necessary.           Civil works -<br>Block work, wall<br>fooring,<br>mobilization of<br>materials and<br>equipment to </th <th></th> <th></th> <th>project in the school</th>  |                 |   | project in the school  |
|--|-----------------|---|--|
| Continuous use<br>and movement<br>of vehicles       Vehicular emissions and fugitive dusts from untarred<br>and movement<br>of vehicles       Ensure wetting of roads         and movement<br>of vehicles       Toutes could cause air pollution and eye/respiratory<br>diseases for workers       Ensure regular maintenance of vehicles         to/fro site       Risk of vehicular accidents for school staff, students,<br>communities and road users       Laise with Road Safety Officers, State Road Traffic Agencies, police and community<br>vigilante groups to help in control of traffic in hotspot zones         Land use -<br>burrow pits       Land degradation and increased susceptibility to<br>erosion due to excavation of earth materials around<br>and in burrow pits       Ensure workers implement occupational health and safety procedures including use<br>of appropriate personnel protective equipment, safe work procedures, first aid box<br>naterial<br>handling,<br>machinery usage       • Ensure workers staging area should be kept clean and clear bushes around.         Orliling of<br>boreholes       Risk of aquifer over-exploitation and pollution of<br>ground water resources due to berehole drilling.       • Trifti dation should also ensure periodic furnigation expecially during holidays         Civil works -<br>Block work, wail<br>Borkwork, wail<br>painting,<br>nobilization of<br>materials       Community bealth & safety risks such as accidents<br>and clear bushes and community<br>werkers staging area should be complement to off peak periods; avoid market days,<br>work and school resound and use caution tapes where necessary.         Uniting of<br>boreholes       Risk of aquifer over-exploitation and pollution of<br>ground water resources due to borehole drilling.       • Origination (WHO) WASH st   |                 |   | Waste and other materials should not be dumped into any surface water bodies                         |
| and movement<br>of vehicles<br>to/fro site<br>to/fro fro site<br>to/fro site<br>to/fro fro site<br>to/fro fro site<br>to/fro fro site<br>to/fro fro fro fro fro fro fro site<br>to/fro fro fro fro fro fro fro fro fro fro  | Continuous use  | Vehicular emissions and fugitive dusts from untarred  | Ensure wetting of roads  |
| of vehicles       diseases for workers       • Use of nose masks to prevent upper respiratory infection (URTT)         to/fro site       Risk of vehicular accidents for school staff, students, communities and road users       • Liaite with Road Safety Officers, State Road Traffic Agencies, police and community vigilante groups to help in control of traffic in hotspot zones         Land use - burrow pits       • Land degradation and increased susceptibility to erosion due to excavation of earth materials around and in burrow pits       • Ensure sourcing of earth materials from registered quarries and licensed construction vendors with appropriate quarry lease to prevent illegal sand mining.         Civil works, matchinery usage       • Workers' accidents such as Injuries, explosions, release of hazardous energy, deaths etc.       • Ensure workers timplement occupational health and safety procedures, first aid box on site etc.         machinery usage       • Bites could also occur from snakes and reptibes eccially in locations such as FGC Birmin Yusage       • First aid kits should contain antivenom.         preventiles of such as a quifer over-exploitation and pollution of brocholes       • Stafe over-exploitation and pollution of ground water resources due to borehole drilling       • Drilling of borehole should comply minimum specifications, World Health Organisation (WHO) WASH standard on borehole Drilling. 18m distance from septic tampering         Civil works - Block work, wall       Community health & safety risks such as accidents and community health and safety procedures intervals and equipment to of greak periods; avoid market days, work analtoria senorize aresources due to borehole drilling floating and   | and movement    | routes could cause air pollution and eye/respiratory  | Ensure regular maintenance of vehicles   |
| to/fro site       Risk of vehicular accidents for school staff, students, communities and road users <ul> <li>Laise with Road Safety Officers, State Road Traffic Agencies, police and community vigilante groups to help in control of traffic in hotspot zones</li> <li>Linit movement of materials and equipment to off peak periods; avoid market days, work resumption and closing hours.</li> </ul> Land use - burrow pits     Land degradation and increased susceptibility to revoin the excavation of earth materials around and in burrow pits         Civil works, material handling, release of hazardous energy, deaths etc.          Ensure workers implement occupational health and safety procedures, first aid box no site etc.         Machiney usage <ul> <li>Bites could also occur from snakes and reptiles especially in locations such as FGC Birnin Yauri (snake bite) and FSTC Jalingo (Reptiles), FGC Kaduna (snake)</li> <li>The school should also ensure periodic fumigation especially during holidays</li> <li>The school should also ensure periodic fumigation especially during holidays</li> <li>Obrilling of borehole should comply minimum specifications, World Health Organisatrio (WHO) WASH standard on borehole Drilling, fluids, oils, greases and trains (WHO), use of sanitary seal.</li> <li>Obrilling of borehole should comply minimum specification aperiodic and way from public tampering</li> <li>Clorary mark four areas for renovation and use caution tapes where necessary.</li> <li>Clorary mark four ana fact gramangement plan (CIISMP), including advert work and safety rules and safety rules and active tampering</li> <li>Clorary mark our areas for renovation and use caution tapes where necessary.</li> <li>Imit movement of stadets, staff and community mebers; all driver</li></ul>  | of vehicles     | diseases for workers  | Use of nose masks to prevent upper respiratory infection (URTI)                                      |
| communities and road usersvigilante groups to help in control of traffic in hotspot zonesLand user -<br>burrow pitsLand degradation and increased susceptibility to<br>erosion due to excavation of earth materials aron equipment to off peak periods; avoid market days,<br>work resumption and closing hours.Ensure sourcing of earth materials from registered quarries and licensed construction<br>vendors with appropriate quary lease to prevent illegal sand mining.Civil works,<br>material<br>handling,<br>materials<br>handling,<br>materials<br>handling,<br>materials• Workers' accidents such as Injuries, explosions,<br>electrical fires, leakages, fails from height, slips,<br>release of hazardous energy, deaths etc.<br>• Bitse could also occur from snakes and reptiles<br>especially in locations such as FGC Birnin Yauri<br>(snake bite) and FSTC Jalingo (Reptiles), FGC<br>Kaduna (snakes)• Ensure workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept clean and clear bushes around.<br>• The workers staging area should be kept  | to/fro site     | Risk of vehicular accidents for school staff, students,   | • Liaise with Road Safety Officers, State Road Traffic Agencies, police and community                |
| ImageImageImageLand use -<br>burrow pitsLand degradation and increased susceptibility<br>to<br>erosion due to excavation of earth materials around<br>and in burrow pitsEnsure sourcing of earth materials from registered quarries and licensed construction<br>vendors with appropriate quarry lease to prevent illegal sand mining.Civil works,<br>material<br>handling,<br>machinery usage• Workers' accidents such as Injuries, explosions,<br>electrical fires, leakages, falls from height slips,<br>release of hazardous energy, deaths etc.• Ensure workers implement occupational health and safety procedures including use<br>of appropriate personnel protective equipment, safe work procedures, first aid box<br>on site etc.Drilling of<br>boreholes• Bites could also occur from snakes and reptiles<br>especially in locations such as FGC Birnin Yauri<br>(snake bite) and FSTC Jalingo (Reptiles), FGC<br>Kaduna (snakes)• Ensure workers implement occupational health and safety procedures including use<br>of appropriate personnel protective equipment, safe work procedures, first aid box<br>on site etc.Drilling of<br>boreholesRisk of aquifer over-exploitation and pollution<br>ground water resources due to borehole drilling<br>ground water resources due to borehole drilling<br>tuel on site, air tight containers with lids, well labelled and away from public<br>tamperingCivil works -<br>Block work, wall<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>molifization of<br>molifization of<br>molifization and<br>pointing,<br>flooring,<br>mobilization of<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing,<br>horing, <br< td=""><td></td><td>communities and road users</td><td>vigilante groups to help in control of traffic in hotspot zones</td></br<>   |                 | communities and road users  | vigilante groups to help in control of traffic in hotspot zones                                      |
| Land use -<br>burrow pits         Land degradation and increased susceptibility to<br>erosion due to excavation of earth materials around<br>and in burrow pits         work resumption and closing hours.           Civil works,<br>material<br>handling,<br>machinery usage         • Workers' accidents such as Injuries, explosions,<br>electrical fires, leakages, falls from height, slips,<br>release of hazardous energy, deaths etc.         • Ensure workers implement occupational health and safety procedures including use<br>of appropriate personnel protective equipment, safe work procedures, first aid box<br>on site etc.           Drilling of<br>boreholes         • Eliss could also occur from snakes and reptiles<br>especially in locations such as FGC Birnin Yauri<br>(snake bite) and FSTC Jalingo (Reptiles), FGC<br>Kaduna (snakes)         • The school should also ensure periodic fumigation especially during holidays           Drilling of<br>boreholes         Risk of aquifer over-exploitation and pollution<br>ground water resources due to borehole drilling         • Drilling of borehole should comply minimum specifications, World Health<br>Organisation (WHO) WASI standard on borehole Drilling. 18m distance from septic<br>tanks (WHO), use of sanitary seal.           Civil works -<br>Block work, wall<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>painting,<br>flooring,<br>mobilization of<br>state work will<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>state work will<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>state work will<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>state work will<br>state WHD         • Clearly mark our areas for renovation and use caution tapes where necessary.           Internet to<br>state WASH bill         • Unplement comunity health and safety rules<br>adereut to trafic protocol of Federal Road Safety Corps (FRSC) and road  |                 |   | • Limit movement of materials and equipment to off peak periods; avoid market days,                  |
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| flooring,<br>mobilization of<br>materials and<br>equipment to<br>site WASH   | nainting.       |   | <ul> <li>Implement community health and safety management plan (CHSMD) including</li> </ul>          |
| mobilization of materials and equipment to site WASH       equipment to site WASH  | flooring,       |   | adequate sensitization of students staff and community members: all drivers must                     |
| <ul> <li>materials and<br/>equipment to<br/>site WASH</li> <li>Plan renovation activities in a phased approach, scheduling work during non-peak<br/>hours/ school holidays/weekends to minimize exposure to civil work hazards.</li> </ul>   | mobilization of |   | adhere to traffic protocol of Federal Road Safety Corps (FRSC) and road safety rules                 |
| equipment to<br>site WASH  | materials and   |   | • Plan renovation activities in a phased approach, scheduling work during non-neak                   |
| site WASH  | equipment to    |   | hours/ school holidays/weekends to minimize exposure to civil work hazards.                          |
| identify and allocate temporary facilities or classrooms to ensure that students and   | site, WASH      |   | Identify and allocate temporary facilities or classrooms to ensure that students and                 |

| facilities etc.  |   | staff are not using the civil work areas, which should be clearly demarcated and access restricted  |
|--|---|---|
|  | Fugitive Dust may likely affect the community health & safety especially areas with earth-based roads                                   | Ensure wetting of roads   |
|  | Disruption of learning activities during civil works<br>such as block work, roofing, etc.   | <ul> <li>Adequate sensitization of students and staff of schools, as well as community members of the proposed works</li> <li>Maximise off peak hours for movement and rehabilitation works</li> <li>Plan renovation activities in a phased approach, scheduling work during non-peak hours/ school holidays/weekends to minimize disruptions to regular school functions.</li> <li>Identify and allocate temporary facilities or classrooms to accommodate activities that are temporarily displaced due to the renovation works.</li> </ul>   |
|  | Potential impacts on physical and cultural resources including chance find  | <ul> <li>In the event of a chance find, project activities in that area should be suspended and the project committee should be informed immediately. The community leader/LGA authority should also be informed to ensure due process is followed to secure the finding before continuation of work in the area.</li> <li>All procedures should be duly documented by the project committee and reported to the SPIU/NPCU.</li> <li>Implement the chance find procedures in annex 17</li> </ul>  |
|  | Competition for resources such as water, healthcare,<br>food, WASH facilities etc. between the workers and<br>the school staff/students | <ul> <li>Prioritise drilling of boreholes early on to provide water for the civil works. Alternatively, liaise with the state ministry of water resources/LGAs on provision of water for civil works to be delivered to site through water tankers and offloaded to tanks provided on-site (which can be used as the tanks for the project boreholes subsequently).</li> <li>Food, first aid, drinking water, WASH facilities should be provided separately for workers. In the case of ill-health workers should be taken to the primary healthcare centres or other clinics/hospitals for treatment and not to rely on the school sick bays.</li> </ul> |
| Civil works –<br>Block work, wall<br>finishing,<br>painting,<br>flooring,<br>mobilization of<br>materials and<br>equipment to<br>site etc. | Increase in traffic along major routes that are prone<br>to congestion from mobilization of equipment and<br>materials to site          | <ul> <li>Liaise with Road Safety Officers, State Road Traffic Agencies, police and community vigilante groups to help in control of traffic in hotspot zones</li> <li>Limit movement of materials and equipment to off peak periods; avoid market days, work resumption and closing hours.</li> <li>Implement TMP in annex 7.</li> </ul>  |

| Use of Labor | Risk of Child Labour which can lead to Violence<br>Against Children and litigation against existing child<br>protection laws  | Prohibit child labor (under 18 years) and any practices that can put children including students at risk   |  |  |
|--------------|---|--|--|--|
|              | Risk associated with poor labor and working<br>conditions and welfare such as overexploitation, lack<br>of amenities like potable water, food, rest periods,<br>WASH, overtime (above 8hourly daily work) without<br>compensation etc.  | Comply with the AGILE LMP including provision of social amenities like potable water, food, rest periods (at least one hour lunch break period), WASH facilities, work hours (maximum of 8hourly/ compensate for overtime), workers health and safety including PPEs, first aid box, safety training etc. Workers to have access to and be sensitized on grievance mechanism such as complaint boxes, compliant phone numbers, grievance   |  |  |
|              | Conflicts between the contractors/workers and the<br>host communities or students and staff during<br>mobilization of equipment and materials to site   | <ul> <li>Workers to sign code of conducts and ensure good behavior.</li> <li>Establish a grievance redress mechanism for complaints to be channeled and effectively addressed.</li> </ul>  |  |  |
|              | <ul> <li>Potential for SEA/SH/GBV</li> <li>Potential for spread of STDs, sexual relations with community members, female students and staff</li> <li>Abuse of cultural norms if workers are foreign to the communities</li> </ul>   | <ul> <li>Sensitise students, school staff, Community leaders, women group, youth group on GBV prevention, response and reporting channels.</li> <li>Establish confidential and accessible reporting mechanisms for victims or witnesses to report incidents of SEA, SH, or GBV without fear of reprisal.</li> <li>All workers to be sensitized and sign Code of Conduct (CoC) and zero tolerance for sexual integration with students, staff, community.</li> <li>Mandatory training sessions for all project staff on appropriate behavior, respect for gender equality, and the prevention of SEA, SH, and GBV</li> <li>Engage with the local community to raise awareness about SEA, SH, and GBV, promoting a culture of respect and accountability.</li> <li>Prioritize the employment of local workers to minimize cultural clashes and enhance community integration. Provide training on project expectations.</li> </ul> |  |  |
|              | Project workers including NPCU, SPIU, Consultants,<br>could fall victim of kidnap, banditry, insurgency,<br>social conflicts etc. especially in the areas as listed<br>previously or based on security reports and<br>intelligence report as at the time of project<br>implementation | <ul> <li>Avoid areas of high security risk until the situation has been diffused as adjudged by security forces.</li> <li>Liaise with the state security apparatus such as police, Nigeria Security and Civil Defence Corps (NSCDC) to provide security related information and protection.</li> <li>Appropriate security measures should be in place to prevent harassment or kidnapping of workers by domesticating and implementing the AGILE Security Management Plan (SMP).</li> <li>Adequate training on the SMP should be provided to all project workers and those engaged by the project.</li> <li>Use of innovative monitoring and supervision methods such as the Geo-Enabling Initiative for Monitoring and Supervision (GEMS), Mapilliary, drones etc. by the</li> </ul>  |  |  |
| All project  | Potential emergency situations such as:   | <ul> <li>NPCU to monitor the ESMP implementation.</li> <li>Prepare and implement an emergency response plan in line with the guidelines in</li> </ul>  |  |  |

| Activities   | <ul> <li>incidents/accidents to workers, school students/staff</li> <li>theft or vandalism of civil works equipment or materials</li> <li>clash between project workers and community members</li> <li>security incidents such as kidnapping, banditry, ethno-religious clashes</li> </ul> | <ul> <li>annex 18.</li> <li>The project committee to communicate the emergency plan to all stakeholders involved in the project and in the response protocol.</li> <li>Domesticate and implement the AGILE security management plan.</li> <li>All incidents should be adequately documented by the project committee. Serious incidents involving fatalities, kidnap should be documented and reported to the SPIU/NPCU and the World Bank (through the NPCU) within 24hrs and 48 hrs respectively.</li> </ul>  |  |  |
|--|--|---|--|--|
| Desta et desta te  | Operation Phase (Post F  | Rehabilitation)- Environmental Impacts  |  |  |
| Continuous<br>usage of                                   | Generation of different types of wastes – solid waste,<br>e-waste (such as batteries, ICT equipment electric   | <ul> <li>Segregation and disposal of different types of waste into their respective bins</li> <li>As part of project activities, the schools should provide color coded waste bins for</li> </ul>   |  |  |
| classroom,<br>WASH,<br>boreholes and<br>other facilities | cables & fittings etc), sewage, menstrual pads   | <ul> <li>As part of project activities, the schools should provide color coded waste bins for segregation of waste and proper disposal of waste and liaise with the state EPAs/waste management agencies/ licensed waste vendors for waste evacuation.</li> <li>E-waste to be sent to Material Recovery Facilities/ recycling centres through the state EPAs/waste management agencies/ licensed waste vendors.</li> <li>Liaise with the state EPAs so sewage to be evacuated periodically.</li> <li>Old newspapers or recycled paper should be provided in the female toilets for girls to wrap their used pads. A covered waste bin should also be provided for collection in the female toilets</li> </ul> |  |  |
|  | Boreholes may fail and water may become<br>unavailable for school use especially for maintenance<br>of the WASH facilities especially in areas with<br>difficulty in getting ground water such as FSTC<br>Otukpo, FGC Vandekiya and FGGC Kabba   | <ul> <li>Ensure use of modern geophysical equipment known high accuracy in groundwater prospecting before drilling the boreholes and ensure it reaches the right aquifer.</li> <li>The SIPs will include rainwater harvesting in their proposals if the borwell yields are inadequate. The project can also include artificial recharge through borewell recharge structures and ground reservoirs to be filled with harvested rainwater, in such schools in addition to the elevated reservoirs, as the former can store more capacity.</li> </ul>   |  |  |
|  | <ul> <li>Poor maintenance of WASH Facilities may lead to damage of facilities which could cause environmental pollution and public health issues</li> <li>Water unavailability may impact cleaning and usage</li> </ul>  | <ul> <li>Prepare and implement a WASH maintenance schedule</li> <li>Attach water points/ boreholes to WASH Facilities.</li> </ul>   |  |  |
|  | Renovated facilities could be destroyed by termite<br>infestation especially in areas that reported termite<br>infestation like FGBC Apo in FCT, FGC Ugwolawo in<br>Kogi   | Good quality wood and materials and proper treatment to be used in the rehabilitation of buildings. Apply Dieldrex anti-termite solution to sides and ensure to collect run-off in a drip pan   |  |  |
|  | Structural failure as a result of flooding and erosion   | The schools should construct drainages, flood control structures, landscaping   |  |  |

|                             | especially in schools su ch where erosion and<br>flooding was reported such as FSTC Ogugu, FGC<br>Ugwolawo, FGC Vandekiya, FGC Birnin Yauri, FGC<br>Ijanikan, FSTC Shiroro, FGC Keffi, FGGC Lejja, FGGC<br>Jalingo, FGC Ganye, FGGC Akure, FGC Ido-Ani, FGC<br>Ibilo, FGGC Abuloma, FGGC Onitsha, FGC Nise, FGGC<br>Efon-Alaye, FSTC Usi-Ekiti, FGC Sokoto and FGC<br>Kaduna |   |
|-----------------------------|--|---|
| Use of Overhead             | The tank could fall and cause accidents.   | Tanks should be sturdily mounted  |
| boreholes                   | • The tank could also rust and pollute the water produced over time.   | • Ensure usage of plastic tanks which should be periodically (half yearly) washed out to remove sludge.   |
|                             | • There could be consumption of polluted water<br>leading to disease outbreaks if the borehole   | • Water filtration system UV/chlorination system should be included as part of the design and construction of the borehole systems  |
|                             | water is not treated   | <ul> <li>Use of pH correction filter which involves the use of a neutralising media in schools</li> </ul>   |
|                             | • Micro-organisms in water could cause water   | with high acidity or alkalinity such as FGC Portharcourt, Rivers State, FGGC Abuloma,   |
|                             | pollution, disease outbreak and ill-health   | FGGC, Lejja in Enugu and FGGC Bakori which groundwater analysis shows relative acidic conditions at that location, and FSTC Uyo, Akwa-Ibom State, FSTC Michika and FGGC Zaria which has more alkaline conditions.   |
|                             |  | <ul> <li>The schools should liaise with the SMEnv/EPA to conduct annual testing of borehole<br/>water to ensure water quality remains within acceptable limits. This activity should<br/>also be supported and budgeted by the Federal Ministry of Education</li> </ul> |
|                             | Presence of high nitrate content in locations such as<br>FGC Kano, FGGC Kazaure, FSTC Hadejia, FGC New-<br>Bussa, FSTC Lassa, FGGC, Jalingo, Kings College Lagos,  | • Include reverse osmosis filtration system (RO machines) in the design and apparatus for the borehole system for schools with values of high nitrate/heavy metals as stated in section 4.3 in this ESMP.   |
|                             | FSTC Ikare-Akoko, FGGC Ipetumodu and FGGC Abaji<br>could cause water pollution, disease outbreak and ill-<br>health  | • The project is advised against using lead pipes in school projects  |
|                             | Operation Phase (  | (Post Rehabilitation) – Social Impacts  |
| Continuous                  | People with Disabilities (PWD) may further be  | • Ensure provision of access ramps to buildings and toilets with grab bars.   |
| usage of                    | disentranchised if design considerations are not made to accommodate them  | <ul> <li>Better lightening, heights of furniture and electrical sockets, adequate turning radius<br/>for doors and walkways, brailles atc.</li> </ul>   |
| WASH and other facilities   |  | <ul> <li>AGILE can also institute special programs in these schools such as anti-bullying campaigns.</li> </ul>   |
| Increase in<br>enrolment of | The number of teachers may be insufficient to cater<br>for the rate of student enrolment, especially female  | The Federal Ministry of Education should implement strategies to recruit teachers     especially female teachers  |
| Students                    | teachers   | <ul> <li>Incentives could be provided to encourage female teachers especially in girls schools.</li> </ul>  |

| including<br>student with<br>disabilities    |  |   |
|--|--|---|
| Operations of<br>facilities and<br>boreholes | Security issues: kidnap of students and school staff<br>Risk of vandalization & theft of equipment installed<br>such as solar panels, water pumps, etc.as reported in<br>schools such as FGC Zaria, FGBC Apo | <ul> <li>Appropriate security measures to protect students and school staff in conjunction with the Federal Ministry of Education and state security forces.</li> <li>Where an area or school is adjudged to be unsafe, it should be temporarily closed. and the students can be relocated to safer areas to continue their academic activities</li> <li>Adapt and comply with the AGILE Security Management Plan (SMP) and the state security plans.</li> <li>Installation of CCTV cameras and security lights</li> <li>Liaise with security forces to ensure safeguarding of lives and property.</li> <li>Conduct regular security management trainings for students and staff including identifying security risks, seeking protection and response protocol.</li> </ul> |

#### SEA/SH Risks

Considering the project will be implemented by the project committee who will make use of local labor/artisans, and where required, technical skills or contractors could be engaged, the risks associated with labor influx such as SEA/SH may be limited. Potential SEA/SH related risks on this project include the following:

- Use of workers for civil works in the schools which could lead to relations with students.
- Increased enrollment of girls as a result of improved learning facilities could lead to exposure of more girls to GBV from school staff and other students.
- Workers engaged could also fall victim of such acts.
- Presence of more male than female teachers in Girls only schools

Presently, in most schools there is absence of sensitization on GBV prevention and response, however, currently in a few cases the Guidance Counsellors are expected to receive and handle such cases, teachers also have a code of conduct and bye-laws they are expected to abide by.

This AGILE Project will implement the following measures:

- A GBV Action Plan and Accountability Framework has been developed, which outlines measures the FUCs project committees will adopt to mitigate and address SEA/SH issues under the Project. The Guidance Counsellors will be the custodian of this framework and ensure it is implemented. They will also work in liaison with the SPIU GBV Officers/NPCU GBV Officers.
- The NPCU should provide mandatory training sessions for the project committee, project staff on appropriate behaviour, respect for gender equality, and the prevention of SEA, SH, and GBV.
- The project committee shall ensure that all workers should sign Code of Conducts and be cautioned to avoid bad behaviours such as use of alcohol, drugs, or exposing minors to such behaviours.
- Include clauses in the contractual bidding documents ('pre-qualification' and 'employers' requirements') key principles and specific requirements to address SEA/SH risks so as to reduce and mitigate the risks especially during project implementation.
- The committee should ensure sensitization of students and workers on Code of Conduct, prevention of STIs/STDs/SEA/SH risks by health workers, Women Affairs, relevant NGOs and in conjunction with the NPCU.
- Stakeholders including students, staff, project workers and communities should be informed of the reporting mechanisms for GBV related issues and the GBV-GM protocol described in section 6.8 below, through the project committees, SPIU, NPCU and Guidance Counsellors. This can be achieved by conducting a comprehensive community sensitization, along with the distribution of pamphlets that highlight referral pathways and centers. Survivors can also choose to report to the Sexual Assault and Refererral Centre (SARC) in the state.

## CHAPTER SIX GRIEVANCE MECHANISM

#### 6.1 Introduction

Grievance mechanism is an accessible and inclusive system, process, or procedure that receives and acts on complaints and suggestions in a timely fashion and that facilitates resolution of concerns arising from a project. An effective grievance mechanism (GM) provides projectaffected parties with redress and tackles issues at an early stage.

The Project Grievance Mechanism is a free, open, and accessible to all, including disadvantaged and vulnerable groups, grievances will be addressed in a fair and transparent manner. Information about the procedures, who to contact and how, the grievance procedure is designed to take into account the needs of vulnerable groups. All complaints will be investigated to establish their validity and to ensure they are treated in a timely and prompt manner. If required, corrective actions will be implemented, documented, and communicated to prevent any recurrence of problems.

The AGILE Project NPCU prepared a comprehensive Grievance Redress Manual which contains details on steps and measures in receiving, addressing and resolving complaints. The manual also includes measures on GBV-GRM protocols including survivor-centred approach and confidentiality. The manual will be used by all project stakeholders, specifically, the SPIU, supervision consultant, school management and students, project committees, Grievance Redress Committees (GRCs), SBMC members amongst others. The project committees will be expected to operationalize the GRM Manual, key highlights and actions are included in the following sections.

With respect to the proposed rehabilitation/renovation works, some areas of potential concerns include grievances that may arise from any of the following:

- The proposed activities may cause noise, dust emission, community health and safety issues, and waste management issues.
- Disruption of academic activities and livelihood activities.
- Sexual exploitation and abuse/sexual harassment (SEA/SH) due to presence of foreign workers (non-locals) and school staff.
- Delayed or non-payment of workers by the committee, and non-performance of other obligations of the committee to rehabilitation workers, suppliers, or supervisors.
- Exclusion of persons with disabilities (PWD) from benefiting from the project.
- Waste from rehabilitations works could be dumped along the road or in farms; and
- Poor labor and working conditions for workers.

#### 6.2 Existing Structures for Grievance Mechanisms in the FUCs

- Grievances from students are reported either to the principal, house master/mistress, guidance counselors or other management staff.
- If the case cannot be resolved at that level, it could be referred to the PTA or SBMC
- A higher level of report is from the principal to the Director Secondary School Education, Federal Ministry of education.
- Where complaints involve community members this is channeled to the community leader.

## 6.3 Additional GM Measures under the AGILE Project

This includes measures to strengthen the existing GRM structures in the project locations, such as the presence of Grievance Redress Committees (GRCs), complaint boxes and dedicated phone lines for complaints and a GBV-GRM protocol for addressing GBV related complaints. The scope of use of this GRM makes it available for the school, students, staff, community members, project workers and project committee.

#### 6.3.1 Grievance Redress Committees

The GRCs will be formed at the school/community level as part of the first level GRC, State Project Implementation Units (SPIUs) (for FUCs in current AGILE participating states), NPCU levels and the Federal Ministry of Education.

#### First level GRC - Project School/Community Level

This GRC is easily accessible to complainants in the project area (school/community people), without any costs.

Members of the 1<sup>st</sup> level GRC will include:

- The SBMC Chairperson
- The School Principal
- A GRM Desk Officer the Guidance Councellor
- Designated environmental compliance officer Geography teacher/environmental science teacher
- A Women representative (from the community)
- A Student representative (usually the school female senior prefect)

Complaints/suggestions can be received through Grievance Redress Committees (GRCs) and Stakeholders can channel their concerns through any member of the GRC, who will in-turn inform the committee for proper recording and subsequent action.

With the support of the NPCU Social, GRM and GBV Officers, the GRC will sensitise students, staff, community members on how to channel complaints to the committee through any of its members or other available channels such as complaint boxes, phone lines etc.

This committee will be expected to receive complaints through the designated channels (complaints boxes, designated phone numbers, direct complaints lodged with any member, complaints raised at progress review meetings/Focus Group Discussions (FGDs)/public consultations etc., anonymous complaints amongst others).

(Where complaints relate to GBV, SEA/SH, complaints will be channelled to the GBV focal person and follow the GBV-GRM protocol in section 6.8 below)

#### Second level GRC – SPIU Level

This GRC is formed at the SPIU level for states that are currently participating in the AGILE parent project or additional financing and can receive complaints from the 1<sup>st</sup> level GRC or directly from complainants through phone calls, walk-in at the SPIU office or directly during visit to the communities. For FUCs that are not currently in an AGILE participating state, the next level is the NPCU level.

Members of the 2<sup>nd</sup> level GRC include:

- The State Project Coordinator
- The GRM Officer
- The Social Development Officer
- The Environmental Officer
- The Communication Officer
- The GBV/Gender Officer

#### Third level GRC - National Project Coordinating Unit Level

This GRC is formed at the National office level and can receive complaints from the project level GRC or SPIU GRCs.

Members of the 3<sup>rd</sup> level GRC include:

- The National Project Coordinator
- The GRM Officer
- The Social Development Officer
- The Environmental Officer
- The GBV/Gender Officer where required, if the case is GBV related
- The Component Lead 1.2

#### Fourth Level - Federal Ministry of education

Where cases remain unresolved, they can be channeled to the Federal Ministry of Education through the Director Secondary School Education.

Beyond this level the World Bank task team has to be informed of all complaints and all attempts taken to resolve the issue. Quarterly reports will be submitted to the World Bank by the NPCU.

#### 6.3.2 Channels to Receive Complaints

The Project will utilize various channels provided below to receive complaints/grievances from Project affected persons and stakeholders:

- GRCs at all levels, including those already formed and those which will be formed across the various schools/project sites.
- Complaint register /Suggestion Boxes located at strategic places in the communities such as within the school compound, community market, community leaders house etc.
- Dedicated Telephone Lines which will be manned by the GR focal persons.
- Meetings/consultations/Focus Group Discussions (FGDs)/ Oral reports to school management, project committee, community leaders, women leader, youth leader etc.

#### **Channel 1: Grievance Redress Committees**

- ≥\_\_Complaints/suggestions can be received through GRCs.
- Students, school staff, and members of the communities would be sensitized on the GRM use, process and procedure.
- Stakeholders can channel their concerns through any member of the GRC, who will inturn inform the committee for proper recording and subsequent action.

#### **Channel 2: Complaint/Suggestion Boxes**

- Complaints/suggestions can be written by project affected persons, interested parties and other stakeholders and dropped in the complaint boxes in the project area.
- Complaints boxes to be located within the school and in the community marketplace, near community leader's residence, other public places etc. The locations were selected based on their proximity to the project area and where grievances may likely occur. Consideration is given for accessibility to complaint boxes by the complainants.
- ▶ The name of the project and dedicated GRM number is on the box.
- It should have a lock and be on a stand and safe from rain.
- The boxes will be accessible to persons in the project area but also provide some form of privacy in case of anonymous complaints.
- The designated GRM focal person (usually the secretary of the community level GRC) should retrieve complaints from the box at least every 48hrs.
- Project related complaints should be documented in the grievance logbook for further action, while complaints not directly related to AGILE should be forwarded to the appropriate authority for action and the complainant duly informed of this action.
- Following the record of the complaints, the GRC will schedule a meeting to address the complaints timely.
- GRCs to sensitise student, staff and community members on the locations and use of the complaint boxes.

#### **Channel 3: Dedicated Phone Lines**

- Dedicated GRM phone numbers will be provided by the project committee to the GRCs
- The lines should be be toll free, i.e., at no cost to the complainant.
- This number will be provided on the project signpost and the complaint box for easy access of stakeholders.
- All complaints received on the phone will be recorded in the grievance logbook.
- Subsequently, this will be addressed by the GRC.
- ▶ GRCs to sensitise student, staff and community members on the numbers.
- The cost of maintaining the phone lines will be borne by the project committees.

#### Channel 4: Meetings/consultations/Focus Group Discussions (FGDs)/Oral reports

- Complaints and suggestions could be received during on-site project progress meetings, focal group discussions, community meetings, student meetings, through the SBMC or other forms of oral receipt etc.
- This complaints from such meetings will be channelled to the GRC and documented.
- ▶ This will also follow the complaints resolution process.

#### **6.4 Processing of Complaints**

This section explains the step-by-step process that a complaint goes through from receipt to resolution. This covers the following:



Figure 25: Processing of Complaints

## 6.4.1 Receiving and Recording Grievances

The grievances from the stakeholders or their representatives may be communicated verbally in person or over a telephone conversation to the dedicated GRM line or in written form placed in the complaint boxes or submitted to the project representatives. All grievances communicated in any of these mediums will be recognized and recorded by the GRCs as and when it is expressed.

**Grievance Logbook –** all project related grievances will be logged in the grievance logbook.

The registration will capture the following data:

- The grievance logbook will be maintained by the GRCs at the project site, SPIU and NPCU level.
- This will be used to record grievances and how they are resolved.
- The SPIU will provide the logbook for the GRC at the project sites.
- The logbook will be kept by the GRC secretary/GRM officer at each level.
- A separate GRM log would be available for recording GBV related issues. The log will contain minimum information and be manned by the Guidance Counsellor at the Community level and kept in a confidential manner.
- SPIU GRM officer to review the project sites logbooks on a bi-monthly basis to see the type of grievances received and how they were addressed. The officer should maintain an electronic version of the grievance logbooks and upload details of grievances from all project sites in the GRM database.
- NPCU GRM Officer to review the SPIU grievance logbooks on a bi-monthly basis either as scanned copies/emails or during monitoring & supervisory visits and maintain a GRM database for all the states.
- NPCU GRM Officer through the NPC will transmit the quarterly report to the World Bank.

## 6.4.2 Acknowledgement of Grievance for Non-GBV Cases

Once the grievance is received and registered by the GRC secretary, a grievance number will be allocated and communicated to the grievant. This communication will also serve as an acknowledgement of the grievance. In case the grievance is assessed to be out of the scope of the GRM, a communication towards the same will be made to the grievant, and an alternative mode

of redress will be suggested. As part of this acknowledgement, a tentative timeline for the redress of the grievances will be identified, in keeping with the process below. This acknowledgement will be provided on the same day as the grievance is received.

## 6.4.3 Verification/Screening

Upon acknowledgement of the grievance, the recipient of the grievance in conjunction with the GRC secretary/ Chairman will quickly screen the compliant to ascertain its merit, relevance, categorization and whether further action is required by the project or not -

- Where complaints are not project related, the GRC should channel this to the appropriate authority for resolution, compliant should be closed and feedback should be given to the complainant on action taken.
- In the case of SEA/SH/ GBV complaint, this will not be investigated by the GRC, but rather the case will be referred to the GBV focal person and handled in line with section 6.8, and with the survivor's consent, further action will be taken where the survivor will be referred to the relevant GBV service provider.
- Where the case is criminal in nature such as issues relating to armed robbery, serious bodily harm, manslaughter or murder, it should be immediately reported to the police/ other appropriate authorities.

## 6.5 Grievance Investigation (for non-GBV/SEA/SH cases)

The Grievance Redress Committee will discuss and undertake an enquiry into the facts relating to the grievance. This will be aimed at establishing and analyzing the cause of the grievance and subsequently identifying suitable mitigation measures for the same. The committee may also undertake confidential discussions with the concerned parties to develop a more detailed understanding of the issue at hand.

The grievance redress committees will be responsible for the following:

- Communicate with the affected persons and evaluate what form of redress they are entitled to.
- ▶ Investigate the complaint in a fair, honest and open-minded manner.
- ▶ Interview/discuss with concerned parties with a view to resolving the issue.
- ▶ Recommend a solution to the grievance.
- Communicate the decisions to the complainant.
- ▶ Refer the grievance to a higher level GRC, if unresolved.

The GRC will investigate all project related complaints and resolve/provide responses. Where the issue cannot be resolved at a particular GRC level, the complainant will be supported in escalating the grievance to the next level GRC. However, efforts will be made to resolve all grievances at the project site/community level.

## 6.6 Resolution, Closure and Feedback

Based on the understanding developed from the investigation and consultations, the GRC will identify a suitable resolution to the issue. This resolution will be communicated accordingly to the grievant.

• If at any stage, the grievant is not satisfied with the resolution, she/he may choose to ask for an escalation of the grievance to the next level GRC, this should be facilitated by the

GRM focal person. However, where grievance still remains unresolved, complainant will be advised of his/her freedom to seek court redressal if they choose to.

- The status of the grievance will be updated in the grievance logbook frequently by the GRM secretary/officer.
- Once the grievance is resolved, and the same has been communicated to the grievant, the grievance shall be closed in the grievance logbook.
- The grievance register will also provide an understanding of the manner in which the grievance was resolved. These instances shall then serve as references for any future grievances of similar nature.
- Where there is evidence of recurring issues or grievance coming up on the project, it is necessary to flag this up to the NPCU in order to assess if the project design requires updating.

## 6.7 Timeframe for Processing Grievances

This section provides information on the expected timeframe for each stage of the GRM. It is expected that every responsible party will ensure they achieve the stipulated timelines or less.

GBV/SEA/SH cases will not follow this timeframe and support must be provided to the survivor immediately due to the serious natures of SEA/SH issues.

| PROCESS   | DESCRIPTION  | TIME<br>FRAME                                     | RESPONSIBILITY  |
|---|--|---|---|
| Receipt of complaint                                  | Document date of receipt, name<br>of complainant, location, nature<br>of complaint etc.  | Same day it<br>was received                       | Secretary to GRC at project level   |
| Acknowledgement<br>of grievance to the<br>complainant | By letter, email, phone  | Same day as<br>date of<br>receipt of<br>complaint | Secretary to GRC at project<br>level  |
| Screen and Establish<br>the Merit of the<br>Grievance | Review the complaint/ Listen to the complainant and assess the merit   | 2 days after<br>receipt of<br>complaint           | Project level GRC Secretary<br>& the complainant or<br>his/her representative |
| Refer unrelated<br>project grievances                 | Where complaint is not related<br>to AGILE refer to appropriate<br>authority and inform<br>complainant                                 | 2 days after<br>receipt of<br>complaint           | Project level GRC Secretary<br>& the complainant or<br>his/her representative |
| Investigate the grievance                             | Visit the site, conduct investigations and interviews  | 1 – 3 days<br>after receipt<br>of complaint       | Project level GRC members   |
| Implement a redressal action                          | Discuss and agree on the grievance resolution  | 1 – 7 days<br>after receipt<br>of complaint       | Project level GRC members<br>& the complainant or<br>his/her representative   |
| Escalate to SPIU for a dissatisfied scenario          | Refer the complainant to the SPIU GRC  | 3 – 10 days<br>after<br>investigation             | Project level GRC Chairman  |
| Receipt and record of complaint at SPIU GRC           | Document date of receipt, name<br>of complainant, location, nature<br>of complaint etc.  | Same day of receipt                               | SPIU GRM Officer  |
| Investigate/<br>Implement a<br>redressal action       | Review the previous action by<br>the project level GRC/ conduct<br>investigations and interviews.<br>Recommend grievance<br>resolution | 2 – 7 days<br>after receipt                       | SPIU GRC  |

Table 9:Time Frame for Processing Complaints

| Escalate to NPCU GRC<br>for a dissatisfied<br>scenario | Refer the complainant to the NPCU GRC  | 3 – 10 days<br>after receipt | SPIU State Project<br>Coordinator/ Project level<br>GRC Chairperson |
|--|--|------------------------------|---|
| Receipt and record of<br>complaint at NPCU<br>GRC      | Document date of receipt, name<br>of complainant, location, nature<br>of complaint etc.  | Same day<br>after receipt    | NPCU GRM Officer  |
| Investigate/<br>Implement a<br>redressal action        | Review the previous action by<br>the GRCs/ conduct<br>investigations and interviews.<br>Recommend grievance<br>resolution  | 2 – 5 days<br>after receipt  | NPCU GRC  |
| Escalate to the Federal<br>Ministry of Education       | Refer the case to the ministry<br>through the Director Secondary<br>School   | 7days after<br>receipt       | National Coordinator  |
| Last Resort – Court<br>Redressal                       | Where the case still remains<br>unresolved, the complainant is<br>free to seek legal action.<br>The Bank task team should be<br>duly informed before this<br>happens | As required                  | Through the National<br>Coordinator                                 |
| Close the case   | Follow up to obtain feedback<br>and document resolution in<br>logbook  | As required                  | GRM officers  |

## 6.8 GBV GM Protocol

The GBV GM will have special procedures for responding to allegations of SEA/SH that are made against a project actor. However, for any complaint that is reported to the GRM (including complaints involving other forms of GBV that are not related to the project), the GRM will also have procedures in place to refer the individual to GBV service providers.

To fulfil the role of addressing GBV, the Guidance and Counsellors in the schools will be trained on the GBV Guiding Principles and the specialized procedures for receiving and referring GBVrelated complaints to the relevant service providers. This set of skills will help GRM staff and volunteers to support the quality of the complaint mechanism, while at the same time ensuring the adherence to these Guiding Principles and a survivor-centered approach, including right to safety, respect, and confidentiality, of the complaint intake and management. Hotline operators in particular should receive training on the handling of GBV-related complaints in line with the principles of confidentiality and the specialized procedures.

When receiving a grievance/during the intake process, the person receiving the complaint shall respect the wishes, choices, rights and dignity of the complainant. In order for the survivor/complainant to make informed decisions about whether to seek services and whether to file a complaint with the project (where the complaint involves SEA or SH), she/he needs to be provided with clear and simple information on the functioning of the system, on the possible outcomes, likely timelines, and the types of support that can be provided. The survivor/complainant must also give their consent for the sharing of basic, anonymous, non-identifiable monitoring data about the incident with the SPIU/NPCU and with the World Bank. If a complainant chooses not to be referred to GBV service providers or have the project take further action, then the case will be closed. The officer or volunteer must seek the survivor/complainant's consent to share basic monitoring data, and if no consent is given, no data will be recorded. For GBV cases, it is important to ensure that access to the complaints

processes is as easy and as safe as possible for the complainant/survivor and that they clearly understand the referral process.

The GBV/SEA/SH Grievance remit is to:

- 1. provide survivor centred approach.
- 2. provide confidential and accessible channels for reporting cases.
- 3. enable linkages between survivors to the GBV service providers such as legal system, health, security, psycho-social, livelihood, mapped by the project.

To mitigate possible project-related SEA/SH grievances, the SPIU will adhere to prevention measures as stipulated in section 5.3 – Measures/Actions to be taken in case of GBV cases above.

The principles for the GBV GRM and channels for receiving GBV related complaints are detailed in the GRM manual. Section 6.8.1 below shows the process for receiving GBV complaints and referral.

## 6.8.1 Process for Receiving GBV Complaint and Referral

- i. GBV focal persons (Guidance Counsellor) will receive complaints from survivors. Survivors may choose any reporting channel they deem comfortable in which case, Complainant should be immediately referred to the GBV-GM focal person at the School – without asking further questions or details. Ccomplainant/survivor information must be kept confidential and anonymous. As part of ESMP implementation, the NPCU GBV Officer will coordinate the FUCs in domesticating the AGILE GBV Action Plan and Accountability Framework and identify the list of service providers and referral pathways to be used accordingly.
- ii. The GBV-GM Focal Person needs to provide the survivor information on services available and with their consent, move to recording.
- iii. The GBV-GM Focal Person will record the nature of the complaint only with no identifiable information on the survivor.
- iv. The GBV-GM officer to immediately refer the case to the relevant GBV service provider identified in the referral directory (service providers mapped by the SPIU, ministry of women affairs, Sexual Assault Referral Centres (SARCs) in the states, Report GBV program<sup>22</sup>.
- v. If the survivor wishes to take police or legal action, information as contained in the referral directory is provided by the GBV Officer
- vi. The SPIU GBV Officer/GBV Focal person to ensure the case is reported to the NPCU and TTL without information of the survivor's identity, only about the allegation, age and gender of the survivor, and what action has been taken.
- vii. There may be need for the service provider to re-sensitize stakeholders at the project level on SEA/SH/GBV in collaboration with the SPIU and also develop strategies to prevent such re-occurrence.
- viii. The GBV officer to obtain feedback on resolution of the case from the GBV service provider and record same including strategies to prevent re-occurrence.

<sup>&</sup>lt;sup>22</sup> https://reportgbv.ng/#/home)

The SPIU must train all GM Focal persons (Guidance Counsellors) on the SEA/SH escalation process so that they can refer cases effectively.

## 6.8.2 Documentation of GBV GM Cases

Given the highly stigmatized nature of the topic, caution would be taken when communicating about reported SEA/SH incidents. GBV-related complaints would provide information only on the nature of the complaint (what the complainant says in her/his own words), and operators would link the complaint to a GBV service provider for necessary attention and action.

The GBV-GM focal persons will be trained by GBV experts hired by the NPCU/SPIU GBV Officers on how to collect GBV/SEA/SH cases confidentially and empathetically (with no judgement)

- In recording the incident, the identity of the survivor should be protected, keeping survivor information confidential and anonymous (no names in the record book). This information is limited to (a) the nature of the allegation or incident; (b) whether the incident is likely to be project related; (c) the age/sex of the survivor (if known); and (d) whether the survivor was referred for services.
- Ensure that no identifiable information on the survivor is stored in the GRM.
- Document the exact complaint (no detailed information of the incident is expected), date, action taken and close the report.
- As required, refer complaints to the GBV service provider.

## 6.9 Monitoring of GRM

The GRM officer will be responsible for:

- Providing the grievance Committee with a weekly report detailing the number and status of complaints any outstanding issues to be addressed.
- Monthly/quarterly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action.
- Periodic monitoring of timely, mandatory, and confidential reporting in case of incidents to the project level GBV-GRM.

# CHAPTER SEVEN ENVIRONMENTAL & SOCIAL MANAGEMENT & MONITORING PLAN

## 7.1 Introduction

As part of this ESMP, a project specific E&S management and monitoring plan has been designed to identify potential risks and impacts and outline mitigation measures with well-defined desired outcomes and actions to address all potential negative impacts. The plan also includes elements such as parameters to be measured, methods of measurement, location of measurement, performance indicators (targets or acceptance criteria) that can be tracked over defined time periods, cost estimates and responsibilities for monitoring.

## 7.2 Institutional responsibilities and accountabilities

The successful implementation of the ESMP will depend on the commitment and capacity of the Project committee, SPIU, NPCU and other third parties/institutions to implement the program effectively. The specific roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are highlighted in table 10 below.

| No | Category   | Responsibilities during  | Responsibilities during O&M  |
|----|--|--|--|
|    |  | Construction   |  |
| 1  | The Project Committee,<br>FUCs   | <ul> <li>Ensure that all provisions of<br/>this ESMP are adhered to<br/>strictly</li> <li>Ensure project workers are<br/>sensitized on the ESMP and<br/>provided a copy</li> <li>Ensure all workers sign the<br/>Code of Conduct (CoC) and<br/>are routinely trained on the<br/>contents of the CoC.</li> </ul>  | <ul> <li>Prepare and implement a maintenance schedule for project facilities to guide the operation phase</li> <li>Principals to provide staff and resources for cleaning and maintenance including cleaning agents from school operational budgets</li> </ul> |
| 2  | Geography/Environmental<br>Science Teacher and<br>Guidance Counselor, FUCs       | <ul> <li>Monitor the implementation<br/>of the environmental and<br/>social mitigation measures<br/>stated in the ESMP</li> <li>Supervise the<br/>implementation of the GRM</li> <li>Implement the project GBV-<br/>GRM protocol and all GBV<br/>related activities</li> <li>Prepare monthly<br/>Environmental and Social<br/>compliance reports for the<br/>attention of the NPCU.</li> </ul> | Ensure implementation of the<br>maintenance schedule for<br>project facilities and all<br>measures stated in the ESMP<br>matrix table for the operation<br>phase   |
| 3  | E&S Team AGILE State<br>SPIU<br>(Environmental, social,<br>GRM, gender officers) | The E&S team will:• Support the FUCs in<br>complying with<br>environmental and social<br>management measures<br>including those in the ESMP• Review of ESMP<br>performance and<br>implementation of<br>correction actions if any   | Not Applicable   |

## Table 10:Institutional Roles and Responsibilities for ESMP Implementation

| No | Category   | Responsibilities during<br>Construction  | Responsibilities during O&M  |
|----|--|--|--|
|    |  | • Support the implementation<br>of GBV related activities for<br>the project.  |  |
| 4  | E&S Unit NPCU  | <ul> <li>Conduct the disclosure of this ESMP in line with FMEnv requirements.</li> <li>Support the state to ensure compliance with World Bank ESF and other relevant laws in Nigeria.</li> <li>Oversight functions of E&amp;S coordination and reviewing E&amp;S reports prior to sending to the World Bank</li> <li>Ensure the state sends in monthly and quarterly E&amp;S compliance report and collate for the attention of the World Bank</li> <li>Conduct periodic monitoring and supervisory visits to the sites.</li> <li>Support the states in articulating corrective E&amp;S action plans.</li> </ul> | Not applicable   |
| 5  | Contractors/ Project<br>Workers  | • This refers to the skilled and<br>unskilled labor to be engaged<br>by the project committee,<br>they should ensure<br>compliance with the ESMP<br>measures   | • Not applicable   |
| 6  | State Ministries of<br>Environment   | <ul> <li>Support the disclosure of the ESMP at the state ministries of environment</li> <li>Environmental monitoring and compliance overseer at the State level.</li> <li>Site assessment and monitoring of ESMP implementation.</li> </ul>  | Periodic environmental<br>monitoring and compliance<br>overseer at the State level.  |
| 7  | State Environmental<br>Protection Agencies (EPAs)<br>and State Waste<br>Management Authorities | <ul> <li>Liaise with the FUCs to support the collection/evacuation of waste from the project sites during rehabilitation</li> <li>Ensure management of project waste in line with best environmental practices as not to degrade or pollute the environment.</li> <li>Conduct periodic monitoring of environmental parameters to ensure compliance with environmental regulations.</li> </ul>  | <ul> <li>Liaise with the FUCs to support the collection/evacuation of waste from the project sites during the operation phase</li> <li>Conduct periodic monitoring of environmental parameters to ensure compliance with environmental regulations.</li> </ul> |
| 7  | Federal Road Safety Corps<br>(FRSC)  | • Control and manage traffic and road safety throughout  | Not applicable   |

| No | Category  | Responsibilities during<br>Construction  | Responsibilities during O&M   |
|----|---|--|---|
|    |   | <ul> <li>project implementation.</li> <li>Discourage counter road safety practices among road users.</li> <li>Support the project committees in training their drivers</li> </ul>  |   |
| 8  | Federal Ministry of<br>Environment  | <ul> <li>Review of Draft ESMP report,<br/>provide disclosure letter,<br/>receive comments from<br/>stakeholders.</li> <li>Disclose the ESMP in the<br/>FMEnv corporate site</li> </ul>   | Periodic environmental<br>monitoring and compliance of<br>environmental parameters  |
| 9  | Federal Ministry of<br>Education  | <ul> <li>Provide supplementary<br/>budget to support project<br/>activities</li> <li>Ensure designs and project<br/>activities comply with the<br/>recommendatins of this<br/>ESMP</li> </ul>                                  | <ul> <li>Provide adequate budgetary<br/>allocation for operation and<br/>maintenance of project<br/>facilities including purchase of<br/>consumables, staffing budget<br/>etc.</li> <li>Monitor the use and<br/>maintenance of such facilities</li> </ul> |
| 10 | Non-Governmental<br>Organisations (NGOs)/Civil<br>Society Organisations<br>(CSOs) | <ul> <li>Support dissemination of project information</li> </ul>   | • Support the project during<br>the operation phase to<br>provide services such as<br>WASH, school supplies etc.  |
| 11 | World Bank  | <ul> <li>Overall supervision and<br/>provision of technical<br/>support and guidance.</li> <li>Recommend additional<br/>measures for strengthening<br/>management framework and<br/>implementation<br/>performance;</li> </ul> | Not applicable  |

#### 7.3 ESMP Matrix

The ESMP matrix in table 11 below highlights identified potential impacts at the prerehabilitation, rehabilitation and post-rehabilitation (operation) phases of the proposed intervention. It further details the measures for mitigating identified potential impacts, highlighting responsibilities and costs implication for implementing and monitoring the implementation of the proffered mitigation measures, indicators for monitoring, frequency, location, and method for monitoring performance.

#### Table 11:Environmental and Social management & monitoring plan

The SIPs will be prepared by the Project Committees at the school level and submitted to the National Office. This will be reviewed by the officers at the National Office including the Component lead and the E&S unit. The later will ensure that recommendations in the ESMP are embedded in these plans.

| S/<br>N | Activities  | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation              | Mitigation<br>Cost                       | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent  | Performanc<br>e indicator  | Sampling<br>Location                | Monitorin<br>g<br>Frequency           | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)   | Monitoring<br>Costs   |
|---------|---|--|---|---|--|---|---|--|-------------------------------------|---------------------------------------|---|---|
|         | · · · · · · · · · · · · · · · · · · ·   |  |   |   | Pre-rehabilitat                          | tion Phase  |   |  |                                     | •                                     |   |   |
| A. Eı   | nvironmental &  | OHS Impacts  |   |   |  |   |   |  |                                     |                                       |   |   |
| 14      | Mobilization<br>of<br>construction<br>materials,<br>equipment<br>and vehicles | Pollution of ambient air<br>from increased dust<br>generation from<br>untarred road especially<br>during dry season,<br>vehicular emissions<br>Increased noise<br>levels/noise pollution<br>along affected areas.<br>Increased suspended<br>particles from<br>mobilization of sand to<br>site without the use of<br>trampoline covers for<br>trucks. | Ensure wetting of roads<br>Retrofit vehicle exhausts with<br>sound-control or<br>soundproofing devices.<br>Ensure regular maintenance<br>of vehicles<br>Ensure mobilization of<br>materials such as gravels,<br>sand, etc. are carried out using<br>properly covered trucks<br>Sensitize communities about<br>unusual activities.<br>Maximise activities during<br>weekends, holidays and off<br>academic periods as much as<br>possible<br>Maintain a speed limit of<br>40kph or less on earth roads | Project<br>Committee/<br>Contractor <sup>23</sup> | N200,000/sc<br>hool<br>(N22,<br>400,000) | Dust<br>No of<br>Complaints<br>from affected<br>schools and<br>communities<br>No of<br>retrofitted<br>vehicles.<br>Covering<br>material<br>such as<br>trampoline<br>are provided<br>and used. | Visual<br>monitoring<br>Site<br>inspection<br>Noise<br>measureme<br>nt<br>Observatio<br>n | Controlled<br>dust levels<br>Evidence of<br>VET and VES<br>Evidence of<br>Compliance | Project<br>school and<br>within 1km | monthly                               | Geography<br>Teacher<br>(GT)/<br>Environment<br>al Science<br>Teacher<br>(EST)<br>SPIU<br>Environment<br>al Officer<br>(ESO)<br>FRSC<br>NPCU ESO<br>State EPAs<br>FMEnv | N200,000<br>/school<br>(22,400,000)<br>(represents<br>monitoring<br>costs for the<br>pre-<br>rehabilitation<br>phase) |
| 2A      | Setting up of<br>staging area<br>for  | Loss of vegetation<br>during land clearing and<br>increased vegetative   | Limit land clearing to specific zone needed for the   | Project<br>Committee/<br>Contractor               | N100,000/sc<br>hool<br>(N11,200,00       | Vegetation<br>cleared   | Site<br>inspection  | Evidence of<br>compliance  | Project<br>school                   | Before and<br>during land<br>clearing | GT/ EST<br>School   |   |

<sup>23</sup> Contractor refers to skilled technicians to be engaged from within the local communities or from external areas

| S/<br>N | Activities   | Potential Impact   | Mitigation Measures  | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost   | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent  | Performanc<br>e indicator                          | Sampling<br>Location               | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)                       | Monitoring<br>Costs                   |
|---------|--|--|--|--------------------------------------|--|--|-------------------------------|--|------------------------------------|-----------------------------|---|---------------------------------------|
|         | temporary &<br>short-term<br>onsite<br>storage   | waste generation.<br>Distortion of topsoil<br>structure from soil<br>removal activities during<br>staging    | rehabilitation work.<br>Protect all vegetation not<br>required to be removed<br>against damage.<br>Replant or revegetate<br>trees/shrubs with same<br>species<br>Vegetal waste can be given to<br>farmers, however, if they<br>contain other pollutants they<br>should be evacuated by the<br>state environmental<br>protection/waste<br>management authorities or |                                      | 0)   | Vegetal<br>Waste on site<br>Revegetated<br>areas   | Visual<br>Observatio<br>n     | Presence of<br>revegetation                        | Equipment<br>saging area           | Bi-monthly                  | Management<br>SPIU ESO<br>State EPA<br>FMEnv                                  |                                       |
| 3A      | Mobilization<br>of<br>construction<br>materials,<br>equipment<br>and vehicles<br>Sub-Total | Increased noise<br>levels/noise pollution<br>within the project school<br>and communities                    | licensed waste vendors<br>Install noise mufflers on<br>machines<br>Regular servicing of<br>equipment and machinery   | Project<br>Committee/<br>Contractor  | 50,000/scho<br>ol<br>(N5,600,000)<br>N350,000/S<br>ch<br>(N39.200,00<br>0) | No of<br>Complaints<br>from affected<br>schools and<br>communities<br>Installed<br>noise<br>mufflers | Interviews<br>Observatio<br>n | Number of<br>complaints<br>received                | Project<br>school and<br>community | Weekly                      | GT/ EST<br>School<br>Management<br>SPIU ESO<br>NPCU ESO<br>State EPA<br>FMEnv | N200,000/Sc<br>h<br>(N22,400,000<br>) |
|         | B. Social Impa   | cts  |  |                                      | -  |  |                               |  |                                    |                             |   |                                       |
| 18      | Mobilization<br>of<br>construction<br>materials,<br>equipment                              | Restriction of access<br>within and around the<br>school during<br>renovation works,<br>including restricted | Adequate sensitization of<br>students and staff of schools,<br>as well as community<br>members of the proposed<br>works.   | Project<br>Committee/<br>Contractor  | Same as 1A   | Sensitization<br>done<br>Caution<br>tapes  | Observatio<br>n<br>Interviews | Number of<br>complaints<br>received<br>No of cases | Project<br>Area                    | Weekly                      | Guidance<br>Counselor<br>(GC)<br>School                                       | N50,000/Sch<br>(N5,600,000)           |

| S/<br>N  | Activities  | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost                | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent                         | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring                           | Monitoring<br>Costs          |
|----------|---|--|---|--------------------------------------|-----------------------------------|--|--|---|----------------------|-----------------------------|--|------------------------------|
|          | and vehicles<br>(including<br>heavy-duty<br>equipment)                        | access to classrooms,<br>administrative blocks,<br>etc.<br>Increase in traffic along<br>major routes that are<br>prone to congestion<br>Risk of accidents for<br>school, staff, community<br>from vehicular<br>movement<br>Increase in noise levels<br>which will disturb<br>school activities,<br>communities, religious<br>activities. | Clearly mark our areas for<br>renovation and use caution<br>tapes where necessary.<br>Liaise with Road Safety<br>Officers, State Road Traffic<br>Agencies, police and<br>community vigilante groups to<br>help in control of traffic in<br>hotspot zones<br>Limit movement of materials<br>and equipment to off peak<br>periods; avoid market days,<br>work/school resumption and<br>closing hours.<br>Ensure implementation of<br>effective GRM- GRCs,<br>complaint boxes, phone lines<br>etc. | FRSC<br>Police                       | Part of GRM<br>Operating<br>Costs | Stakeholder<br>complaints<br>Traffic<br>management<br>GRM<br>established   |  | received and<br>resolved<br>Absence of<br>traffic<br>congestion<br>from project<br>activities   |                      |                             | Management<br>SPIU Social<br>Officer (SSO)<br>NPCU SSO<br>FRSC<br>GRC        |                              |
| 2B<br>3B | Mobilization<br>of<br>construction<br>materials,<br>equipment<br>and vehicles | Potential vehicular and<br>operational accidents for<br>students, staff and<br>community members<br>from movement of<br>equipment and<br>materials to site   | Implement community health<br>and safety plan (CHSP) (see<br>annex 9)<br>Use of adequately trained<br>drivers<br>Limit movement of materials<br>and equipment to off peak<br>periods; avoid market days,<br>work and school resumption<br>and closing hours.<br>Delineate work areas with<br>caution tapes.<br>Train workers to ensure good   | Project<br>committee/<br>Contractor  | N30,000/Sch<br>(3,360,000)        | Compliance<br>with CHSP<br>No of<br>accidents,<br>incidents or<br>injuries | Site<br>inspection<br>Consultatio<br>n<br>Interviews | HSE/OHS<br>Evidence of<br>Compliance<br>to CHSP<br>Evidence of<br>caution signs<br>onsite<br>Evidence of<br>drivers<br>training<br>Incidents<br>recorded<br>Evidence of | Project<br>area      | Weekly                      | GT/EST<br>GC<br>School<br>Management<br>FRSC<br>SPIU<br>ESO/SSO<br>SSO<br>GC | N100,000/Sch<br>(11,200,000) |
| 38       |   | connects between the<br>contractors/workers<br>and the host<br>communities or students<br>and staff during   | Irain workers to ensure good<br>behavior.<br>Involve community<br>representatives in decision-  | committee/<br>Contractor             | -<br>Part of GRM                  | complaints<br>from<br>stakeholders<br>GRM                                  | n  | training<br>Complaints  | area                 | weekiy                      | GC<br>School<br>Management   |                              |

| S/<br>N | Activities                             | Potential Impact  | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost                    | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)              | Monitoring<br>Costs            |
|---------|--|---|---|--------------------------------------|---------------------------------------|--|------------------------------|--|----------------------|-----------------------------|--|--------------------------------|
|         |  | mobilization of<br>equipment and<br>materials to site   | making processes related to<br>mobilization activities<br>Establish a grievance redress<br>mechanism for complaints to<br>be channeled and effectively<br>addressed. See chapter 6  |                                      | Costs                                 |  |                              | received and<br>resolved   |                      |                             | SPIU and<br>NPCU<br>SSO/GRM<br>Officer                               |                                |
| 48      | Engagement<br>of Labor                 | Grievance from poor<br>recruitment of local<br>labour for semi- &<br>unskilled labour by the<br>project committee                 | Ensure compliance with the<br>AGILE LMP which includes a<br>transparent, fair and inclusive<br>recruitment processInvolve<br>the local community in the<br>recruitment process, seeking<br>input and feedback<br>Document all procedures<br>Establish effective GRM in the<br>project areas to enable<br>complaint uptake and redress | Project<br>committee/<br>Contractor  | -                                     | Complaints<br>from<br>stakeholders<br>/workers                         | Consultatio<br>n<br>Records  | Evidence of<br>compliance<br>Documented<br>records   | Project<br>Area      | Monthly                     | GC<br>School<br>Management<br>SPIU and<br>NPCU<br>SSO/GRM<br>Officer |                                |
| 5B      | Establishmen<br>t of staging<br>areas, | Transactional issues and<br>grievances for burrow<br>pits, rental sites, staging<br>areas   | Ensure well documented and<br>fair transactional agreements<br>for such areas<br>Establish effective GRM in the<br>project areas to enable<br>complaint uptake and redress  | Project<br>Committee/<br>Contractor  | Based on<br>agreement                 | Transactiona<br>l agreements<br>Complaints<br>from affected<br>persons | Consultatio<br>n<br>Reports  | Evidence of<br>documented<br>and fair<br>agreements  | Project<br>Area      | Monthly                     | GC<br>School<br>Management<br>SPIU SSO                               | -                              |
| 6B      | All project<br>activities              | Project workers and<br>drivers could be exposed<br>to occupational health<br>and safety risks such as<br>accidents, injuries etc. | Ensure workers implement<br>occupational health and safety<br>plan (OHSP) including use of<br>appropriate personnel<br>protective equipment, safe<br>work procedures, first aid box<br>on site, Health & safety (HSE)<br>training etc. see annex 6  | Project<br>Committee/<br>Contractor  | N200,000/<br>Sch<br>(N22,400,00<br>0) | Presence of<br>OHSP<br>Accidents<br>Complaints                         | Observatio<br>n<br>Reports   | Compliance<br>with the<br>OHSP-PPEs,<br>well stock<br>first aid box,<br>evidence of<br>workers HSE<br>training | Project<br>School    | Daily                       | GT/EST<br>School<br>Management<br>SPIU<br>ESO/SSO<br>NPCU E&S        | N100,000/ Sch<br>(N11,200,000) |

| S/<br>N | Activities               | Potential Impact  | Mitigation Measures  | Responsibili<br>ty for<br>Mitigation  | Mitigation<br>Cost                     | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent                   | Performanc<br>e indicator   | Sampling<br>Location        | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty   | Monitoring<br>Costs  |
|---------|--------------------------|---|--|---|--|--|--|---|-----------------------------|-----------------------------|---|--|
| 7B      | Engagement<br>of workers | Potential for<br>SEA/SH/GBV from<br>workers interactions<br>Potential for spread of<br>STDs, sexual relations<br>with community<br>members, female<br>students and staff<br>Abuse of cultural norms<br>if workers are foreign to<br>the communities | Sensitise students, school<br>staff, Community leaders,<br>women group, youth group on<br>GBV prevention, response and<br>reporting channels.<br>All workers to be sensitized<br>and sign Code of Conduct<br>(CoC) and zero tolerance for<br>sexual integration with<br>students, staff, community<br>Train the Guidance<br>Counsellors on GBV<br>requirements for this project<br>Provide and distribute referral<br>pathway and directory. | Project<br>Committee/<br>Contractor<br>GBV Service<br>Providers/<br>Experts | Cost<br>N100,000<br>(N11,200,00<br>00) | to be<br>measured<br>Code of<br>Conducts<br>GBV-GRM<br>List of<br>service<br>providers<br>Separate<br>toilets with<br>designations<br>provided | measurem<br>ent<br>Records<br>Consultatio<br>n | e indicator<br>Signed Code<br>of Conducts<br>Available<br>GBV-GRM<br>Disseminated<br>list of Service<br>Providers<br>and referral<br>pathway<br>Compliance<br>to stated<br>measures | Location<br>Project<br>Area | g<br>Frequency<br>Bi-weekly | Responsibili<br>ty<br>(Monitoring<br>)<br>GC/ GBV<br>Focal Persons<br>SPIU/NPCU<br>GBV Officer<br>State /<br>Federal<br>Ministries of<br>Women<br>Affairs | Costs<br>N50,000<br>(N5,600,000)<br>For monitoring<br>of activities on<br>SEA.SH/GBV/C<br>ode of<br>Conducts |
|         | Sub-Total                |   | Use of minors (below 18 years<br>of age) will be prohibited<br>Ensure separate and labelled<br>toilets for male and female<br>workers with locks, and to be<br>well lit at night<br>Establish GBV-GRC equipped<br>to handle GBV cases with<br>reporting channels that are<br>easily accessible and<br>community members feels<br>safe reporting to at the<br>school/community level of the<br>grievance uptake see section<br>6.8            |   | N330,000/S                             |  |  |   |                             |                             |   | N300,000/  |
|         | Total Dao Daha           | bilitation Dhase  |  |   | ch<br>(N36,960,00<br>0)                |  |  |   |                             |                             |   | Sch<br>(N33,600,000<br>)   |
|         | тогат Рте-кећа           | abilitation Phase   |  |   | N080,000                               |  |  |   |                             |                             |   | N500,000J  |

| S/<br>N | Activities   | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation   | Mitigation<br>Cost                    | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent   | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring                       | Monitoring<br>Costs                    |
|---------|--|--|---|--|---------------------------------------|---|--|--|----------------------|-----------------------------|--|--|
|         |  |  | I   |  | (N76,160,00<br>0)                     |   |  |  |                      |                             | ,  | (N56,000,000<br>)                      |
|         |  |  |   |  | Rehabilitatio                         | on Phase  |  |  |                      |                             |  |  |
| 10      | C. Environmen  | Ital & OHS Impacts   | Ensure watering where   | Project  | N300.0007                             | Air Quality   | Site   | Compliance   | Project              | Wookly                      | CT/FST   | N100.000 per                           |
| 10      | Demolition,<br>Civil works –<br>Block work,<br>wall<br>finishing,<br>painting,<br>flooring, etc. | Increase in suspended<br>particulate matter<br>Increased generation of<br>solid waste such as<br>demolition waste can<br>cause pollution to the<br>environment and public<br>health concerns if not<br>properly managed<br>Hazardous waste<br>generation such as<br>asbestos could lead to<br>air pollution, health risk<br>from inhalation of<br>asbestos fibres and<br>exposure to asbestos<br>materials<br>Accidental spillage of<br>paints, etc. during<br>application.<br>Oil leakages and spillage<br>of other hydrocarbons<br>from construction<br>vehicles and equipment<br>may contaminate<br>topsoil/subsoil<br>Human waste,<br>indiscriminate<br>defecation or open<br>defecation by workers. | Ensure watering where<br>applicable prior to and during<br>civil works to reduce the<br>release of dusts<br>Use road worthy vehicles and<br>conduct routine maintenance<br>Ensure proper sorting;<br>storage and final disposal of<br>waste, state environmental<br>protection/waste<br>management authorities or<br>licensed waste vendors<br>Implement Waste<br>Management Plan (see Annex<br>5)<br>Provide industrial waste bins<br>as part of the project<br>Where feasible, schedule<br>removal of asbestos<br>containing materials during<br>the summer holidays, when<br>the schools are completely<br>closed, or otherwise the area<br>should be restricted<br>temporarily for the period of<br>removal, and affected<br>materials should be properly<br>contained and covered to<br>avoid exposure of the fibre<br>materials | Project<br>Committee/<br>Contractor<br>State EPA/<br>Licensed<br>waste<br>operator | N300,000/<br>sch<br>(N33,600,00<br>0) | Air Quality<br>Waste<br>Management<br>Practices<br>Waste<br>Manifest<br>Workers<br>WASH<br>facilities | Site<br>inspection<br>/<br>observation<br>Verification<br>of records | Compliance<br>with FMEnv<br>air quality<br>standards<br>Good waste<br>management<br>practices<br>Waste bins<br>onsite<br>Evidence of<br>waste<br>disposal<br>records<br>Presence of<br>workers<br>WASH<br>facilities | Project<br>area      | Weekly                      | GT/EST<br>School<br>Management<br>SPIU/NPCU<br>ESO<br>State EPA<br>FMEnv | N100,000 per<br>school<br>(11,200,000) |

| S/<br>N | Activities  | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent   | Performanc<br>e indicator   | Sampling<br>Location              | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>) | Monitoring<br>Costs |
|---------|---|--|---|--------------------------------------|--------------------|--|--|---|-----------------------------------|-----------------------------|---|---------------------|
|         |   | Risk of surface water<br>pollution from dumping<br>of waste or other<br>contaminants such as<br>chemicals, used oils etc   | membrane or pans at stacking<br>area;<br>Hazardous waste should be<br>handled with care using the<br>right PPEs, properly contained<br>and segregated and handed<br>over to the state<br>environmental<br>protection/waste<br>management authorities for<br>onward disposal. See annex 5<br>for guidelines<br>Provision of WASH & toilet<br>facilities for workers<br>Avoid tapping or sourcing<br>materials (water) from nearby<br>waterbody/river.<br>Drilling of borehole in the<br>schools can be prioritized as<br>initial activities and the water<br>can be used for the<br>rehabilitation works<br>Waste and other materials<br>should not be dumped into<br>any surface water bodies |                                      |                    |  |  |   |                                   |                             |   |                     |
| 2C      | Continuous<br>use and<br>movement of<br>vehicles<br>to/fro site | Vehicular emissions and<br>fugitive dusts from<br>untarred routes could<br>cause air pollution and<br>eye/respiratory diseases<br>Noise pollution<br>Risk of vehicular<br>accidents for school<br>staff, students,<br>communities and road | Use of nose masks to prevent<br>URTI<br>Maintain a speed limit of<br>40kph or less on earth roads<br>Ensure that all vehicles are<br>serviced; undergo vehicle<br>emission testing (VET) and<br>vehicle exhaust screening<br>(VES). Use road worthy<br>vehicles/maintain regularly.   | Project<br>Committee/C<br>ontractor  | -                  | SO2, NOx, CO,<br>VOC, PM <sub>2.5</sub> ,<br>PM <sub>10</sub><br>Complaints<br>Accident<br>Reports | In-situ<br>measureme<br>nt<br>Site<br>inspection<br>Noise<br>measureme<br>nt | Air Quality<br>Parameters<br>are within<br>FMEnv<br>permissible<br>limits<br>Evidence of<br>VET and VES<br>Evidence of<br>noise | Project<br>area and<br>within 1km | Monthly                     | GT/EST<br>FRSC<br>SPIU/NPCU<br>ESO<br>FMEnv             |                     |

| S/<br>N | Activities  | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost                        | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent   | Performanc<br>e indicator   | Sampling<br>Location       | Monitorin<br>g<br>Frequency       | Institutional<br>Responsibili<br>ty<br>(Monitoring | Monitoring<br>Costs |
|---------|---|--|---|--------------------------------------|---|--|--|---|----------------------------|-----------------------------------|--|---------------------|
|         |   |  |   |                                      |   |  |  |   |                            |                                   | (Monitoring  |                     |
| 30      | Land use –<br>burrow pits   | users<br>Land degradation and<br>increased susceptibility<br>to erosion due to   | Retrofit vehicle exhausts with<br>sound-control or<br>soundproofing devices<br>Liaise with Road Safety<br>Officers, State Road Traffic<br>Agencies, police and<br>community vigilante groups to<br>help in control of traffic<br>Limit movement of materials<br>and equipment to off peak<br>periods; avoid market days,<br>work resumption and closing<br>hours.<br>Ensure sourcing of earth<br>materials from registered<br>quarries and licensed | Project<br>Committee/<br>Contractor  | Costs of<br>burrow pit<br>reclamation     | Borrow Pit<br>Reclamation<br>Plan  | Observatio   | mufflers<br>Traffic<br>management<br>Availability<br>of Borrow Pit<br>Management  | Material<br>burrow<br>site | After<br>Rehabilitati<br>on phase | GT/EST<br>SPIU/NPCU<br>ESO<br>State<br>EPA/SMEnv   |                     |
|         |   | excavation of earth<br>materials around and in<br>burrow pits<br>Abandoned burrow pits<br>may lead to sites for<br>waste dump, breeding<br>sites for communicable<br>diseases  | construction vendors with<br>appropriate quarry lease to<br>prevent illegal sand mining.<br>Ensure all burrow pits used<br>are rehabilitated and restored<br>to a safe and stable state. Plan<br>should include measures  |                                      | to be<br>adequately<br>included in<br>BOQ |  | Review of<br>Borrow Pit<br>Manageme<br>nt Plan                                     | Plan<br>Site<br>reclamation<br>after<br>rehabilitation  | site                       |                                   | FMEnv  |                     |
| 4C      | OHS: Civil<br>works,<br>material<br>handling,<br>machinery<br>usage | Workers' accidents such<br>as Injuries, explosions,<br>electrical fires, leakages,<br>falls from height, slips,<br>release of hazardous<br>energy, deaths etc.<br>Bites could also occur<br>from snakes and reptiles | Ensure workers implement<br>occupational health and safety<br>procedures including use of<br>appropriate personnel<br>protective equipment, safe<br>work procedures, first aid box<br>on site etc.<br>First aid kits should contain<br>antivenom<br>The workers staging area<br>should be kept clean and clear<br>bushes around   | Project<br>Committee/<br>Contractor  | N500,000 /<br>school                      | OHSP<br>workers<br>Trained on<br>HSE/OHS/<br>Training<br>reports<br>Accidents,<br>incidents or<br>injuries<br>Availability | Consultatio<br>n with<br>workers<br>Site<br>Observatio<br>n<br>Incident<br>Reports | HSE/OHS<br>Training<br>reports and<br>list of<br>attendees<br>Evidence of<br>Compliance<br>to OHSP<br>Evidence of<br>use of PPES,<br>caution signs<br>onsite, well- | Project<br>School          | Weekly                            | GT/EST<br>School<br>Management<br>SPIU/NPCU<br>ESO |                     |

| S/<br>N | Activities               | Potential Impact   | Mitigation Measures  | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost                 | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent  | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)                         | Monitoring<br>Costs           |
|---------|--------------------------|--|--|--------------------------------------|------------------------------------|---|---|--|----------------------|-----------------------------|---|-------------------------------|
|         |                          |  | The school should also ensure<br>periodic fumigation especially<br>during holidays   |                                      |                                    | and use of<br>appropriate<br>PPEs<br>First Aid Kits   |   | stocked first<br>aid kits  |                      |                             |   |                               |
| 50      | Drilling of<br>boreholes | Risk of aquifer over-<br>exploitation and<br>pollution of ground<br>water resources due to<br>borehole drilling<br>Risks of borehole failure | Ensure use of modern<br>geophysical equipment known<br>high accuracy in groundwater<br>prospecting before drilling the<br>boreholes and ensure it<br>reaches the right aquifer.<br>Drilling of borehole should<br>comply minimum<br>specifications, WHO WASH<br>standard on borehole Drilling.<br>18m distance from septic<br>tanks (WHO), use of sanitary<br>seal<br>Obtain standard design from<br>the NPCU<br>Care must be taken in the<br>handling and storage of all<br>drilling fluids, oils, greases<br>and fuel on site; air tight<br>containers with lids, well<br>labelled and away from public<br>tampering<br>Promote water harvesting,<br>artificial recharge through<br>borewell recharge structures<br>and ground reservoirs to store<br>harvested rainwater in<br>schools especially in zones<br>with very low aquifers. | Project<br>Committee/<br>Contractor  | Part of<br>rehabilitation<br>costs | Location of<br>borehole<br>onsite<br>Borehole<br>specification<br>s<br>Groundwater<br>quality<br>parameters<br>especially<br>heavy<br>metals, BOD,<br>COD | Site<br>inspection<br>Borehole<br>drilling<br>report<br>Lab<br>analysis of<br>groundwate<br>r samples | Compliance<br>with siting<br>location and<br>specifications<br>Parameters<br>within<br>permissible<br>limits of<br>FMEnv | Project Site         | Quarterly                   | GT/EST<br>School<br>Management<br>SPIU/NPCU<br>ES<br>FMEnv<br>Component<br>Lead |                               |
|         | Sub-Total                |  |  |                                      | N800,000<br>(N89,600,00<br>0)      |   |   |  |                      |                             |   | N100,000<br>(N11,<br>200,000) |

| S/<br>N | Activities  | Potential Impact  | Mitigation Measures  | Responsibili<br>ty for<br>Mitigation        | Mitigation<br>Cost                       | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent  | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)              | Monitoring<br>Costs       |
|---------|---|---|--|---|--|---|---|---|----------------------|-----------------------------|--|---------------------------|
|         | D. Social Impacts   |   |  |   |  |   |   |   |                      |                             |  |                           |
| 1D      | Civil works –<br>Block work,<br>wall<br>finishing,<br>painting,<br>flooring, etc. | Community health &<br>safety risks such as<br>accidents especially for<br>school students and<br>community members<br>Fugitive Dust may likely<br>affect the community<br>health & safety<br>especially areas with<br>earth-based roads<br>Disruption of learning<br>activities during civil<br>works such as block<br>work, roofing, etc.<br>Increase in traffic along<br>major routes that are<br>prone to congestion<br>from mobilization of<br>equipment and<br>materials to site | Implement community health<br>and safety management plan<br>(CHSP), including adequate<br>sensitization of students, staff<br>and community members; all<br>drivers must adhere to traffic<br>protocol of FRSC and road<br>safety rules<br>Ensure wetting of roads<br>Clearly mark our areas for<br>renovation and use caution<br>tapes where necessary.<br>Limit movement of materials<br>and equipment to off peak<br>periods; avoid market days,<br>work and school resumption<br>and closing hours, or night<br>hours.<br>Vehicles conveying materials<br>should be covered with<br>tarpaulin<br>Adequate sensitization of<br>students and staff of schools,<br>as well as community<br>members of the proposed<br>works<br>Liaise with Road Safety<br>Officers, State Road Traffic<br>Agencies, police and<br>community vigilante groups to<br>help in control of traffic in<br>hotspot zones | Project<br>Committee/<br>Contractor<br>FRSC | N100,000/<br>school<br>(N11,200,00<br>0) | Air quality<br>Vehicles with<br>tarpaulin<br>Noise level/<br>Complaints/<br>Grievances<br>Training<br>Records<br>Implementat<br>ion of CHS<br>No of<br>Complaints<br>Grievance<br>records | In-situ<br>measureme<br>nt<br>Consultatio<br>n<br>Review of<br>compliance<br>to CHSP<br>Accident/<br>incident<br>reports<br>Review of<br>Grievance<br>records | Compliance<br>to CHSP<br>Drivers<br>trained by<br>FRSC on road<br>safety and<br>fleet<br>management<br>Installed<br>caution and<br>safety signs<br>in strategic<br>places<br>Absence of<br>traffic<br>incidents | Project<br>Area      | Weekly                      | GT/EST<br>GC<br>School<br>Management<br>FRSC<br>SPIU/NPCU<br>ESO/SSO | N100,000<br>(N11,200,000) |
| S/<br>N | Activities                | Potential Impact  | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent  | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>) | Monitoring<br>Costs |
|---------|---------------------------|---|---|--------------------------------------|--------------------|---|---|--|----------------------|-----------------------------|---|---------------------|
| 20      | Pacruitmont               | Poor  | works<br>Plan renovation activities in a<br>phased approach, scheduling<br>work during non-peak hours/<br>school holidays/weekends to<br>minimize exposure to civil<br>work hazards and disruption<br>to academic activities<br>Identify and allocate<br>temporary facilities or<br>classrooms to ensure that<br>students and staff are not<br>using the civil work areas,<br>which should be clearly<br>demarcated and access<br>restricted  | Project                              | -                  | CPM   | Paviow  | Effoctivo  | Project              | Monthly                     | 66  |                     |
| 20      | Recruitment<br>of workers | Poor recruitment<br>process of local labour<br>for semi- & unskilled<br>labour by the project<br>committee such as<br>unfair, discriminatory,<br>exploitative, cause<br>conflicts, potential<br>litigation.<br>Poor terms and<br>conditions of<br>employment which<br>could lead to poor<br>wages, unsafe work<br>conditions, suboptimal<br>welfare etc.<br>Risk of Child Labour<br>which can lead to<br>Violence Against<br>Children and litigation<br>against existing child<br>protection laws | Comply with the AGILE LMP<br>including provision of social<br>amenities like potable water,<br>food, rest periods (at least one<br>hour lunch break period),<br>WASH facilities, work hours<br>(maximum of 8hourly/<br>compensate for overtime),<br>workers health and safety<br>including PPEs, first aid box,<br>safety training etc Workers<br>should be sensitised on the<br>available grievance redress<br>channels (see chapter 6)<br>Prohibit child labor (under 18<br>years) and any practices that<br>can put children including<br>students at risk | Project<br>Committee/C<br>ontractor  | -                  | GRM<br>Recruitment<br>records<br>Complaints/<br>grievances<br>Workers<br>strike action<br>Working<br>conditions | Review:<br>Minutes of<br>meetings,<br>Grievance<br>records<br>Recruitmen<br>t records<br>Consultatio<br>ns/<br>interviews | Effective<br>GRM<br>Minimal<br>complaints/<br>absence of or<br>Resolved<br>strike actions<br>Workers are<br>not<br>victimized<br>for<br>association/<br>unions | Area                 | Montniy                     | GC<br>School<br>Management<br>SPIU/NPCU<br>SSO          |                     |

| S/<br>N | Activities   | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent                      | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>) | Monitoring<br>Costs |
|---------|--------------|--|---|--------------------------------------|--------------------|---|---|---|----------------------|-----------------------------|---|---------------------|
| 3D      | Civil Works  | Potential impacts on<br>physical and cultural<br>resources including<br>chance find  | Implement the chance find<br>procedures in annex 17<br>Project activities in that area<br>should be suspended and the<br>project committee should be<br>informed immediately, due<br>process must be followed to<br>secure the finding before<br>continuation of work in the<br>area.<br>All procedures should be duly<br>documented by the project<br>committee and reported to the<br>SPIU/NPCU.  | Project<br>Committee/<br>Contractor  | -                  | Compliance<br>to chance<br>find<br>procedures<br>Complaints<br>and reports                                      | Interview<br>Observatio<br>n<br>Consultatio<br>n  | Absence of<br>complaints<br>Compliance<br>to the chance<br>find<br>procedures       | Project<br>schools   | As<br>required              | GC<br>School<br>Management<br>SPIU/NPCU<br>SSO          |                     |
| 4D      |              | Competition for<br>resources such as water,<br>healthcare, food, WASH<br>facilities etc. between<br>the workers and the<br>school staff/students | Prioritise drilling of boreholes<br>early on to provide water for<br>the civil works. Alternatively,<br>liaise with the state ministry<br>of water resources/LGAs on<br>provision of water for civil<br>works<br>Food, first aid, drinking water,<br>WASH facilities should be<br>provided separately for<br>workers. In the case of ill-<br>health workers should be<br>taken to the primary<br>healthcare centres or other<br>clinics/hospitals for treatment<br>and not to rely on the school<br>sick bays | Project<br>Committee/<br>Contractor  | -                  | Complaints<br>fro<br>stakeholders<br>Availability<br>of food,<br>drinking<br>water, first<br>aid for<br>workers | Observatio<br>n<br>Interviews<br>Consultatio<br>n | Absence of<br>complaints<br>Presence of<br>alternative<br>facilities for<br>workers | Project<br>Area      | Monthly                     | GC<br>School<br>Management<br>SPIU/NPCU<br>SSO          |                     |
| 5D      | Use of Labor | Conflicts between the<br>contractors/workers<br>and the host<br>communities or students<br>and staff during                                      | Workers to sign code of<br>conducts and ensure good<br>behavior. See annex 8 for  | Project<br>Committee/<br>Contractor  | -                  | Code of<br>Conducts   | Records<br>Consultatio<br>ns                      | Signed Code<br>of Conducts<br>Absence of<br>complaints                              | Project<br>Area      | Weekly                      | GC<br>School<br>Management                              |                     |

| S/<br>N | Activities | Potential Impact   | Mitigation Measures  | Responsibili<br>ty for<br>Mitigation  | Mitigation<br>Cost            | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)   | Monitoring<br>Costs |
|---------|------------|--|--|---|-------------------------------|---|------------------------------|--|----------------------|-----------------------------|---|---------------------|
|         |            | mobilization of<br>equipment and<br>materials to site  | samples<br>Establish a grievance redress<br>mechanism for complaints to<br>be channeled and effectively<br>addressed.  |   | Part of GRM<br>costs          | GRM<br>Complaints   |                              |  |                      |                             | SPIU/NPCU<br>SSO/GRM<br>Officer   |                     |
| 6D      |            | Potential for<br>SEA/SH/GBV<br>Potential for spread of<br>STDs, sexual relations<br>with community<br>members, female<br>students and staff<br>Abuse of cultural norms<br>if workers are foreign to<br>the communities | Sensitise students, school<br>staff, Community leaders,<br>women group, youth group on<br>GBV prevention, response and<br>reporting channels.<br>All workers to be sensitized<br>and sign Code of Conduct<br>(CoC) and zero tolerance for<br>sexual integration with<br>students, staff, community<br>Provide and distribute referral<br>pathway and directory<br>Use of minors (below 18 years<br>of age) will be prohibited<br>Ensure separate and labelled<br>toilets for male and female<br>workers with locks, and to be<br>well lit at night<br>Establish GBV-GRC equipped<br>to handle GBV cases with<br>reporting channels that are<br>easily accessible and<br>community members feels<br>safe reporting to at the<br>school/community level of the<br>grievance uptake section 6.8 | Project<br>Committee/<br>Contractor<br>GBV Service<br>Providers/<br>Experts | N100,000<br>(N11,200,00<br>0) | Code of<br>Conducts<br>GBV-GRM<br>List of<br>service<br>providers<br>Separate<br>toilets with<br>designations<br>provided | Records<br>Consultatio<br>n  | Signed Code<br>of Conducts<br>Available<br>GBV-GRM<br>Disseminated<br>list of Service<br>Providers<br>and referral<br>pathway<br>Compliance<br>to stated<br>measures | Project<br>Area      | Bi-weekly                   | GC/ GBV<br>Focal Persons<br>SPIU/NPCU<br>GBV Officer<br>State /<br>Federal<br>Ministries of<br>Women<br>Affairs |                     |
| 7D      | Potential  | Project workers  | Avoid areas of high security   | Project   | Part of state                 | Security  | Reports of                   | Compliance   | Project              | Weekly                      | School  | 6,000,000 (one      |

| S/<br>N | Activities  | Potential Impact  | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost  | Parameters<br>to be  | Method of<br>measurem        | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Froquency | Institutional<br>Responsibili  | Monitoring<br>Costs                            |
|---------|---|---|---|--------------------------------------|---|--|------------------------------|---|----------------------|-----------------------------|--|--|
|         |   |   |   | Mitigation                           |   | measureu   | ent                          |   |                      | rrequency                   | (Monitoring<br>)   |  |
|         | exposure to<br>insecurity<br>risks such as<br>kidnapping,<br>banditry, etc. | including NPCU, SPIU,<br>Consultants, could fall<br>victim of kidnap,<br>banditry, insurgency,<br>social conflicts etc.                       | risk<br>Liaise with the state security<br>apparatus such as police,<br>Nigeria Security and Civil<br>Defence Corps (NSCDC) to<br>provide information and<br>protection<br>Rehabilitation areas to be<br>lighted up with flood lights as<br>a way of security for<br>equipment/materials and<br>movement of people in and<br>around the vicinity/ install<br>CCTV<br>In addition, the school should<br>domesticate the AGILE<br>Security Management Plan<br>(SMP)<br>Adequate training on the SMP<br>should be provided to all<br>project workers and those<br>engaged by the project<br>Use of innovative monitoring<br>and supervision methods such<br>as the Geo-Enabling Initiative<br>for Monitoring and<br>Supervision (GEMS),<br>Mapilliary, drones etc. by the<br>NPCU to monitor the ESMP | Committee<br>Police<br>NSCDC         | Security costs<br>Cost of<br>security<br>light/CCTV to<br>be embedded<br>in project<br>cost | management<br>plan (SMP)<br>and<br>strategies<br>Security<br>lights/CCTV<br>Incidents<br>Security<br>Reports | incidents<br>Observatio<br>n | to SMP<br>Presence of<br>security<br>light/CCTV<br>No of<br>incidents | Area                 |                             | Management<br>SPIU<br>Federal<br>Ministry of<br>Education<br>Police<br>NSCDC | off cost for<br>technology use<br>and support) |
| 8D      | All project<br>Activities   | Potential emergency<br>situations such as:<br>incidents/accidents to<br>workers, school<br>students/staff, theft or<br>vandalism, kidnapping, | Implement an emergency<br>response plan in line with the<br>guidelines in annex 18<br>Communicate the emergency<br>plan to all stakeholders   | Project<br>Committee<br>Contractor   |   |  |                              |   |                      |                             |  |  |

| S/<br>N | Activities   | Potential Impact  | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation          | Mitigation<br>Cost  | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)                                      | Monitoring<br>Costs  |
|---------|--|---|---|---|---|--|------------------------------|---|----------------------|-----------------------------|--|--|
|         | Sub-Total  | banditry, ethno-religious<br>clashes etc.   | involved in the project and in<br>the response protocol<br>Domesticate and implement<br>the AGILE security<br>management plan<br>Total Rehab  | ilitation Phase                               | N200,000<br>(N22,400,00<br>0)<br>N1,000,000<br>(N112,000,0  |  |                              |   |                      |                             |  | N100,000<br>(N11,200,000<br>)<br>N200,000)<br>(N22,400,000 |
|         |  |   |   |   | 00)   |  |                              |   |                      |                             |  | )  |
|         |  |   |   | Operatio                                      | on Phase (Post R  | ehabilitation Ph   | lase)                        |   |                      |                             |  |  |
| 1E      | A. Environmen<br>Continuous<br>usage of<br>classroom,<br>WASH and<br>other<br>facilities | ntal & OHS Impacts<br>Generation of different<br>types of wastes – solid<br>waste, e-waste (such as<br>batteries, ICT<br>equipment, electric<br>cables & fittings etc),<br>sewage, menstrual pads | Segregation and disposal of<br>different types of waste into<br>their respective bins<br>As part of project activities the<br>schools should provide color<br>coded waste buns for<br>segregation of waste and<br>proper disposal of waste and<br>liaise with the state<br>EPAs/waste management<br>agencie s/ licensed waste<br>vendors for waste evacuation<br>E-waste to be sent to Material<br>Recovery Facilities/ recycling<br>centres through the state<br>EPAs/waste management<br>agencies/ licensed waste<br>vendors<br>Liaise with the state EPAs so<br>sewage to be evacuated<br>periodically<br>Sensitise students on good | Project<br>Committee/<br>School<br>Management | Part of school<br>operation<br>cost from<br>Ministry<br>budget<br>(estimate of<br>N20,000 per<br>school per<br>month )<br>22,400,000.0<br>00 (annually) | Waste<br>management<br>practices<br>Presence of<br>Bins<br>Environment<br>al clubs | Observatio<br>n              | Good<br>housekeepin<br>g and good<br>waste<br>management<br>practices<br>Presence of<br>environment<br>al clubs | Project<br>Schools   | Monthly                     | State<br>Ministry of<br>Environment<br>/ EPA<br>FMEnv<br>Federal<br>Ministry of<br>Education | -  |

| S/<br>N | Activities | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation          | Mitigation<br>Cost   | Parameters<br>to be<br>measured  | Method of<br>measurem<br>ent | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)   | Monitoring<br>Costs |
|---------|------------|--|---|---|--|--|------------------------------|---|----------------------|-----------------------------|---|---------------------|
|         |            |  | and establish environmental<br>clubs for waste reduction,<br>reuse and recycle and planting<br>of trees<br>Old newspapers or recycled<br>paper should be provided in<br>the female toilets for girls to<br>wrap their used pads. A<br>covered waste bin should also<br>be provided for collection in<br>the female toilets see annex 5<br>for protocol  |   |  |  |                              |   |                      |                             |   |                     |
| 2E      |            | Poor maintenance of<br>WASH Facilities may lead<br>to damage of facilities<br>and public health issues.<br>Boreholes may fail and<br>water may become<br>unavailable for school<br>use especially for<br>maintenance of the<br>WASH facilities<br>Sanitary pads may clog<br>the sewage | Prepare and implement a<br>WASH maintenance schedule<br>Provide adequate human<br>resources (cleaning staff),<br>material resources (cleaning<br>supplies and hygiene<br>products), financial resources<br>(budget for restocking and<br>maintenance) and educational<br>resources (hygiene education<br>program)<br>Attach water points/<br>boreholes to WASH Facilities.<br>Provide covered waste bins<br>for disposable of sanitary<br>pads/ local incinerators in the<br>schools see waste<br>management plan annex 5.<br>Sensitise girls on the channels<br>and importance of proper<br>waste disposal and menstrual | Project<br>Committee/<br>School<br>Management | Part of school<br>operation<br>cost from<br>Ministry<br>budget | Maintenance<br>schedule<br>Water points<br>Waste<br>Management<br>system | Physical<br>inspection       | Good waste<br>management<br>practices<br>Good<br>housekeepin<br>g<br>Routine<br>maintenance | Project<br>Schools   | Quarterly                   | School Based<br>Management<br>Committee<br>(SBMC)<br>Parents<br>Teachers<br>Association<br>(PTA)<br>State<br>Ministry of<br>Environment<br>/ EPA<br>Federal<br>Ministry of<br>Education |                     |
| 3E      | Use of     | Renovated facilities   | Good quality wood and   | Project                                       | Part of  | Quality of   | Technical                    | Use of quality  | Project              | Half yearly                 | School  |                     |

| S/<br>N | Activities                                   | Potential Impact  | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation   | Mitigation<br>Cost  | Parameters<br>to be<br>measured   | Method of<br>measurem<br>ent  | Performanc<br>e indicator   | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)                                     | Monitoring<br>Costs |
|---------|--|---|---|--|---|---|---|---|----------------------|-----------------------------|---|---------------------|
|         | Facilities                                   | could be destroyed by<br>termite infestation<br>especially in areas that<br>reported termite<br>infestation   | materials and proper<br>treatment to be used in the<br>rehabilitation of buildings  | Committee  | Project Costs   | construction  | specificatio<br>ns  | materials and<br>quality<br>construction  | School               |                             | Management<br>Federal<br>Ministry of<br>Education   |                     |
| 4E      |  | Structural failure as a<br>result of flooding and<br>erosion  | The schools should construct<br>drainages, flood control<br>structures, landscaping   | School<br>Management<br>State<br>Ministry of<br>Environment<br>Federal<br>Ministry of<br>Education | Part of<br>Ministry<br>Budget<br>estimate of<br>N3,000,000<br>per school for<br>20 schools)<br>60,000,000 | Drainage<br>system<br>Erosion and<br>flood control<br>structures                                      | Observatio<br>n   | Good<br>drainage<br>system<br>Erosion and<br>flood control<br>structures  | Project<br>school    | Half yearly                 | Federal<br>Ministry of<br>Education   |                     |
| 5E      | Use of<br>Overhead<br>Tanks and<br>boreholes | The tank could fall and<br>cause accidents.<br>The tank could also rust<br>and pollute the water<br>produced over time.<br>There could be<br>consumption of polluted<br>water leading to disease<br>outbreaks if the borehole<br>water is not treated<br>Micro-organisms in<br>water could cause water<br>pollution, disease<br>outbreak and ill-health | The tank-stand should be<br>adequate and sturdily<br>mounted.<br>The tank should be<br>periodically (half yearly)<br>washed out to remove sludge.<br>Water filtration system<br>UV/chlorination system<br>should be included as part of<br>the design and construction of<br>the borehole systems.<br>Conduct annual testing of<br>borehole water to ensure<br>water quality remains within<br>acceptable limits. | School<br>Management<br>/ Federal<br>Ministry of<br>Education                                      | Part of<br>project<br>installation<br>costs<br>Routine<br>school<br>maintenance<br>budget                 | Reports of<br>incidents<br>Water<br>quality   | Review of<br>reports<br>In-situ/<br>laboratory<br>water<br>analysis | Tanks are<br>well<br>mounted<br>Absence of<br>rust in tanks/<br>periodically<br>maintained<br>Water quality<br>parameters<br>are within<br>stipulated<br>FMEnv limits | Project<br>School    | Quarterly                   | Federal<br>Ministry of<br>Education<br>State<br>Ministry of<br>Environment<br>/EPA<br>FMEnv |                     |
|         | Use of<br>Borehole<br>water                  | Risk of water pollution<br>which could cause<br>diseases<br>Presence of low or high<br>pH values in the<br>groundwater<br>high acidity or alkalinity<br>such as FGC   | Use of pH correction filter<br>which involves the use of a<br>neutralising media in schools<br>with high acidity or alkalinity<br>Include reverse osmosis<br>filtration system (RO<br>machines) in the design and<br>apparatus for the borehole   | Project<br>Committee/<br>Contractors   | Part of<br>project costs  | Presence of<br>filters and<br>protection<br>systems<br>Reverse<br>osmosis<br>filtration<br>system (RO | Observatio<br>n   | Compliance<br>with<br>recommenda<br>tions<br>Water quality<br>standards<br>complies<br>with FMEnv   | Project<br>Schools   | Quarterly                   | School<br>Management<br>SBMC<br>PTA<br>Federal<br>Ministry of                               |                     |

| B. Social Improvementation of Social Society and Society andesociety and Society and Society and Society an                             | S/<br>N  | Activities  | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost           | Parameters<br>to be<br>measured | Method of<br>measurem<br>ent | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring   | Monitoring<br>Costs |
|---|----------|---|--|---|--------------------------------------|------------------------------|---------------------------------|------------------------------|--|----------------------|-----------------------------|--|---------------------|
| B. Social ImpactImage: ContinuousPWD may further be<br>(disenfranchised if ramps<br>ar en ot provided in the<br>project design for classes<br>(MASH and<br>other<br>facilitiesEnsure provision of access<br>image of (disenfranchised if ramps)<br>buildings and toiletsProject<br>CommitteePart of design<br>costsInclusive<br>part of design<br>projectVisual<br>inspectionPresence of<br>presence of<br>too<br>besignProject<br>SchoolsOne-off<br>ManagementSchool<br>Management   |          |   | Portharcourt, Rivers<br>State, FGGC Abuloma,<br>FGGC, Lejja in Enugu and<br>FGGC Bakori which<br>groundwater analysis<br>shows relative acidic<br>conditions at that<br>location, and FSTC Uyo,<br>Akwa-Ibom State, FSTC<br>Michika and FGGC Zaria<br>which has more alkaline<br>conditions.<br>Presence of high nitrate<br>content in locations such<br>as FGC Kano, FGGC<br>Kazaure, FSTC Hadejia,<br>FGC New-Bussa, FSTC<br>Lassa, FGGC, Jalingo,<br>Kings College Lagos,<br>FSTC Ikare-Akoko, FGGC<br>Ipetumodu and FGGC<br>Abaji could cause water<br>pollution, disease<br>outbreak and ill-health | system for schools with values<br>of high nitrate/heavy metals<br>as stated in chapter 4 in this<br>ESMP.<br>The project is advised against<br>using lead pipes in school<br>projects   |                                      |                              | machines)                       |                              | standards  |                      |                             | )<br>Education<br>SMEnv/<br>FMEnv  |                     |
| 1FContinuous<br>usage of<br>classroom,<br>wXSH and<br>other<br>facilitiesPWD may further be<br>disenfranchised if ramps<br>are not provided in the<br>project design for classes<br>/WASH facilitiesEnsure provision of access<br>ramps to buildings and toilets<br>with grab bars.Project<br>CommitteePart of design<br>costsInclusive<br>DesignVisual<br>inspectionPresence of<br>RampsProject<br>RampsOne-off<br>SchoolsSchool<br>Management-WASH and<br>other<br>facilitiesproject design for classes<br>/WASH facilitiesPert of design of classes<br>recommenda<br>and be builied or<br>stigmatizedMore students with<br>disabilities may enroll<br>and be builied or<br>stigmatizedMore students with<br>disabilities may enroll<br>and be builied or<br>stigmatizedAGILE can also institute<br>special programs in these<br>schools such as anti-builying<br>campaignsPart of<br>Peteral<br>Part ofNumber of<br>RecruitmenRecruitmen<br>RecruitmenProject<br>RampsOne-off<br>RampsSchool<br>Schools-2FIncrease in<br>may beineufficient to<br>recombend to<br>recombend to<br>recombend to<br>recombendThe number of teachersThe Federal Ministry of<br>Ministry of<br>Federal<br>Ministry of<br>RampsPart of<br>Mumber of<br>RecruitmenRecruitmen<br>RatioRatio<br>RatioProject<br>ProjectOne-off<br>RampsSchool<br>Schools-Part of<br>recombend to<br>recombend to<br>remainThe number of teachersThe Federal Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry ofPart of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>Ministry of<br>M  |          | B. Social Impa  | cts  |   |                                      |                              |                                 |                              |  |                      |                             |  |                     |
| <b>2r</b> increase in The number of reachers The Federal Ministry of Federal Part of Number of Recruitmen Ratio of Project During NPCO feam -   | 1F<br>2F | Continuous<br>usage of<br>classroom,<br>WASH and<br>other<br>facilities | PWD may further be<br>disenfranchised if ramps<br>are not provided in the<br>project design for classes<br>/ WASH facilities<br>More students with<br>disabilities may enroll<br>and be bullied or<br>stigmatized  | Ensure provision of access<br>ramps to buildings and toilets<br>with grab bars.<br>Better lightening, heights of<br>furniture and electrical<br>sockets, adequate turning<br>radius for doors and<br>walkways, brailles etc.<br>AGILE can also institute<br>special programs in these<br>schools such as anti-bullying<br>campaigns | Project<br>Committee                 | Part of design<br>costs<br>- | Inclusive<br>Design             | Visual<br>inspection         | Presence of<br>Ramps<br>Compliance<br>to<br>recommenda<br>tions on<br>Inclusion for<br>PWDs<br>Special<br>toilets etc. | Project<br>Schools   | One-off                     | School<br>Management<br>Component<br>Lead<br>NPCU E&S<br>Federal<br>Ministry of<br>Education | -                   |
| [enomeneous] may be mouncillined in the formula information of the ministry | Zľ       | increase in<br>enrolment of   | ne number of teachers may be insufficient to   | Education should implement  | Ministry of                          | Part of ministry             | Number of female                | t records                    | female of  | Schools              | project                     | NPCU Team  | -                   |

| S/<br>N | Activities               | Potential Impact   | Mitigation Measures   | Responsibili<br>ty for<br>Mitigation   | Mitigation<br>Cost   | Parameters<br>to be<br>measured                        | Method of<br>measurem<br>ent                                     | Performanc<br>e indicator  | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>)  | Monitoring<br>Costs |
|---------|--------------------------|--|---|--|--|--|--|--|----------------------|-----------------------------|--|---------------------|
|         | Students                 | cater for the rate of<br>student enrolment,<br>especially female<br>teachers   | strategies to recruit teachers<br>especially female teachers<br>Incentives could be provided<br>to encourage female teachers<br>especially in girls schools<br>including deploying NCE<br>teachers etc.   | Education  | budget   | teachers<br>recruited                                  |  | teachers in<br>schools   |                      | implement<br>ation          | School Based<br>Management<br>Committee<br>(SBMC)<br>PTA |                     |
| 3F      | Operations<br>of Schools | Security issues: kidnap<br>of students and school<br>staff<br>Risk of vandalization &<br>theft of equipment<br>installed such as solar | Replacement of broken<br>sections of school fence<br>Where an area or school is<br>adjudged to be unsafe, it<br>should be temporarily closed<br>and the students can be<br>relocated to safer areas to<br>continue their academic<br>activities<br>Ensure implementation of<br>security plan to safeguard<br>students and staff,<br>Install flood lights and CCTV<br>cameras as part of security<br>measures to capture<br>movement in and around the<br>schools, The school<br>management should sensitise<br>the students on the use of the<br>facilities.<br>Liaise with security forces to<br>ensure safeguarding of lives<br>and property<br>Conduct regular security<br>management trainings for<br>students and staff including<br>identifying security risks, | School<br>Management<br>Police<br>NSCDC<br>Federal<br>Ministry of<br>Education | Part of<br>project costs<br>Supplementa<br>ry budget<br>from the<br>Ministry<br>(estimate of<br>N300,000/sc<br>hool)<br>33,600,000 | Security<br>Management<br>plans<br>Security<br>Reports | Review<br>security<br>Manageme<br>nt plan<br>Incident<br>records | Absence of<br>incidents<br>Presence of<br>security<br>lights/CCTV<br>Replaced<br>fence | Project<br>schools   | Continuous                  | SBMC<br>PTA<br>Federal<br>Ministry of<br>Education       |                     |

| S/<br>N | Activities  | Potential Impact | Mitigation Measures                         | Responsibili<br>ty for<br>Mitigation | Mitigation<br>Cost                           | Parameters<br>to be<br>measured | Method of<br>measurem<br>ent | Performanc<br>e indicator | Sampling<br>Location | Monitorin<br>g<br>Frequency | Institutional<br>Responsibili<br>ty<br>(Monitoring<br>) | Monitoring<br>Costs                       |
|---------|-------------|------------------|---|--------------------------------------|--|---------------------------------|------------------------------|---------------------------|----------------------|-----------------------------|---|---|
|         |             |                  | seeking protection and<br>response protocol |                                      |  |                                 |                              |                           |                      |                             |   |   |
|         | Grand Total |                  |   |                                      | N1,680,000<br>(188,160,00<br>0)<br>\$212,370 |                                 |                              |                           |                      |                             |   | N700,000<br>(N78,400,000<br>)<br>\$88,487 |

\*An estimated mitigation cost of N1,680,000 per school and monitoring cost of N700,000 per school (Exchange rate – 1\$=N886, 11/12/2023)

However, operation phase costs have been totaled and captured separately as a line item in the ESMP Implementation budget in Table 16 below to ensure clarity.

### 7.4 Capacity building plan

The project committees at the schools do not have adequate capacity to implement the ESMP hence they need some training. Furthermore, the geography/environmental science teacher in the schools will be assigned to monitor environmental mitigation compliance for the project, while the guidance counselor will be assigned to monitor social and GBV mitigation measures for the project, thus they also require training on environmental and social risk management. However, the SPIUs in the AGILE participating states and the NPCU E&S team have capacity in managing environmental and social risks. Thus, this capacity building plan is applicable to the project committees in the schools, school management, geography/environmental science teachers and the guidance counselors in the schools.

| No | Training Modules  | Participants  | Duration | When   | Who to Conduct<br>Training  | Cost (N)   |
|----|---|---|----------|--|---|------------|
| 1. | Environmental, Social,<br>Health & Safety (ESHS)<br>Guidelines<br>ESMP mitigation<br>measures and<br>procedures for<br>implementation and<br>monitoring   | Project committees in the<br>schools, school<br>management,<br>geography/environmental<br>science teachers and the<br>guidance counselors | 1 day    | Before Pre-<br>Rehabilitation<br>(After<br>Clearance of<br>the ESMP) | NPCU to organize<br>the training  | N1,000,000 |
| 2  | GBV Action Plan, Referral<br>pathways, Mitigating GBV<br>risks in line with the WB-<br>GPN  | Project committees in the<br>schools, school<br>management,<br>geography/environmental<br>science teachers and the<br>guidance counselors | 1 day    | Before Pre-<br>Rehabilitation<br>(After<br>Clearance of<br>the ESMP) | NPCU to organize<br>in conjunction<br>with GBV Experts<br>or World Bank                 | N500,000   |
| 3. | <ul> <li>Overview of Health<br/>and Safety Hazards in<br/>rehabilitation:<br/>Incidents, Causation,<br/>First aid, Investigation<br/>&amp; Reporting, Site<br/>Specific OHS, Use of<br/>Personal Protective<br/>Equipment</li> <li>Emergency Plan &amp;<br/>Procedures</li> <li>Security Management<br/>Plan Training</li> <li>Waste Management<br/>Plan</li> <li>Community Health &amp;<br/>Safety Procedures</li> </ul> | Project Committees,<br>project workers,<br>geography/environmental<br>science teachers  | 2 days   | Pre-<br>Rehabilitation   | NPCU to organize<br>in conjunction<br>with Certified<br>OHS Consultant<br>or World Bank | N3,600,000 |
| 4. | Training on Code of<br>Conduct, GRM, GBV-GM,<br>Labor and working<br>conditions   | Project Committees,<br>project workers, guidance<br>counselors  | 4 days   | Pre-<br>Rehabilitation<br>and<br>Rehabilitation                      | NPCU to organize<br>in conjunction<br>with Experts or<br>World Bank                     | N2,000,000 |
| 5. | Training of GRCs on GRM procedures  | Project level GRCs, project<br>committees, School<br>Management, Director<br>Secondary School   | 2        | Before Pre-<br>Rehabilitation  | NPCU to organize  |            |

### Table 12:Capacity Building Content

| No   | Training Modules   | Participants   | Duration | When                   | Who to Conduct<br>Training  | Cost (N)                |
|------|--|----------------|----------|------------------------|---|-------------------------|
|      |  | Education      |          |                        | -   |                         |
| 6    | Use of technology for<br>monitoring such as GEMs,<br>drones etc. | NPCU E&S Team, | 2 days   | Pre-<br>Rehabilitation | NPCU to organize<br>in conjunction<br>with<br>GEMs/technology<br>provider | N 1,000,000             |
| Tota | al   |                |          |                        |   | N8,100,000<br>(\$9,142) |

\* Conversion rate of 886: CBN official Rate as at 11/12/2023

## 7.5 Monitoring and Evaluation Plan

The project committee and workers/contractors will be responsible for implementing the mitigation measures in this ESMP. While the geography/science teacher and guidance counselor will monitor daily project activities to ensure compliance with the ESMP.

The SPIUs in the current 18 AGILE participating states for the parent project and the Additional Financing will support the implementation of the project especially with respect to environmental and social risk management. As such the NPCU will contact the SPIUs accordingly to debrief them on the level of support required from them. The SPIUs will conduct monthly site visits to each FUC in the states.

In addition, the NPCU will provide bi-monthly monitoring/supervision to FUCs in states without any current AGILE project, and quarterly monitoring/supervision to FUCs in states with current AGILE projects.

## 7.5.1 Reporting Plan

The reporting procedures presented in table 13 below have been developed in order to ensure that the NPCU is able to receive feedback from the implementation of the ESMP on an on-going basis and to take rapid corrective actions if there are issues of non-conformance.

| Phase          | Responsibility    | Deliverables               | Frequency  | Submission      |
|----------------|-------------------|----------------------------|------------|-----------------|
| Pre-           | Geography/Science | Report of mitigation       | Monthly    | SPIU E&S Team   |
| rehabilitation | Teacher and       | activities including any   |            | NPCU E&S Team   |
|                | Guidance          | specific events            |            |                 |
|                | Counselor         |                            |            |                 |
| Rehabilitation | Geography/Science | Monitoring Reports of E&S  | Monthly    | SPIU E&S Team   |
|                | Teacher and       | Compliance                 |            | NPCU E&S Team   |
|                | Guidance          |                            |            |                 |
|                | Counselor         |                            |            |                 |
|                |                   |                            |            |                 |
|                | Project           |                            |            |                 |
|                | Committees        |                            |            |                 |
|                | Geography/Science | Additional Reports         | As         | SPIU E&S Team   |
|                | Teacher and       | according to specific      | required   | NPCU E&S Team   |
|                | Guidance          | conditions e.g. Accidents, |            | World Bank Team |
|                | Counselor         | serious                    |            |                 |
|                |                   | environmental/social       |            |                 |
|                | Project           | impacts, grievances        |            |                 |
|                | Committees        |                            |            |                 |
|                | NPCU E&S Team     | Reports on implementation  | Quarterly/ | World Bank      |

### Table 13:Reporting Plan

| Phase     | Responsibility | Deliverables             | Frequency   | Submission          |
|-----------|----------------|--------------------------|-------------|---------------------|
|           | NPCU PC        | and monitoring of E&S    | Annual      |                     |
|           |                | activities               |             |                     |
| Operation | School         | Monitoring Report on E&S | Half yearly | Federal Ministry of |
|           | Management     | compliance               |             | Education           |

### 7.5.2 Record Keeping

The project committee is required to keep records providing evidence of ongoing mitigation activities. Such records may include site monitoring plan, Site Specific HSE Plan, Waste Management Plan, Traffic Control Plan, signed Code of Conducts, training records, complaints records, incident report, Inspection, maintenance and equipment maintenance records. These documents should be made available to monitoring teams upon request.

# 7.6 ESMP Implementation Schedule

It is expected that the activities related to the ESMP Matrix as seen above should be integrated into the overall rehabilitation schedule. The project implementation phase is estimated to be completed in 18 months. The implementation schedule is presented in the table 14 below.

| No | Activity             | Responsibility  | Prior to        | Pre-           | Rehabilitation   | Operation    |
|----|----------------------|-----------------|-----------------|----------------|------------------|--------------|
|    | Description          |                 | for Civil Works | Rehabilitation |                  |              |
| 1  | Clearance &          | NPCU            |                 |                |                  |              |
|    | Disclosure of ESMP   |                 |                 |                |                  |              |
| 2  | Finalization of      | Component       | $\checkmark$    |                |                  |              |
|    | Engineering Designs  | Lead/ Project   |                 |                |                  |              |
|    |                      | Committee       |                 |                |                  |              |
| 3  | Inclusion of         | Project         |                 |                |                  |              |
|    | Environmental &      | Committee       |                 |                |                  |              |
|    | in Rid Documents     |                 |                 |                |                  |              |
| 4  | Environmental and    | NDCII           |                 |                |                  |              |
| Т  | Social Management    | NI CO           |                 | v              | v                |              |
|    | Training             |                 |                 |                |                  |              |
| 5  | Mobilization to site | Project         |                 |                |                  |              |
|    |                      | Committee/      |                 |                |                  |              |
|    |                      | Workers         |                 |                |                  |              |
| 6  | Rehabilitation Phase | Project         |                 |                | $ $ $\checkmark$ |              |
|    |                      | Committee/      |                 |                |                  |              |
|    |                      | Workers         |                 |                |                  |              |
| 7  | Implementation of    | Project         |                 |                |                  | $\checkmark$ |
|    | Mitigation           | Committee/      |                 |                |                  |              |
|    | Measures             | Workers/ School |                 |                |                  |              |
|    |                      | Management      |                 |                | ,                | r            |
| 8  | Supervising ESMP     | Geography/scien |                 | √              | √                | $\checkmark$ |
|    | Implementation       | ce teacher.     |                 |                |                  |              |
|    |                      | Guidance        |                 |                |                  |              |
|    |                      | F&S NDCII F&S   |                 |                |                  |              |
| 9  | Environmental and    | NPCII           |                 |                |                  |              |
|    | Social Auditing      |                 |                 |                | V                | V            |

### Table 14:ESMP Implementation Schedule

### 7.7 ESMP Disclosure

After the ESMP review and clearance by the World Bank, the ESMP shall be disclosed in line with the Nigerian EIA laws for 21 days. This will include a formal registration of the ESMP with the FMEnv and receipt of guidelines for the disclosure from FMEnv. The Environmental Officer at the NPCU is required to coordinate the disclosure process. At a minimum, this will include the following:

| No | Action                      | Remarks  | Cost                   |
|----|-----------------------------|--|------------------------|
| 1. | Registration of the ESMP at | This is based on fixed statutory fees by the           | <del>N</del> 50,000    |
|    | the FMEnv                   | FMEnv  |                        |
| 2. | Inhouse technical review    | This is based on fixed statutory fees by the           | <del>N</del> 200,000-  |
|    |                             | FMEnv  |                        |
| 3. | Impact Mitigation           | This is based on fixed statutory fees by the           |                        |
|    | Monitoring (IMM) FMEnv      | FMEnv <sup>24</sup>                                    |                        |
|    | Statutory Cost              |  |                        |
| 4. | Final Access Charges        | This is based on fixed statutory fees by the           |                        |
|    |                             | FMEnv  |                        |
| 5. | Disclosure on 2 National    | This entails advert in 2 newspapers (actual            | <del>N</del> 540,000   |
|    | Newspapers or as guided     | costs will be determined at the point of placing       |                        |
|    | by FMEnv                    | the advert and varies depending on the paper)          |                        |
| 6. | Radio announcement of       | The SPIU will conduct radio announcement that          | N 100,000 Per          |
|    | the ESMP in each state      | has state coverage for the ESMP, to air for 10         | state                  |
|    | local radio station         | working days, first 5 days of display and last 5       | (N3,600,000)           |
|    |                             | days of display(actual cost will depend on the         |                        |
|    |                             | station)   |                        |
| 7. | Printing of Hard Copies for | N5,000 (estimate) X 150 <sup>25</sup> copies (minimum) | <del>N</del> 750,000   |
|    | Display Centres             |  |                        |
| 8. | Logistics for the various   | Logistics costs for providing the report at the        | N 500,000              |
|    | display centres             | display centres including transportation and           |                        |
|    |                             | sensitising stakeholders about the disclosure          |                        |
| 9. | Disclosure at the World     | The ESMP will be disclosed according to the            | N/A                    |
|    | Bank External Website       | World Bank Disclosure ESS 10                           |                        |
|    |                             | Total  | <del>N</del> 6,390,000 |
|    |                             |  | (\$7212)               |

| Table | 15: | <b>ESMP</b> | Disclosure |
|-------|-----|-------------|------------|
|-------|-----|-------------|------------|

\*Actual costs will be provided at the point of disclosure. The NPCU Environmental Officer will assist the project in the disclosure process \* Conversion rate of 886: CBN official Rate at 11/12/2023

## 7.8 ESMP Implementation Cost

The summary of the cost for the implementation of the ESMP is presented in the Table 16 below. The total costs of the ESMP including costs for mitigation and monitoring and capacity building is estimated as: Two Hundred and Eighty Eight Million, Eight Hundred and Ninety Eight Thousand Naira (N288,898.00) only, for all 112 FUCs across the 36 states .

### Table 16:Summary of ESMP Implementation Budget

<sup>&</sup>lt;sup>24</sup> The cost for IMM and Final Access Charge will be determined at the point of disclosure at FMEnv, however, usually the charge is N500,000 per state

<sup>&</sup>lt;sup>25</sup> 112 FUC LGAs, 36 State Ministries of Environment, Federal Ministry of Environment and Federal Ministry of Education

| S/N | Item                          | Responsibility                | Estimated Cost (NGN)          |
|-----|-------------------------------|-------------------------------|-------------------------------|
| 1.  | Mitigation                    | Project Committee             | 188,160,000.00                |
| 2.  | Monitoring                    | SPIU/NPCU/School              | 84,400,000.00                 |
|     |                               | Management/MDAs               |                               |
| 3.  | Capacity Building             | NPCU                          | 8,100,000.00                  |
| 4.  | GRM Costs                     | Project Committee             | 8,848,000.00                  |
| 5.  | Disclosure Costs              | NPCU                          | 6,390,000.00                  |
| 6.  | Total (pre-rehabilitation and |                               | 295,898,000                   |
|     | rehabilitation phases)        |                               | (\$333,970)                   |
| 7.  | Operational Phase Costs       | Federal Ministry of Education | 116,000,000.00<br>(\$130,925) |

CBN 1\$: N886, 11/12/2013

Considering the peculiarity of the project where the actual rehabilitation works to be implemented will depend largely on the actual funds to be disbursed in lieu of inflation rates and exchange rates, this ESMP was prepared using the extreme scenario based on consultations at the FUCs (implementing all components of the WASH facilities, renovating up to 10 buildings in each school with all components of ceiling, roofing, painting, walls etc. and fence completion). Consequently, the average cost allocated per school for implementation of the ESMP measures is Two Million, Five Hundred and Twelve Thousand, Five Hundred and Seventy One Naira (N2,512,571.00) only, which was obtained by dividing the sum of mitigation + monitoring + GRM costs by 112 FUCs, with an additional one-off cost of N6,000,000 by the NPCU for purchase of monitoring technology[ Technology options include GEMs, Mapilliary, drones etc. as may be preferrable to the project] for schools in high security zones and N1,000,000 for associated training on the technology usage.

The estimated budget for the operation phase is One Hundred and sixteen million naira (N116,000,000) which the Federal Ministry of Education should plan for to implement the actions in the operation phase to ensure project sustainability.

# CHAPTER EIGHT STAKEHOLDER CONSULTATION

### 8.1 Introduction

The AGILE project prepared a Stakeholders Engagement Plan that is aimed at identifying the needs and processes to adhere to for stakeholder engagement throughout the project duration. The Stakeholder Engagement plan also aided the identification of different categories of stakeholders crucial to the project, either as direct beneficiaries, influence groups, or interest groups.

As part of the ESMP requirement, stakeholder consultations were held between 23<sup>rd</sup> October to 5<sup>th</sup> December 2023 as follows:

In 106 schools (excluding 6 schools that had insecurity concerns) across the 36 states with the project committees, the principals, students, staff, learners with disabilities and staff with disabilities.

73 project communities within a 2km radius (in some cases up to 5km radius to the school in the absence of a closer one) spread across the 36 states (see annex 11 for the list of communities and locations). The criteria for selection of communities to visit includes:

- Areas without security threats
- Communities within a radius 2km and in some cases 5km, where there were none closer
- At least one/two representation from each state
- Some communities already consulted under previous AGILE projects were excluded

Consultations were held with community leaders, women, youth, vulnerable groups (persons with disabilities, widows, elderly people above 70years) as were identified, to allow every group to express their opinions about the project.

Consultations were held with 31 number of Ministries, Departments & Agencies (MDAs) across 14 states. A criterion was used considering the enormous scope of the project (all 36 states including the FCT, within a limited timeframe). The criteria are as follows:

- A target of at least 2 states in each of the six geopolitical zones
- A target of the major agencies very critical to the project which included: State Ministries of Environment, State Environmental Protection Agencies, State Ministry of Health and State Ministry of Women Affairs
- MDAs with little or no information available in existing AGILE instruments (ESMPs and ESMFS) for either the parent project or the Additional Financing (AF).

Specifically, consultations were held in Adamawa, Borno and Gombe (North-East), Jigawa and Katsina (North-West), Abia and Imo (South-East), Kogi, Nasarawa and Niger (North-Central), Akwa-Ibom and Cross Rivers (South-South), Osun and Ondo (South-West). The specific MDAs consulted in each state are stated in table 17 below.

| -   |  | *** | • 66                      |    | 1.1                      | 0.1 | 1               |
|-----|--|-----|---------------------------|----|--------------------------|-----|-----------------|
| Env | vironment Sector                         | Wo  | omen Affairs              | He | alth                     | Oti | ners            |
| 1.  | Niger State Ministry of Environment      | 1.  | Borno State Ministry of   | 1. | Borno State Ministry of  | 1.  | Federal Road    |
|     | and Forestry (SME&F)                     |     | Women Affairs             |    | Health                   |     | Safety Corps    |
| 2.  | Borno State Ministry of                  | 2.  | Osun Ministry of          | 2. | Kogi State Ministry of   |     | (FRSC), Traffic |
|     | Environment                              |     | Women, Children and       |    | Health                   |     | Control Team,   |
| 3.  | Niger State Environmental                |     | Social Affairs            | 3. | Adamawa State Ministry   |     | Minna           |
|     | Protection Agency (NISEPA)               | 3.  | Kogi State Ministry of    |    | of Health                |     | Division        |
| 4.  | Adamawa State Ministry of                |     | Women Affairs and         | 4. | Jigawa State Ministry of | 2.  | FRSC, Traffic   |
|     | Environment                              |     | Social Development        |    | Health                   |     | Control Team,   |
| 5.  | Gombe State Environmental                | 4.  | Abia State Ministry of    | 5. | Cross Rivers State       |     | Osogbo          |
|     | Protection Agency (GOSEPA)               |     | Women Affairs             |    | Ministry of Environment  |     |                 |
| 6.  | Kogi State Ministry of Environment       | 5.  | Adamawa State Ministry    | 6. | Nasarawa State Ministry  |     |                 |
|     | and Natural Resources                    |     | of Women Affairs          |    | of Health                |     |                 |
| 7.  | Osun State Ministry of Environment       | 6.  | Nasarawa State Ministry   | 7. | Ondo State Ministry of   |     |                 |
|     | and Sanitation                           |     | of women Affairs and      |    | Health                   |     |                 |
| 8.  | Nasarawa State Ministry                  |     | social development        |    |                          |     |                 |
|     | <b>Environment and Natural Resources</b> | 7.  | Jigawa State Ministry of  |    |                          |     |                 |
| 9.  | Jigawa State Ministry of                 |     | Women Affairs             |    |                          |     |                 |
|     | Environment                              | 8.  | Gombe State Ministry of   |    |                          |     |                 |
| 10. | Akwalbom State Ministry of               |     | Women Affairs and         |    |                          |     |                 |
|     | Environment and Solid Mineral            |     | Social Development        |    |                          |     |                 |
| 11. | Imo State Ministry of Environment        | 9.  | Katsina State Ministry of |    |                          |     |                 |
|     | and Mineral Resources                    |     | Women Affairs             |    |                          |     |                 |
| 12. | Cross Rivers State Ministry of           |     |                           |    |                          |     |                 |
|     | Environment                              |     |                           |    |                          |     |                 |
| 13. | Ondo State Ministry of                   |     |                           |    |                          |     |                 |
|     | Environment                              |     |                           |    |                          |     |                 |

| Tabla | 17.MDAc | Concultod | during the  | ECMD |
|-------|---------|-----------|-------------|------|
| lable | I/.MDA5 | consuiteu | uui ing the | LOME |

The consultations were platforms to discuss the proposed project with stakeholders, obtain useful information and concerns relevant to the project, establish environmental and social baseline amongst others.

### 8.2 Stakeholder Consultation Plan

It is important to consult with stakeholders at the different stages of the project to ensure project acceptance and sustainability. This plan highlights project phases, specific activities at each phase, target groups/stakeholders, and the approach/method for consulting the different groups.

| Project Phase  | Project Activities                    | Target Group                           | Method   |
|----------------|---------------------------------------|--|--|
| Pre-           | <ul> <li>Disclosure of</li> </ul>     | <ul> <li>Project Committee</li> </ul>  | <ul> <li>Consultation meetings, town</li> </ul>  |
| Rehabilitation | relevant project                      | <ul> <li>Students</li> </ul>           | hall meetings, focal group                       |
|                | information                           | <ul> <li>School Staff &amp;</li> </ul> | discussions                                      |
|                | <ul> <li>Identification of</li> </ul> | Management                             | <ul> <li>Disclosure of ESMP at School</li> </ul> |
|                | proposed project                      | <ul> <li>Host communities</li> </ul>   | level, LGAs, State Ministry of                   |
|                | location and area                     | <ul> <li>Community leaders</li> </ul>  | Environment, National Level                      |
|                | of influence                          | and members                            |  |
|                | <ul> <li>ESMP disclosure</li> </ul>   | including women,                       |  |
|                |                                       | youths, vulnerable                     |  |

#### Table 18:Public Consultation Plan

| Project Phase  | Project Activities  | Target Group  | Method  |
|----------------|---|---|---|
|                |   | groups etc.<br>■ MDAs   |   |
| Rehabilitation | <ul> <li>Civil Works</li> <li>ESMP<br/>Implementation</li> <li>ESMP Monitoring</li> <li>Training on<br/>Environmental and<br/>Social Risk<br/>Management</li> </ul> | <ul> <li>Project Committees</li> <li>Community leaders<br/>and members</li> <li>School<br/>management, staff,<br/>students</li> <li>GRCs</li> </ul> | <ul> <li>Consultation meetings at the school and communities</li> <li>Information via school principal/SBMC/PTA</li> <li>Formal and informal training for community members, school staff and students</li> </ul> |
| Operation      | <ul> <li>De-mobilization</li> <li>Audit/ Post construction evaluation</li> <li>School Maintenance</li> </ul>  | <ul> <li>Community leaders</li> <li>School management</li> <li>SBMCs</li> <li>PTA</li> <li>MDAs</li> </ul>  | <ul> <li>Consultation meetings with<br/>school management, SBMC,<br/>PTA, MDAs</li> <li>Information via school<br/>Principal</li> </ul>   |

# 8.3 Summary of Consultations

# 8.3.1 Project committees and School Management

| Date:   | 23 <sup>rd</sup> October to 5 <sup>th</sup> December 2023  | }   |  |  |  |
|---|--|---|--|--|--|
| Venue:  | Principal Office/ School Hall in the School  |   |  |  |  |
| Participants:   | Project Committee, Principal. School staff, ESMP Consultants   |   |  |  |  |
| Key Areas of Discussion:  | <ul> <li>The objectives of the ESMP as an instrument to ensure environmental and social impacts are identified and avoided/reduced or adequately mitigated. Also to ensure stakeholder consultations as an avenue to express their concerns and solicit information.</li> <li>The ESMP process and requirements</li> <li>To ascertain information about the school such as type of school, number of students, number of teachers etc.</li> <li>To understand the existing situation in school with respect to infrastructure, WASH, teachers and other requirement such as availability of power, water, waste management practices,</li> <li>To understand the proposed activities under the project and discussed the potential environmental and social impacts and mitigation measures associated with such activities</li> </ul> |   |  |  |  |
|   | Similar Questions Raised across t  | he schools  |  |  |  |
| Key Findings  | Concerns Raised across Board   | ESMP Consultants Response   |  |  |  |
| <ul> <li>Many schools are aware of<br/>the project and the<br/>activities</li> <li>Some have limited<br/>understanding about the<br/>project</li> <li>Limited information about<br/>the scope of interventions<br/>that can be selected</li> <li>Limited information about</li> </ul> | <ul> <li>They all affirmed that water<br/>supply and WASH facilities are<br/>inadequate</li> <li>What type of rehabilitation works<br/>are they allowed to do apart from<br/>the WASH facilities</li> <li>Can they install street lights under<br/>the project</li> <li>Commencement date of the</li> </ul>  | <ul> <li>The main focus of the project is to<br/>support water supply and WASH facilities</li> <li>The project can accommodate<br/>rehabilitation of classrooms,<br/>administrative buildings, hostels etc.<br/>however, they should prepare their<br/>School Improvement Plan (SIP) and reach<br/>out to the NPCU component lead for more<br/>details</li> </ul> |  |  |  |

| at all about the project<br>especially the new<br>principals  |  | ESMP   |
|---|--|--|
|   | SPECIFIC ISSUES RAISED IN SC   | HOOLS  |
| FGGC Onitsha - Vice<br>Principal Special Duties<br>31/10/2023   | Re-affirm that their BOQ has been<br>submitted for the WASH, however,<br>the College still need more areas of<br>interventions among which erosion<br>and flood control structures,<br>landscaping                                       | The schools are also expected to carry out<br>some rehabilitation/renovation works.<br>They can also carry out minor landscaping<br>works, however erosion and flood control<br>structures are major civil works and they<br>need to liaise with the Federal Ministry of<br>Education of Ministry of Environment for<br>support in those areas                     |
| FGC Zaria – Principal<br>02/11/2023   | Mentioned the issue of theft and<br>vandalism that plagues the school<br>from the local community  | <ul> <li>The school was advised to intensify collaborations with the community leaders and law enforcement to curb these issues.</li> <li>Encouraged to mount CCTV cameras and security lights</li> </ul>  |
|   | Inquired about the project schedule<br>and when would funds be disbursed   | Disbursement will commence after the<br>required procedures have been met such<br>as the preparation and approval of this<br>ESMP  |
| FSTC Igangan - The Vice<br>Principal Academics II<br>16/11/2023<br>FGBC Apo – VP Special<br>Duties<br>9/11/2023 | Inquired about the possibility of<br>providing accommodations for staff<br>members, as they have insufficient<br>accommodation for staffs  | The scope of the project is rehabilitation<br>and not new construction, it is important<br>to comply with that. However, they can still<br>make their request known to the NPCU and<br>also the Federal Ministry of Education in<br>case of other intervention projects  |
| FSTC Otukpo – The Principal<br>8/11/2023  | They have serious water scarcity<br>due to the low aquifer level and<br>they rely on water trucks to bring<br>water to the school which is tedious<br>and expensive  | <ul> <li>They should ensure that the feasibility<br/>for borehole drilling should make use<br/>of smart modern geophysical<br/>investigation.</li> <li>They should also consider rainwater<br/>harvesting and the equipment can be<br/>laid as part of project activities, but<br/>they should reach out to the<br/>component lead for more discussions</li> </ul> |
| FGGC Gusau - VP Special<br>duties<br>2/11/2023<br>FGC Vandekiya – Principal<br>9/11/2023                        | The school is in need of drainages.<br>Can the school use some part of the<br>intervention for that purpose  | The scope of the project is WASH facilities<br>rehabilitation/ renovation works. They can<br>also carry out minor landscaping works,<br>however drainages are major civil works<br>and they need to liaise with the Federal<br>Ministry of Education of Ministry of<br>Environment for support in those areas.   |
| FGGC Kabba – Principal<br>6/11/2023   | Extension of the project scope to<br>include the equipping and<br>renovation of the school's science<br>laboratory   | The scope of the project is WASH facilities<br>rehabilitation/ renovation works. They<br>were advised to reach out to the<br>component lead if this can be<br>accommodated in the funds disbursed  |
| FGGC Kabba – VP Special<br>Duties<br>6/11/2023  | Shared the past difficulties faced<br>with unsuccessful borehole drilling<br>by previous contractors. He<br>earnestly requested assistance in<br>providing modern geophysical<br>equipment known for its high<br>accuracy in groundwater | <ul> <li>They should ensure that the technical team for the borehole uses such equipment to ensure the sustainability of the boreholes.</li> <li>They should also consider rainwater harvesting and the equipment can be laid as part of project activities but</li> </ul>   |

|  | prospecting  | <ul> <li>they should reach out to the component lead for more discussions</li> <li>The project can also include ground reservoirs in such schools in addition to the elevated reservoirs, as the former can store more capacity.</li> </ul>  |
|--|--|--|
| FSTC Ogugu – Member of<br>Management<br>7/11/2023  | Issues of kidnapping around the<br>school. He also stated that the<br>school has a perimeter fencing.<br>Police and Civil defence patrol<br>frequently   | The school was advised to intensify<br>collaborations with the community leaders<br>and law enforcement to curb these issues.<br>Also implement the AGILE security<br>management plan and the security<br>management strategies in this ESMP   |
| FSTC Ogugu – Principal                             | They do not have a geography<br>teacher, however, the agricultural<br>science teacher can support the<br>implementation of environmental<br>mitigation measures as required  | The NPCU will organize trainings for the teacher on ESMP implementation to help with the responsibility  |
| FGC Ogbomosho – VP<br>Special duties<br>17/11/2023 | If supply of utility vehicles and<br>CCTV cameras to enhance security<br>within the school can be<br>accommodated in the project   | The scope of the project is WASH facilities,<br>rehabilitation/ renovation works. They are<br>encouraged to include CCTV in their BOQ<br>and submit to the NPCU for review and<br>approval. However, purchase of vehicle is<br>not part of the project scope and this<br>request can be sent directly to the Federal<br>Ministry of Education              |
| FGC Yola – VP Special Duties<br>31/10/2023         | Are both staff and students going to benefit from the project  | Yes, rehabilitation can also include<br>administrative and staff buildings   |
|  | Are the staff toilets going to be<br>within academic areas only or can<br>be extended to their houses  | It should be within the academic area,<br>however, they can reach out to the<br>component lead for more clarifications   |
| FGC Yola – VP Academics<br>31/10/2023              | Are the toilets going to be water<br>system or pit   | It depends on what the school prefers and<br>will be sustainable. However, traditional<br>pits are obsolete, and they are advised to<br>consider VIP/Pour flush considering the<br>limited water requirements when<br>compared to water closet. However, if they<br>are sure of water availability then they can<br>also consider some water closet system |
| FGC Buni Yadi – Principal<br>29/10/2023            | Their school is currently occupying<br>the same space with FGGC Potiskum<br>due to insecurity but they have<br>separate needs in their permanent<br>site which includes additional<br>Toilets, boreholes and reticulation<br>of water. | This will be duly documented, however,<br>they are advised to avoid high risk areas<br>until they are advised by the state security<br>that the issue has been resolved  |
| FGC Ibilo – VP Special Duties<br>29/11/2023        | They prefer the ESMP training<br>should be done with the biology<br>teacher, as the geography teacher is<br>involved in a lot of politics  | This is their decision as the<br>consultant/NPCU cannot impose on them,<br>as long as they are sure who will<br>effectively carry out the tasks.   |
| FGC Kaduna – VP Academics<br>2/11/2023             | They have snakes in the school<br>sometimes.<br>Some of the hostel areas are<br>swampy due to poor drainage  | They were advised to periodically fumigate<br>and cut grasses around the school. Also, to<br>stock antivenom in the school sick bay. The<br>Government can help them with this.<br>They should liaise with the Federal<br>Ministry of Education and State Ministry of<br>Environment to support with addressing  |

|                        |                                 | the issue of swampy areas                  |
|------------------------|---------------------------------|--|
| FGC Bakori – Principal | Inquired if they can construct  | The scope of the project is WASH and       |
| 30/10/2023             | incinerators under this project | rehabilitation of buildings. Constructing  |
|                        |                                 | incinerators is outside the scope and also |
|                        |                                 | has some environmental and public health   |
| FGGC Zaria – Principal |                                 | concerns which cannot be accommodated      |
| 2/11/2023              |                                 | in this project. However, they can make    |
|                        |                                 | their requests to the Federal Ministry of  |
|                        |                                 | Education and the State Ministry of        |
|                        |                                 | Environment.                               |

# 8.3.2 Consultation with Students

| Date  | 23 <sup>rd</sup> October to 5 <sup>th</sup> December 2023   |  |
|---|---|--|
| Venue:  | Principal Office/ School Hall in the School   |  |
| Participants:   | Students, ESMP Consultants  |  |
| Key Areas of Discussion:  | <ul> <li>Inform them about the AGILE project which intends to support learning environment and also about the ESMP as an instrument to ensure environmental and social impacts are identified and avoided/reduced or adequately mitigated</li> <li>To provide an avenue for them to express their concerns and suggestions</li> <li>Peculiar issues facing education especially girls</li> <li>Hygiene and sanitation situation</li> </ul>  |  |
|   |   |  |
| Koy Findings  | Similar Questions Raised across t   | the schools  |
| • The students were not   | They lamented about the state of  | • The main focus of the project is to  |
| <ul> <li>The students were not<br/>really aware of the AGILE<br/>project</li> <li>In almost 90% of the<br/>schools the students have<br/>not received trainings on<br/>hygiene and sanitation of<br/>GBV</li> </ul> | <ul> <li>They lamented about the state of WASH facilities and how it makes learning uncomfortable</li> <li>They stated that the school has a lot of open defecation because of the situation of WASH facilities</li> <li>The students mentioned that the school furniture e.g., chairs were broken and that it was uncomfortable to learn which such furniture in classes</li> <li>There is no power supply this issue has not been resolved</li> <li>Waste is burnt in a specified location in the school or the local incinerator for schools that have this</li> <li>They usually burn their sanitary pads as well, in some cases they dispose them inside the toilets which can sometimes lead to blockages.</li> <li>When they have issues with respect to gender or personal issues they report to the guidance counselor or the principal</li> </ul> | <ul> <li>The main focus of the project is to<br/>support water supply and WASH facilities</li> <li>The management will be informed to<br/>organize hygiene programs for them and<br/>awareness of good waste management<br/>practices as this is important for their<br/>health</li> </ul> |
| SPECIFIC ISSUES RAISED IN SCHOOLS   |   |  |
| FGC Enugu – Head Girl   | Requested if the improvement of They should discuss with the principal if   |  |
| 3/11/2023   | the sick bay, e-library can be part of  | this can be added to the SIP. However,   |

|                            | the project                          | their request will be documented in this ESMP |
|----------------------------|--------------------------------------|---|
|                            | Inquired about the commencement      |   |
|                            | date if it will be before they       | There are requirements to be met before       |
|                            | graduate                             | the actual civil works can commence, but      |
|                            |                                      | this will be soon                             |
| FGBC Apo – Head Boy        | Highlighted the absence of sporting  | They should discuss with the principal if     |
| 9/11/2023                  | facilities and laboratory equipment  | this can be added to the SIP. However,        |
|                            | limits students' physical activities | their request will be documented in this      |
|                            | and hampers their overall            | ESMP  |
|                            | development                          |   |
| FSTC Ikare Akoko – Student | Although this does not include new   | The scope of the project is rehabilitation    |
| Representative             | construction but we are in need of   | and not new construction, it is important     |
| 16/11/2023                 | additional classrooms. If the AGILE  | to comply with that. However, they can still  |
|                            | project can consider this.           | make their request known through the          |
|                            |                                      | Principal to the NPCU and also the Federal    |
|                            |                                      | Ministry of Education in case of other        |
|                            |                                      | intervention projects                         |

# 8.3.3 Consultation with Teachers and Learners with Disabilities

See table 7 for details of types of disabilities and the locations.

| Date  | 23 <sup>rd</sup> October to 5 <sup>th</sup> December 2023   |   |
|---|---|---|
| Venue:  | Classroom/ School Hall in the School  |   |
| Participants:   | Learners with disabilities/Teachers with disabilities, ESMP Consultants   |   |
| Key Areas of Discussion:  | <ul> <li>Inform them about the AGILE project which intends to support learning environment and also about the ESMP as an instrument to ensure environmental and social impacts are identified and avoided/reduced or adequately mitigated</li> <li>What type of challenges do they face accessing education</li> <li>How do they think this can be improved</li> <li>What is the school doing to encourage learners/teachers with disability</li> </ul> |   |
|   | Similar Questions Raised across t   | he schools  |
| Key Findings  | Concerns Raised across Board  | ESMP Consultants Response   |
| • There is a significant<br>number of learners with<br>disabilities (130) and<br>teachers with disabilities<br>(39) across the FUCs | <ul> <li>They stated that it was quite difficult engaging in academic pursuit because the facilities to support them are not available like brailles, adequate light, access ramps, special toilets, transportation system</li> <li>The teachers have relied on several copying mechanisms</li> <li>They also face some bullying and stigmatization from others</li> </ul>  | <ul> <li>The AGILE intervention includes some facilities that will support persons with disabilities such as special toilets and access ramps in the designs.</li> <li>Recommendations for other areas have also been made in this ESMP.</li> <li>The principals will also be advised to write to the Federal Ministry of Education about their special needs since the ministry is promoting inclusive education</li> <li>The school management will be encouraged to implement a program on antibullying and stigmatization of persons with disabilities</li> </ul> |
| SPECIFIC ISSUES RAISED IN SCHOOLS   |   |   |
| FGGC Minjibar Kano- Fully<br>blind teacher<br>26/10/2023  | One of his major challenges is the<br>school not having special teaching<br>materials for the blind, such as<br>casual reading device, and reading<br>textbooks, embosser, though the<br>help of another teacher he teaches   | <ul> <li>He was encouraged that there is more<br/>awareness on disability inclusion in the<br/>education sector now and measures are<br/>being put in place to support persons<br/>with disabilities.</li> <li>The AGILE intervention includes some</li> </ul>  |

|  | by dictation from the normal<br>textbooks. He has also mastered the<br>routes of the school accessing all<br>locations.   | <ul><li>facilities that will support persons with<br/>disabilities such as special toilets and<br/>access ramps in the designs.</li><li>Recommendations for other areas have<br/>also been made in this ESMP.</li></ul>     |
|--|---|---|
| FGGC Minjibar Kano-<br>partially deaf teacher<br>26/10/2023  | The teacher informed the<br>consultant that she has been<br>teaching for 23 years in the school<br>and her major challenge was her in<br>ability to get a hearing aid device. | She was encouraged to reach out so some<br>NGOs that support in this area <sup>26</sup> s and also<br>write to the Federal Ministry of Education<br>or Teachers board. The request will be<br>duly documented in this ESMP. |
| FGC Kano – Limb challenged<br>26/10/2023                     | Complained that she has not been<br>promoted in years because of the<br>stigmatization of her condition   | The Principal is new and promised to look into the issue and regularize it  |
| FGC Bauchi – Visually<br>impaired male teacher<br>24/10/2023 | He does not receive support to get<br>devices he needs and has to look for<br>money for some of these things like<br>braille  | He was encouraged to reach out so some<br>NGOs that support in these areas and also<br>write to the Federal Ministry of Education<br>or Teachers board. The request will be<br>duly documented in this ESMP.                |
| FGC Ijanikan - visually<br>impaired Students<br>11/11/2023   | Uses glasses difficult to see, poor light in the classroom  | The project will support efficient lighting<br>system in the classes and the school<br>management will also be encouraged to<br>provide good lightening in the classes  |

### 8.3.4 Consultation with Communities

| Venue:                                      | Classroom/ School Hall in the School   |  |
|---|--|--|
| Participants:                               | Learners with disabilities/Teachers with disabilities, ESMP Consultants      |  |
| Key Areas of Discussion:                    | • About the community – environment, social and socio-economic baseline      |  |
|   | Awareness of the project and level of acceptance                             |  |
|   | Physical and Cultural sensitivities in the area                              |  |
|   | Grievance redress channels   |  |
|   | • Potential impacts that could be associated with the project and mitigation |  |
|   | measures   |  |
|   |  |  |
| Similar Questions Raised across the schools |  |  |

| Similar Questions Raised across the schools |
|---|
|---|

| Key Findings   | <b>Concerns Raised across Board</b> | ESMP Consultants Response  |
|--|-------------------------------------|--|
| • They appreciated the AGII  | E intervention                      | • The objective of the ESMP was explained  |
| <ul> <li>Any issues between the school and the communities are usually resolved by the community leader</li> <li>Inquired if local labor will be sourced from the communities</li> <li>The communities have existing grievance redress structures</li> <li>The women stated that they are not hindered from participating in livelihood activities and their girls are allowed to attend schools just like the boys</li> </ul> |                                     | <ul> <li>to them and the potential impacts<br/>associated with such projects like<br/>disturbance, conflict with workers, GBV<br/>related risks etc.</li> <li>The project has the potential to allow for<br/>engagement of local labor temporarily,<br/>they will be duly notified by the school<br/>through the SBMC/Community leader if<br/>this will be the case</li> </ul> |
| SPECIFIC ISSUES RAISED IN SCHOOLS  |                                     |  |
| FGGC Leija. Enugu - Youth  | Stated that as long as they inform  | They were informed that project activities   |

| FGGC Lejja, Enugu - Youth | Stated that as long as they inform  | They were informed that project activities |
|---------------------------|-------------------------------------|--|
| leader representative     | their people about the construction | will be communicated to the community      |
| 3/11/2023                 | activity, no issues are envisaged   | prior to commencement                      |

<sup>&</sup>lt;sup>26</sup> She was encouraged to reach out so some NGOs that support in these areas and also write to the Federal Ministry of Education or Teachers board. The request will be duly documented in this ESMP.

Sightsavers

Disability Rights Advocacy Centre

|  | with the contractors, the and the<br>community head will always be<br>available to solve any issues  |  |
|--|--|--|
| FGGC Lejja, Enugu –<br>Community Leader<br>3/11/2023           | It will be good if the fence of the<br>school is increased to provide more<br>privacy and security for the girls<br>(students)   | The Principal was told to document this<br>with the possibility of including it in the<br>SIP  |
| FGGC Yola – Vulnerable<br>person at Anguwan Lala<br>31/10/2023 | Children with disabilities find it<br>difficult to go to school because the<br>only specialized school for people<br>with disabilities in Adamawa state<br>is in Jada and is very expensive<br>beyond their reach. Particularly the<br>cost of a typewriter, brail machine,<br>writing frame, brail sheet,<br>slate/stylus, etc. | <ul> <li>The Ministry of education is encouraging inclusive education in regular schools</li> <li>The AGILE intervention includes some facilities that will support persons with disabilities such as special toilets and access ramps in the designs.</li> <li>Recommendations for other areas have also been made in this ESMP.</li> </ul> |

### 8.3.5 Consultation with MDAs

At the MDA offices, an introduction of the AGILE project was made by the ESMP Consultant/AGILE NPCU representative and the objective of the ESMP as stated in chapter one of this report was provided to the stakeholders. The expected role of the MDA in supporting the project was elucidated, especially in the aspect of monitoring. A summary of key points is stated below.

- The Ministries of Environment are responsible for conducting periodic monitoring of environmental parameters to ensure compliance with environmental regulations.
- The state environmental protection agencies are responsible for waste management evacuation and disposal at the Government approved dumpsites in the state. Schools in urban areas are under their mandate, while for schools in rural areas, the Local Government Authority or waste vendors are responsible for waste evacuation and disposal in schools. However, any school across the state can write to the Ministry/EPA for support in waste evacuation and they will assist.
- In general, they are all willing to support the unity schools and the AGILE project as best as they can once they are informed., however, they are mostly constrained by inadequate funding.

Specific findings relevant to the project are summarized in table 19 below.

| INSTITUTION   | KEY POINTS  | RESPONSES                                |
|---------------|---|--|
| Adamawa State | The Permanent Secretary stated that flooding is more      | The ESMP consultant stated that          |
| Ministry of   | prominent in the Southern Part of the State               | flooding was observed to have caused     |
| Environment   |   | erosion in FGC Ganye, the school has     |
| (31/10/2023)  |   | been asked to reach out to the Ministry  |
|               |   | for assistance.                          |
|               | With respect to waste management, the Director Waste      | The consultant stated that the Unity     |
|               | management and Pollution Control stated that they         | school management will also be told to   |
|               | provide industrial waste bins in schools before but now   | reach out to the Ministry to assist them |
|               | the capacity to do this is limited due to lack of funds.  | with waste management during the         |
|               | However, they can liaise with construction companies such | project and also during operations as    |
|               | as Triacta, BATCO, RECON to help them evacuate waste as   | the current waste management practice    |

### Table 19: Summary of Consultations with the MDAs

|  | part of Corporate Social Responsibility from schools that   | in all schools are poor   |
|--|---|---|
|  | The Permanent Secretary stated that sometimes the<br>ministry visit schools on World toilet day to sensitise the<br>students on environmental health concerns.<br>He advised that it will be more sustainable to build local<br>incinerators especially in boarding schools to handle the<br>issue of disposal of sanitary pads which usually clogs the<br>toilets and render them unusable, while the Ministry can<br>ensure the design is environmentally friendly.   | Building of incinerators is not in the<br>scope of the AGILE project. However, the<br>Ministry can support the schools in this<br>area in line with best environmental<br>practices.  |
| Gombe State<br>Environmental<br>Protection<br>Agency<br>(GOSEPA)<br>(14/11/2023)   | The Director Admin and Finance (DAF) explained that the<br>mandate of the Agency has to do with the sanitation,<br>Management and evacuation of waste in the state but<br>presently they only deal with MDAs and schools within the<br>state capital. However, they engage the services of private<br>operators to enhance the evacuation of waste in other<br>areas outside the capital (cosmopolitan and back tone<br>green Environmental services), while the Local<br>Government Authorities also have units responsible for<br>waste management and sanitation in the various LGAs.  | FGC BILIRI and FGGC BAJOGA which are<br>under the project are not in the state<br>capital, as such the school management<br>will be provided with the names of the<br>waste operators and also informed to<br>liaise with the LGA as required to<br>manage construction and operational<br>phase waste. |
| Kogi State<br>Ministry of<br>Environment<br>and Natural<br>Resources<br>(8/11/2023)  | The Director Environmental Assessment stated that the<br>Ministry has an agency called Kogi State Sanitation and<br>Waste Management Board which are in charge of waste<br>management within the state within the state capital,<br>Lokoja. Efforts are underway to expand its operational<br>areas to other Local Government Areas within the state.<br>The various LGAs and private waste collectors handle<br>waste management in other LGAs. However, the schools<br>can write to the Ministry to provide support, and this will<br>usually be honored and waste trucks can be arranged to<br>evacuate waste from the schools.  | The unity schools will be informed<br>accordingly to liaise with the ministry to<br>support waste evacuation and disposal,<br>in addition to working with the<br>LGAs/licensed waste operators  |
| Osun Ministry<br>of Women,<br>Children and<br>Social Affairs<br>(3/11/2023)<br>Kogi State<br>Ministry of<br>Women Affairs<br>and Social<br>Development | The commissioner stressed the need to actively involve<br>women during the construction phase, promoting<br>inclusivity and ensuring that the perspectives of all<br>community members, particularly women, are considered.<br>She also highlighted the importance of addressing GBV<br>with utmost seriousness. She recognized the social<br>implications of the project and urged the consultant to<br>incorporate measures that would effectively mitigate and<br>address any potential issues related to GBV<br>The Permanent Secretary stated that through various NGO<br>they visit schools for integrated health organization<br>(Challenge Children hood initiative NGO). However, the<br>Ministry does not do much in the aspect of GBV because<br>sensitization is still low in the state | The consultant stated that AGILE<br>project has a GBV Action Plan,<br>Responsibility & Response Framework<br>which will also be domesticated in the<br>unity schools. In addition, the schools<br>will also collaborate with the Ministry<br>for support where required                                 |
| (8/11/2023)<br>Abia State<br>Ministry of<br>Women Affairs<br>(2/11/2023)   | The Director, Women Affairs stated that the ministry is<br>responsible for protection of the right of the women and<br>vulnerable groups. They have a GBV response department<br>in the Ministry. They also have trained counsellors and<br>lawyers that help in the area of GBV. The Ministry works in<br>collaboration with partners such as National Security and<br>Civil Defence Corps and NGOs such as International<br>Federation of Women Lawyers and Justice for Women to<br>get justice for GBV/SEA victims. The ministry has social<br>desk officers in all the 17 LGAs of Abia state  | The unity schools will be duly informed<br>to liaise with the ministry for support as<br>may be required either in the area of<br>sensitisation, response protocol etc.   |
| Adamawa State<br>Ministry of<br>Women Affairs  | Director, Social Development stated that the state a significant number of girls that drop-out of school were recorded yearly, and this is as a result of pregnancy,  | The consultant encouraged more<br>collaboration between the Ministry of<br>Women Affairs and the Gender Desk  |

| (31/10/2023)<br>Nasarawa State<br>Ministry of<br>women Affairs<br>and social<br>development<br>(10/11/2023)                 | financial constraints, early marriage etc. GBV cases are<br>reported Through Hope Centres at Specialist Hospital Yola,<br>Hope Centers at General Hospital in Mubi, Michika and<br>Numan. Also at one stop centre at the Women<br>Development Centre Yola<br>The Director Social Development stated that with respect<br>to GBV, the Ministry provides shelters pending the<br>outcome of the case either by police or court. They also<br>provide phsyco-social support to survivors. NGOs that<br>support the ministry include GAMMUN centre for<br>development, Centre for Youth and Community Action<br>(NACWYCA), Shelter life environmental initiative, Citizen<br>centre for justice leadership and peace | Officer in the Ministry of Education in<br>providing more awareness on<br>prevention & response of GBV related<br>issues and hygiene programs in the<br>schools<br>This information will be provided to the<br>unity schools so they can receive<br>support from the Ministry when<br>required especially in the area of<br>awareness creation for GBV prevention<br>and response             |
|---|--|---|
| Kogi State<br>Ministry of<br>Health<br>(8/11/2023)  | The Permanent Secretary stated that the Ministry supports<br>schoolgirls with toiletries and personal hygiene and cases<br>of child Abuse. However, this is usually the state schools.<br>NGOs that support the Ministry are Girls' guard distributes<br>sanitary pads to school and NUGF, Federation of Muslim<br>Women's Associations in Nigeria (FOMWAN).   | The consultant urged the Ministry to<br>extend some of their support and<br>monitoring services to the unity schools<br>considering that if there is a disease<br>outbreak in any of the schools it will still<br>be recorded as statistics for the state.<br>Furthermore, the schools will also rely<br>on state hospitals for secondary<br>treatment or admittance of ill<br>students/staff |
| Adamawa State<br>Ministry of<br>Health<br>(31/10/2023)  | Permanent Secretary stated they have a public health<br>department which has reproductive health unit and<br>epidemiology unit.<br>They sometimes conduct general sensitisation in the state<br>on reproductive health and disease control, however, they<br>have not done much with adolescent girls but are willing to<br>do so, as this will enable them have accurate data as well<br>on the prevalent health conditions amongst adolescent<br>girls and thus strategies on how to help  | The consultant stated that It is<br>important that AGILE engages with this<br>ministry and they can support by<br>conducting promotion programmes in<br>schools especially for adolescent girls<br>on menstrual hygiene and how to<br>prevent diseases, considering that this<br>is a major issue presently.  |
| FRSC, Traffic<br>Control Team,<br>Minna Division<br>(26/10/2023)<br>FRSC, Traffic<br>Control Team,<br>Osogbo<br>(3/11/2023) | <ul> <li>Control and manage traffic and road safety throughout project implementation</li> <li>Ensure route diversions are seamless and direct road users appropriately</li> <li>Discourage counter road safety practices among road users</li> <li>Conduct training and tests for drivers to ensure they are qualified</li> </ul>   | The consultant stated that the unity<br>schools will be informed to liaise with<br>the FRSC to support with traffic<br>management during the civil works  |

# CHAPTER NINE CONCLUSION AND RECOMMENDATIONS

## 9.1 Conclusion

This ESMP is for the proposed rehabilitation/renovation works in the 112 FUCs across the country. The works include provision of WASH facilities, boreholes, the renovation of classrooms, toilets, administrative blocks, including roofing, walls, floors, ceiling works, wall finishing including painting, etc. It is envisaged that the proposed interventions will be largely beneficial to the students, staff and management of the schools, host communities, and the country at large. However, some potential negative impacts have been identified, and this ESMP have proffered to mitigate the identified impacts. Furthermore, monitoring plan have been included, with responsibilities and cost of monitoring.

The project committees in the schools will have principal responsibility for all measures outlined in this ESMP are implemented, while the NPCU E&S team will directly supervise the monitoring aspects and supported by AGILE SPIU team in current AGILE states.

### 9.2 Recommendations

- The NPCU should ensure GRCs are established across all the schools and t raining should be provided to the members.
- It is also recommended that the NPCU should adhere to the capacity building plan in the ESMP to enhance the capacity for implementation of mitigation measures.
- Following the clearance of this ESMP, the NPCU should officially inform the State Project Coordinators and E&S officers of the 18 AGILE participating states of their roles in supporting the FUCs, and formally introduce the FUC project committees to the SPIUs. a working group should also be created to include the project committees (including the science/geography teachers in the FUCs), the SPIU E&S officers and the NPCU E&S officers.
- The NPCU should officially communicate with the state MDAs (environment, women affairs) following the approval of this ESMP on the disclosure of the ESMP and their expected roles in supporting the project. Furthermore, request for nomination of key focal persons that will support the project committees. They should also be part of the working groups established for the project.
- It is also recommended for the school management to sensitise their students on nondiscrimination of students with disabilities and the available channels for students and staff to lodge any complaints about the project.
- It is also recommended that vegetative areas/green areas and tree planting should be included in the design for the buildings to help promote a green environment and emission reduction. Based on the huge problem of waste management, Environmental clubs should be constituted for students in the schools to promote good waste management practices, practice waste reduction/reuse/recycling and planting of trees. The schools as part of this project should install industrial recycling bins, promote recycling amongst students, demarcate areas for recycling and liaise with the state environmental protection agencies to evacuate recyclable waste from the schools.
- Building materials considered to be toxic, including asbestos, should be avoided. Where asbestos waste is encountered as part of rehabilitation works, it will be handled as hazardous waste. Where asbestos waste is encountered as part of rehabilitation works, it will be handled as hazardous waste.
- Designs should make provisions for fire prevention and management equipment such as fire-resistant ceilings, extinguishers, smoke detectors, sand buckets, emergency exits etc.

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### ANNEX 1 Terms of Reference for the ESMP BACKGROUND

The World Bank is supporting the Federal Government of Nigeria (FGN) through the Federal Ministry of Education to implement the Adolescent Girls Initiative for Learning and Empowerment (AGILE). The project aims to support the FGN through a holistic and multi-sectorial approach to unlock binding demand and supply-side constraints to girls' empowerment, especially in northern Nigeria. The project will use secondary schools as a platform to empower girls through education, life skills; health education (e. g nutrition, reproductive health), GBV awareness and prevention, negotiations skills; self- agency and digital literacy skills. The AGILE project was development as part of the FGN's long- term education reform agenda, to adequately address the identified constraints of accessing and completing secondary education facing adolescent girls in Nigeria. The project is in line with the FGN's commitment to promote gender equality and girls' empowerment by introducing a number of initiatives including putting forward a set of prioritized policy and programmatic actions on doubling girls' secondary education enrolment and completion rates.

The Project Development Objective (PDO) of AGILE aims to improve secondary education opportunities among girls, with particular attention to adolescent girls, in targeted areas in participating states. The project focuses on the human capital development for sustaining economic growth and poverty reduction through improvement in the quality and efficiency of social service delivery at the state level to promote social inclusion, strengthening governance, public sector management and gender equity.

#### **Project Components**

The AGILE Project is structured into three components consisting of interventions aimed at keeping girls in school and providing opportunities for them to acquire critical life skills and market relevant skills not currently offered in schools.

#### Component 1: Safe and Accessible Learning Spaces

- **Subcomponent** 1.1. Creating new safe learning spaces in Secondary Schools
- Subcomponent 1.2. Improving existing infrastructure in Secondary Schools i.e., School Improvement Grant (SIG)

### **Component 2: Fostering an enabling environment for Girls**

- Subcomponent 2.1: Promoting social and behavioral change through communications campaigns, engagement with traditional rulers, and advocacy;
- Subcomponent 2.2a: Empowering girls with critical life skills and knowledge for navigating adulthood
- Subcomponent 2.2b. Digital Literacy Skills and Remote Learning Platforms
- Subcomponent 2.3: Providing financial incentives to the poorest households

### **Component 3: Project Management and System Strengthening**

- Sub-component 3.1: System strengthening for sustainability and technical Assistance
- Sub-component 3.2: Project Management, Monitoring and Evaluation (M&E)

Overall, component 1&2 activities of the AGILE project are expected to have moderate environmental and substantial social risks, which can be readily mitigated through appropriate measures. Thus, prior to the commencement of project activities and in the course of the implementation of the project, site specific studies including Environmental and Social Management Plans (ESMPs) and relevant plans such as Labour Management Plan (LMP); Waste Management Plan (WMP), Occupational Health & Safety Plan (OHSP); Security Management Plan (SMP) etc. will be carried out and implemented by the proposed intervention.

#### **Rationale for the ESMP**

National Project Coordinating Unit (NPCU) will undertake renovation/rehabilitation of 112 Unity schools across the country. Prior to implementation of civil works in rehabilitation sub-projects, there is need for the assessment of the environmental and social impacts of the sub-project interventions. It is important

that an Environmental and Social Management Plan (ESMP) is prepared to address these potential risks and other E&S risks and impacts associated with the rehabilitation works in the sub-project locations. The ESMP will provide technical guidance for the identification and management of the social and environmental risks and impact that will be associated with the proposed renovation/rehabilitation activities. The envisaged negative impacts will be site specific, reversible, and manageable through appropriate mitigation measures.

The ESMP will be prepared in line with international good practice and the World Bank's Environmental and Social Framework requirements and take into consideration National Environmental legislation, as far as applicable.

Due to the potential environmental and social risks and impacts associated with the AGILE project, the following Environmental and Social Standards applies:

- > ESS1: Assessment and Management of Environmental and Social Risks and Impacts;
- **ESS2:** Labour and Working Conditions:
- > ESS3: Resource Efficiency and Pollution Prevention and Management;
- ESS 4: Community Health and Safety;
- > ESS5: Land acquisition, Restriction of land use and Involuntary Resettlement; and
- > ESS 6: Biodiversity and Natural Resources Management
- > ESS10: Stakeholder Engagement and Information Disclosure.

#### **Objectives**

The objective of this assignment is to prepare an environmental and social management plan which should consist of a well-documented set of mitigation measures, monitoring, and institutional actions to be taken before and during sub- project implementation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. It should also include the measures required to implement these actions, addressing the adequacy of the monitoring and institutional arrangements in the intervention site (s).

#### **Description of the Project Area**

The proposed school rehabilitation/renovation will be implemented across the entire country consisting of the 36 States including the FCT.. Nigeria occupies about 910,770sq.km with an estimated population of 218,841,722 as of August 2022. (United Nations; <a href="https://worldpopulationreview.com/countries/nigeria-population">https://worldpopulationreview.com/countries/nigeria-population</a>). The country has a total coastline of 853 km (530.0 mi), with climates ranging from arid to humid equatorial, with the coastal areas in the southern areas, with temperatures ranging from mid-21°C to low 32°C during most of the year. Rainfall is heaviest averaging 70 inches per year. In the central areas, temperatures can get to over 37°C and average rainfall of 50 inches per year. The climate in northern region is drier while southern region is warm humid climate.

The Federal Ministry of Education spearheads the Education sector saddled with the responsibility of fostering the development of all Nigerian citizens to their full potentials amongst others. The Ministry uses various platforms in achieving its goals and objectives; one of such platforms is the Universal Basic Education, which provides six years of free, compulsory and universal primary education for all children. The State Ministry of Education oversees the state educational activities through the SUBEB in the context of the project.

Unity schools formally known as Federal Government Colleges, spread across the country with each state having an average of 2-3 schools. The school environments are characterized by poor conditions of infrastructure, WASH, absence of perimeter fence, inadequate teachers, exclusion of access for Persons with Disabilities, absence of adequate waste management practices, etc.

#### **Description of Proposed Works**

The general scope of works are renovation and rehabilitation of WASH Facilities, school administrative blocks, classrooms, provision of furniture and fittings, construction of boreholes as well renovation of existing classrooms and schools. Specific works differ amongst the schools with each delineating its

priority. Table 1 & 2 in the Annex 1 highlights the proposed Unity Schools intended for construction /renovation.

#### Scope of Work for the Consultancy

The scope of work for the Consultancy service is to develop an ESMP that covers the identified subproject (see table 1 Annex1). A Firm will be engaged for this exercise and will work in close collaboration with the NPCU Environmental and Social team as well as the Component Lead, infrastructure engineers and other stakeholders as identified by the NPCU. In this respect, the sequencing of the technical design and the ESMP will be critical. The firm will receive the draft technical design in order to take into account the technical variants of the proposed activities and also bring out clearly any major constraint that may arise due to the social and environmental situation on the ground for design consultant to consider while finalizing documents for construction.

In each intervention site, the consultant firm will visit the unity schools and will take into account the proposed draft engineering designs, and other activities aimed at reducing or managing the project activities. The consultant firm will consider all the Environmental and Social Standards relevant to the AGILE project as highlighted above and selects the management strategies needed to ensure that environmental risks are appropriately mitigated.

Tasks of the consultancy assignment include the following:

- Review the existing project appraisal document (PAD) on environmental and social management framework (ESMF), Environmental and Social Commitment Plan (ESCP), Resettlement Policy Framework (RPF) prepared for AGILE project.
- > Review of World Bank Environmental and Social Standards that is applicable to the project.
- Review of preliminary engineering design and technical feasibility studies for the proposed project.
- Identify and summarizes all anticipated significant adverse environmental and social impacts from the proposed activities; including impacts of proposed civil -work, labour influx, sexual exploitation, sexual abuse (SEA), Sexual harassment (SH), occupational health and safety hazard; Community health and safety; displacement and conflict/ fragility; other broader social issues such as risk of elite capture, security and safety issues, social exclusion of the most marginalized/ vulnerable e.g.; persons with disabilities, IDPs, survivors of sexual violence etc.
- Describe proposed sub project by providing a description of project relevant components and presenting diagrams, maps, tables and pictures.
- Describes physical, biological and social conditions of the project study area before implementation of the project which comprised relationship between environmental and social and importance to the community in order to identify the environmental and social component of high value presenting a particular interest.
- > To identify legal administration and policies, institutional framework relevant to sub project.
- Identify and summarizes all occupational health and safety/ public health and safety issues at the sites
- Describe each appropriate mitigation measures to prevent, reduce, minimize and mitigate adverse effect to enhance the quality and sustainability of the project.
- Establish monitoring measure to prevent, minimize and mitigate or compensate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and associated costs.
- > Select and measure appropriate baseline indicators
- > Define details of feasible and cost-effective measures that may reduce potentially significant adverse environmental and social impacts to acceptable levels
- Develop a time bound plan for mitigating environmental and social risks associated with the scope of works in consultation with the relevant public agencies.
- Identify monitoring objectives and specifies the type of monitoring, with linkages to the impacts assessed and the mitigation measures;

- Provide a specific description of institutional arrangements; the agencies responsible for carrying out the mitigation and monitoring measures (e.g. for construction, operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and training) and the contractual arrangements for assuring the performance of each implementation agency;
- Define technical assistance programs that could strengthen environmental management capacity in the agencies responsible for implementation;
- Provide an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and
- Provide the expected capital and recurrent cost estimates and sources of funds for implementing the ESMP and inform accordingly the design consultants so that these costs are duly taken into consideration in the designs;
- Define the arrangement for the Grievance Redress Mechanism and structure for the SEA/SH referral pathway.
- > Provide a Security Management Plan.

The Environmental and Social Management Plan (ESMP) should be addressed based on socio economic issues;

- \* A summary of the principals, student, teachers, and other population including vulnerable groups determined through a documented discussion with local communities. These meetings and discussions must be documented and should show how issues and problems raised are or will be resolved.
- \* A summary of the impacted communities for the project location, access, population, demographic and social characteristics with Economic status such as rate of employment, rate of income distribution, services and housing.
- Consultation with primary and secondary stakeholders to obtain the views about the project. The consultation occurs during the preparation of (ESMP) to determine the hint on environmental and social issues and risk during and after completion of (ESMP) and obtain comment from stakeholders on proposed mitigation measures.
- Appropriate preparation of environmental hazard plan including an analysis of the risk of accident, the identification of appropriate security measures and the development of a preliminary contingency plan.
- **ESMPs** to capture the socio-economic, cultural and risk context for women, they should consider:
  - Existing gender country diagnostics/country action plans;
  - Data on partner/non-partner physical violence against women;
  - Data and/or information on cultural practices vis-à-vis women (early marriage, physical practices);
  - Existing services available from GBV Services Providers;
  - Where health centres are located and what types of services are offered (e.g., whether they treat sexually transmitted diseases, provide reproductive health services, have supplies of rape kits including post-exposure prophylactics and emergency contraception, etc.);
  - Whether women have easy access to these services, and if they have mobility and/or economic constraints that may impede access; and,
  - Information obtained from consultations carried out in the preparation of the project.

#### **Outline of the ESMP Report**

The environmental and social management plan (ESMP) report shall be designed in a comprehensive and systematic format containing all studies, process, analysis, test and recommendations for the purpose of intervention. The report should focus on the findings, recommendations and conclusion shall be

supported by summaries of the data collected and citation of any reference applied. The environmental and social management plan will comprise the following topic organized in a suggested outline.

Cover page Table of content List of acronyms and their meanings List of tables List of figures List of plates Executive summary CHAPTER ONE – INTRODUCTION

Project Background Scope of the project Objective and Rationale of ESMP ESS and how it applies to the project activity

#### CHAPTER TWO - INSTITUTIONAL AND LEGAL FRAMEWORK OF (ESMP)

- Discussion of the World Bank environmental and Social Framework (ESF) relevant to the project.
- Summary of the relevant local, state and federal policy, legal, regulatory and administrative framework.

#### **CHAPTER THREE – PROJECT DESCRIPTION**

- Description of the proposed project, project component and activities

#### **CHAPTER FOUR - DESCRIPTION OF PROJECT AREA OF INFLUENCE**

- Description of the area of influence and environmental baseline conditions
- Analysis of existing livelihoods opportunities, income, gender characteristics, age profile, health, transport access, existing community structures at community, household, and individual levels

#### CHAPTER FIVE: POTENTIAL IMPACTS AND MITIGATION

- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project
- Discussion of the potentially significant adverse of environmental and social impacts of the proposed project
- Description of the Labour influx, SEA/SH risk (including a SEA/SH Action Plan), and more broadly the ESHS expectations, and include appropriate mitigation measures. The basis of the SEA Action Plan should be provided as part of the ESMP.
- Discussion on Security issues and Security Management Plan

#### CHAPTER SIX: GRIEVANCE REDRESS MECHANISM

CHAPTER SEVEN: ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

- Discussion of the proposed mitigation measures
- Institutional responsibilities and accountabilities
- Capacity building plan
- Public consultation plan
- Description of grievance redress mechanism (in alignment with the ESMP and Project Implementation Manual) to address situations of conflicts or disagreements about some of the project activities
- Monitoring and evaluation plan, including suitable indicators for the proposed project
  Costs of implementing the ESMP

CHAPTER EIGHT: PUBLIC CONSULTATION

• Presentation of consultations with relevant stakeholders and affected persons CHAPTER NINE: CONCLUSION AND RECOMMENDATIONS

| S/N          | Question                            | Answer                    |  |  |
|--------------|-------------------------------------|---------------------------|--|--|
|              |                                     | -                         |  |  |
| 1.           | Name of Respondent                  |                           |  |  |
| 2.           | Length of stay within the community |                           |  |  |
| 3.           | Gender                              | Male                      |  |  |
|              |                                     | Female                    |  |  |
| 4.           | Nationality                         |                           |  |  |
| 5.           | Age Group                           | 18 - 30                   |  |  |
|              |                                     | 31 - 50                   |  |  |
|              |                                     | 51 - 65                   |  |  |
|              |                                     | Above 65                  |  |  |
| 6.           | Religious Group                     | Christian                 |  |  |
|              |                                     | Muslim                    |  |  |
|              |                                     | ATR                       |  |  |
|              |                                     | Other(Specify)            |  |  |
| 7.           | Marital Status                      | Single                    |  |  |
|              |                                     | Married                   |  |  |
|              |                                     | Divorced                  |  |  |
|              |                                     | Widow(er).                |  |  |
| 8.           | Family Pattern                      | Joint                     |  |  |
|              |                                     | Nuclear                   |  |  |
|              |                                     | Individual                |  |  |
| 9.           | Size of family                      | Small (2-4)               |  |  |
|              |                                     | Medium (5-7)              |  |  |
| 10           | Household main occupation           | Laige (above 7)           |  |  |
| 10.          | nousenoid main occupation           | Crop Farming              |  |  |
|              |                                     | Livestock Farming         |  |  |
|              |                                     | Fishing                   |  |  |
|              |                                     | Agricultural Processing   |  |  |
|              |                                     | Artisan                   |  |  |
|              |                                     | Trading                   |  |  |
|              |                                     | Public Servant            |  |  |
|              |                                     | Private Sector Employment |  |  |
|              |                                     | House Wife                |  |  |
|              |                                     | Retired                   |  |  |
|              |                                     | Others (Specify)          |  |  |
| 11.          | Monthly Income                      | N1-17,000                 |  |  |
|              |                                     | N18,000-19,000            |  |  |
|              |                                     | N19,000-74,000            |  |  |
|              |                                     | N101 000 and above        |  |  |
| 12           | No of Adult Farning Members         |                           |  |  |
| 12.          | No of Dependents                    |                           |  |  |
| 14           | Roads to the community              | Very Good                 |  |  |
| <sup>1</sup> | Rouds to the community              | Good                      |  |  |
|              |                                     | Fair                      |  |  |
|              |                                     | Poor                      |  |  |
|              |                                     |                           |  |  |

# ANNEX 2 Socioeconomic Assessment Instrument

| S/N | Question  | Answer                  |  |  |  |
|-----|---|-------------------------|--|--|--|
| -   |   | •                       |  |  |  |
| 15. | Roads within community                            | Very Good               |  |  |  |
|     | ,   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 16. | Access to education                               | Very Good               |  |  |  |
|     |   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 17. | Access to Public health institutions              | Very Good               |  |  |  |
|     |   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 18. | Portable water                                    | Very Good               |  |  |  |
|     |   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 19. | Public electricity                                | Very Good               |  |  |  |
|     |   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 20. | Communication facilities                          | Very Good               |  |  |  |
|     |   | Good                    |  |  |  |
|     |   | Fair                    |  |  |  |
|     |   | Poor                    |  |  |  |
| 21. | Major source of water available to your household | River                   |  |  |  |
|     |   | Borehole (Commercial)   |  |  |  |
|     |   | Borehole (Private)      |  |  |  |
|     |   | Public pipe-borne water |  |  |  |
|     |   | Pond                    |  |  |  |
|     |   | Water vendor            |  |  |  |
|     |   | Well water              |  |  |  |
| 22. | Primary source of electricity                     | Lamp                    |  |  |  |
|     |   | Private Generators      |  |  |  |
|     |   | Community Generators    |  |  |  |
|     |   | PHCN (National Grid)    |  |  |  |
| 23. | Main source of fuel used for cooking              | Firewood                |  |  |  |
|     |   | Charcoal                |  |  |  |
|     |   | Kerosene                |  |  |  |
|     |   | Gas<br>El a studistica  |  |  |  |
|     |   | Electricity             |  |  |  |
|     |   | Others (Specify)        |  |  |  |
| 24. | i ype of tollet facility used                     | Pit<br>Deale            |  |  |  |
|     |   | Bush                    |  |  |  |
|     |   | Bucket                  |  |  |  |
|     |   | Water Closet            |  |  |  |
| 07  |   |                         |  |  |  |
| 25. | Refuse disposal methods                           | Public Open Dump        |  |  |  |
|     |   | Organized Collection    |  |  |  |
|     |   | Burning                 |  |  |  |
|     |   | Burying                 |  |  |  |
| S/N | Question                                    | Answer                  |
|-----|---|-------------------------|
|     |   |                         |
|     |   | Bush                    |
| 26. | Most prevalent disease conditions           | Malaria                 |
|     |   | Typhoid                 |
|     |   | Diarrhoea               |
|     |   | Cough                   |
|     |   | Respiratory Disturbance |
|     |   | Others (Specify)        |
| 27. | Streams within your community and uses      |                         |
| 28. | Does your community experience insecurities | Yes                     |
|     | (banditry, theft, kidnapping, etc.)         | No                      |
|     |   |                         |

### **ANNEX 3** Consultation Pictures and Attendance

Please refer to the NPCU on list of persons consulted.

### PICTURES DEPICTING THE EXISTING SITUATION IN THE SCHOOLS



FGC Abaji Collapsed Fence



FGGC Bwari Potholes in Class



FGGC Bwari – Open Dumpsite in the school



Unsteady Stone used as step into the class



FGGC Gusau Collapsed Toilet Facility



FGGC Lejja Waste dumped behind Girls hostel



FGGC Lejja- Non functional toilet in Girls hostel



FGC Enugu-Rainwater harvesting pipes



FGGC Okigwe- Section of Staff office with old asbestos and leaking roof



FGC Ijanikan– Dilapidated Ceiling



FGC Keffi-Erosion at the foundation of the Laboratory





FGA Suleja- Dilapidated Ceiling

FGGC Ugwolawo – Pit toilet

# ANNEX 4 General Environmental Management Conditions for Construction and Renovation Contracts

### General

1. The Project Committees shall comply with the Environmental and Social Management Plan (ESMP) for the works they are responsible for. The committee shall prepare a work strategy and plan to fully take into account relevant provisions of the ESMP.

2. Notwithstanding the committees' obligation under the above clause, they shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:

(a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

(b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

(c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

(d) Prevent bitumen, oils, lubricants and wastewater used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

(e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

(f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the community leader so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.

(g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

(h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.

(i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.

(j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.

(k) Ensure public safety and meet traffic safety requirements for the operation of work to avoid accidents.

3. The committee shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

4. The committee shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions. 5. Besides the regular inspection of the sites for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties.

### Worksite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bunded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed of at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed of appropriately at designated sites or be reused or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the road but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

### **Material Excavation and Deposit**

12. The committee shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14. New extraction sites:

a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on on high or steep ground or in areas of high scenic value and shall not be located less than 1km from such areas.

b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The committee shall deposit any excess material in accordance with the principles of the general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

### Water Resources Management

32. The committee shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

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

### **Health and Safety**

49. In advance of the construction work, the committee shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS. A list of health centers in close proximity should be kept by the committee for quick referral of workers ill health. A link to the list of NIGERIA Health Facility Registry (HFR) is provided as follows:

https://hfr.health.gov.ng/facilities/hospitals-

<u>search?state id=1&lga id=1&ward id=0&facility level id=0&ownership id=0&operational status id=1&r</u> <u>egistration status id=0&license status id=0&geo codes=0&service type=0&service category id=0&entri</u> <u>es per page=20&page=589</u>

50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

### **Repair of Private Property**

52. Should the committee, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the committee shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the committee through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

### Committee s' Environment, Health and Safety Management Plan (EHS-MP)

54. Within 6 weeks of signing the Contract, the committee shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The committee s' EHS-MP will serve two main purposes:

- For the committee, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a SE, to ensure that the committee is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the committee s' EHS performance.

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

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

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

### **EHS Reporting**

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

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

58. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the committee keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. A sample format for an incident notification is shown below. Details of EHS performance will be reported to the Client through the SE's reports to the Client.

### Training of committee s' Personnel

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

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

### Cost of Compliance

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

### **Example Format: EHS Report**

Period of reporting:

Contract: EHS management actions/measures:

Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

### **EHS incidents:**

Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

EHS compliance:

Report on compliance with Contract EHS conditions, including any cases of non-compliance. Changes:

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

Concerns and observations:

Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

### Signature (Name, Title Date):

committee Representative

### Example Format: EHS Incident Notification

| EHS Incident Notification  |                   |
|--|-------------------|
| Provide within 24 hrs to the Supervising Engineer                  |                   |
| Originators Reference No:  |                   |
| Date of Incident:  | Time:             |
| Location of incident:  |                   |
| Name of Person(s) involved:  |                   |
| Employing Company:   |                   |
| Type of Incident:  |                   |
| Description of Incident:   |                   |
| Where, when, what, how, who, operation in progress at the time (or | nly factual)      |
| Immediate Action:  | 5                 |
| Immediate remedial action and actions taken to prevent reoccurrer  | nce or escalation |
| Signature (Name, Title, Date):                                     |                   |
| Committee Representative   |                   |
|  |                   |

### ANNEX 5 Waste Management Plan

### Section A – General Waste Management Protocol

The categories of waste envisaged under the sub-project are as follows:

**Vegetal waste** – This will be vegetation clearance during site preparation and mobilization of equipment to the site. However, vegetal waste is expected to be minimal considering most of the schools are already in existence.

Construction waste - This will include Cement, sands, Paints, Zincs, Metal Scraps, Woods, papers etc.

**Gaseous emissions** – from movement of vehicles, machine operations, site clearing activities, mixing of materials and chemicals such as paints

Liquid waste - Leakages from vehicles, oil containers, chemicals, adhesives, etc.

**Solid and human waste** – Waste generated by workers onsite, such as, domestic sewage, faeces, urine, wastewater, food remnant, food packaging etc. During the operations phase, wastes such as menstrual used pads/towels, packaging/sachet of sanitary pads, tampons, etc.

**E-Waste** – includes ICT wastes, electrical fittings, batteries, solar panels etc.

### **Recommended Measures for Waste Management**

- Minimize the production of waste by using resource efficient products
- Contractors should reuse and recycle waste generated as much as possible
- Identify and classify the type of waste generated. If hazardous wastes are generated, proper procedures must be taken regarding their storage, collection, transportation and disposal
- Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each
- Dispose all wastes in authorized areas, metals, used oils, and excess material generated during construction
- Incorporate recycling systems and the separation of materials
- Identify and demarcate equipment maintenance areas (>15m from rivers, streams, lakes or wetlands).
- Identify, demarcate and enforce the use of within-site access routes to limit impact to site vegetation.
- Install and maintain an adequate drainage system to prevent erosion on the site during and after construction.
- Erect erosion control barriers around perimeter of cuts, disposal pits, and roadways.
- Spray water on dirt roads and stockpiled soil to reduce wind-induced erosion and particulates dispersal, as needed.
- Identify and demarcate locations for stockpiles and borrow pits, ensuring that they are 15 meters away from critical areas such as steep slopes, erosion-prone soils, and areas that drain directly into sensitive water bodies.
- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for construction debris.
- Written record of type, amount, transportation and final disposal site should be kept as part of project's files.

Potential Source Waste Waste Streams Management S/N Type PRECONSTRUCTION А Movement Emission COx, SOx, NOx, CO, • Use water suppression to prevent dust 1 of vehicles emission Dust on

The table below shows how this waste generated will be managed.

|   | unpaved surface<br>and engine<br>exhaust                          |   |  | <ul> <li>Maintain vehicles and machineries to reduce<br/>emission</li> <li>Maintain low speed to reduce dust and gaseous<br/>emission</li> </ul>   |
|---|---|---|--|--|
| 2 | Staging area, site<br>offices and<br>workshops                    | Non-<br>Hazardous                             | <ul> <li>Vegetal Waste</li> <li>Industrial Waste:<br/>Metal scraps,<br/>packaging waste</li> </ul>   | <ul> <li>Vegetal waste shall be supplied to farmers for use as compost.</li> <li>Woody vegetal can be supplied to host communities. However, where it contains other contaminants they should be evacuated by the state EPA or licensed waste vendor</li> </ul>  |
|   |   | Domestic<br>and<br>Sanitary                   | <ul> <li>Food remnant,<br/>kitchen wastes.<br/>Food packaging etc</li> <li>Domestic Sewage</li> </ul>  | <ul> <li>To be transferred to locals for use as compost<br/>and animal feed.</li> <li>Plastic and other packaging to evacuated by the<br/>state EPAs or licenced waste contractors</li> <li>Sewage will be collected in a properly closed<br/>constructed septic tank and will be evacuated<br/>in conjunction with the state EPA as required.</li> </ul>  |
| 3 | Removal of<br>existing asbestos<br>ceiling                        | Hazardous<br>waste                            | • Asbestos ceiling   | Ensure use of appropriate PPEs while removing<br>and handling such materials including nose<br>masks, handgolves, eye protection and overalls.<br>Store on site in a secluded area with restricted<br>access and cover with tarpolin to prevent spread<br>of particles. Liaise with the state EPA/ ministry of<br>environment for evacuation or registered<br>operator with off-site permitted hazardous waste<br>treatment, storage, or disposal. See additional<br>guidance below.               |
| В | CONSTRUCTION  |   |  |  |
| 1 | Movement of<br>vehicles on<br>unpaved surface                     | Emission                                      | COx, SOx, NOx, CO,<br>Dust   | <ul> <li>Use water suppression to prevent dust<br/>emission</li> <li>Maintain vehicles and machineries to reduce<br/>emission</li> </ul>   |
|   | exhaust   |   |  | <ul> <li>Maintain low speed to reduce dust and gaseous<br/>emission</li> <li>Use of cleaner technologies and modern<br/>equipment</li> </ul>   |
| 2 | exhaust<br>Civil works<br>Workers'<br>camp/offices                | Non-<br>Hazardous<br>/Industrial              | <ul> <li>Spoils</li> <li>Waste Packaging<br/>and Dunnage such<br/>as scrap wood,<br/>scrap metal, steel,<br/>glass, plastic, paper<br/>and cardboard,<br/>empty metal<br/>containers, excess<br/>concrete, broken<br/>equipment, or<br/>components</li> <li>Domestic-type<br/>waste: wastepaper<br/>and food scraps,<br/>metal cans</li> </ul>                             | <ul> <li>Maintain low speed to reduce dust and gaseous emission</li> <li>Use of cleaner technologies and modern equipment</li> <li>Segregated and kept securely in closed containers on site. To be evacuated by the state EPA or transferred to approved recycling third parties for reuse/recycling</li> <li>Non-recyclables to be removed by the state EPA or other approved waste vendors</li> <li>Plastic and other packaging to be evacuated by state EPA licensed third parties.</li> </ul> |
| 2 | exhaust<br>Civil works<br>Workers'<br>camp/offices<br>Civil Works | Non-<br>Hazardous<br>/Industrial<br>Hazardous | <ul> <li>Spoils</li> <li>Waste Packaging<br/>and Dunnage such<br/>as scrap wood,<br/>scrap metal, steel,<br/>glass, plastic, paper<br/>and cardboard,<br/>empty metal<br/>containers, excess<br/>concrete, broken<br/>equipment, or<br/>components</li> <li>Domestic-type<br/>waste: wastepaper<br/>and food scraps,<br/>metal cans</li> <li>Solid Wastes: used</li> </ul> | <ul> <li>Maintain low speed to reduce dust and gaseous emission</li> <li>Use of cleaner technologies and modern equipment</li> <li>Segregated and kept securely in closed containers on site. To be evacuated by the state EPA or transferred to approved recycling third parties for reuse/recycling</li> <li>Non-recyclables to be removed by the state EPA or other approved waste vendors</li> <li>Plastic and other packaging to be evacuated by state EPA licensed third parties.</li> </ul> |

|             |   |   | Liquid Waste: spent  | site permitted hazardous waste treatment.   |
|-------------|---|---|--|---|
|             |   |   | lubricating oils.  | storage, or disposal facilities in accordance with  |
|             |   |   | hydraulic fluids   | the state environmental policies  |
|             |   |   | brake fluids battery   |   |
|             |   |   | electrolyte and  |   |
|             |   |   | dielectric fluids  |   |
|             |   |   | chemical cleaning  |   |
|             |   |   | agonte nainte  |   |
|             |   |   | agents, paints,  |   |
|             |   |   | primers, unimers,  |   |
|             |   |   | and corrosion  |   |
|             |   |   | control coatings;  |   |
|             |   |   | sealants and   |   |
|             |   | XAX .   | adnesives etc  |   |
|             | Civil works                             | Waste   | wastewater from  | Discharged to the ground as only very small   |
|             |   | water   | equipment wasning  | quantity is envisaged at this stage.  |
|             |   |   | and concrete   |   |
|             |   |   | production   |   |
| -           |   |   |  |   |
| С           | OPERATION                               |   |  |   |
| C<br>1      | OPERATIONMovementof                     | Emission  | COx, SOx, NOx, CO,   | See A1  |
| C<br>1      | OPERATIONMovementofvehicles             | Emission  | COx, SOx, NOx, CO,<br>Dust   | See A1  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid   | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of   | See A1<br>Segregated and kept securely in closed containers   |
| C<br>1<br>2 | OPERATIONMovementofvehicles0Operations  | Emission<br>Solid<br>waste  | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.  |
| C<br>1<br>2 | OPERATIONMovementofvehicles0Operations1 | Emission<br>Solid<br>waste<br>Chemical  | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste   | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be  |
| C<br>1<br>2 | OPERATIONMovementofvehicles0Operations1 | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage                                 | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical  | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste                      | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual         | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation  | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation<br>from constructed  | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.<br>Alternatively, the girls can dispose the pads in the  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation<br>from constructed<br>toilets   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.<br>Alternatively, the girls can dispose the pads in the<br>incinerator directly if they are not comfortable  |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation<br>from constructed<br>toilets   | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.<br>Alternatively, the girls can dispose the pads in the<br>incinerator directly if they are not comfortable<br>using the bins or take them home for final              |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation<br>from constructed<br>toilets<br>Used sanitary pads                     | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.<br>Alternatively, the girls can dispose the pads in the<br>incinerator directly if they are not comfortable<br>using the bins or take them home for final<br>disposal. |
| C<br>1<br>2 | OPERATIONMovementofvehiclesOperations   | Emission<br>Solid<br>waste<br>Chemical<br>waste<br>Sewage<br>E-waste<br>Menstrual<br>pads | COx, SOx, NOx, CO,<br>Dust<br>Maintenance of<br>buildings, roofing<br>sheets, iron sheets,<br>paint., batteries, ICT<br>equipment, electrical<br>fittings etc.<br>Sewage evacuation<br>from constructed<br>toilets<br>Used sanitary pads<br>may be dumped in | See A1<br>Segregated and kept securely in closed containers<br>on site to be collected by the state EPA.<br>Old newspapers or recycled paper should be<br>provided in the female toilets for girls to wrap<br>their used pads. A covered waste bin should be<br>provided for this to be collected and subsequently<br>transfer to the school incinerator on a daily basis.<br>Alternatively, the girls can dispose the pads in the<br>incinerator directly if they are not comfortable<br>using the bins or take them home for final<br>disposal. |

### Section B - Menstrual Pad Management Protocol

As pads are often disposed after one use they create large quantities of litter, accumulate in landfills, block sanitation systems when thrown in toilets, and release toxins when burned incorrectly. An appropriate waste-management chain must be in place from on-point to endpoint. As cultural beliefs and stigma influence individual disposal, users must change their disposal behaviour to manage disposable pads.

### A. Planning for best pad management protocols

- i. Consultations should be held with the adolescent girls to understand their needs, cultural beliefs and worries about different disposal methods.
- ii. Consultations are an effective way of getting in-depth information about the beliefs, attitudes, perceptions, and practices related to menstrual health and hygiene in a given context.
- iii. Ensure the consultation process is ethical and confidential and in a safe space and ensure effective participation

### Use and care of Pads and Menstrual Materials

Caregivers (school management, ministry of health, gender desks etc.) should consider the following principles:

- i. Are girls and women familiar with the sanitary pad material?
- ii. How frequently does the material need to be changed?
- iii. Does the material require supportive supplies such as water, soap, washbasins etc. and are they available?
- iv. How is the material cleaned and are supplies available?

v. Are water, private spaces for washing, drying and changing available?

### **B.** Disposal Considerations

Caregivers (school management, ministry of health, gender desks etc.) should consider the following principles:

- i. How frequently must the material be disposed of?
- ii. What are the local beliefs about different methods of disposal?
- iii. Are discreet disposal points available for used materials?
- iv. Is there a waste collection system and endpoint disposal site?
- v. Are girls and women aware of disposal mechanisms?
- vi. Is there hand washing facilities and access to changing rooms

### C. Disposal Options

- i. They can be wrapped properly with old newspapers/ recycled papers/waste papers and taken home to be disposed for day students, while boarders can follow steps ii to iv below. The school should make available the materials to wrap soiled sanitary pads
- ii. The wrapped pads can be dropped in covered bins provided in the toilets
- iii. The waste bins can be collected by garbage collectors or collected by those responsible for incineration of these pads
- iv. The wrapped pads can also be directly put into incinerators. Environmentally friendly local incinerators can be constructed in conjunction the state ministries of environment especially in schools in rural areas (minimal access to the ministry of environment waste disposal facilities. Private waste disposal companies) and boarding schools to ensure proper disposal of sanitary wastes.
- v. Where the above options are not feasible, the pads can be disposed into a disposal pit or pit latrine

### D. DONT'S

- i. Sanitary pads should never be flushed down the toilet because it may clog the drainage system.
- ii. Menstrual cloth slows the decomposition process in eco-san toilets and commercial sanitary pads are NOT biodegradable, thus should not be dumped/flushed into toilets; this increases the risk of clogging the pipes.

### E. Information Dissemination and Awareness

Schools should organize periodic awareness and sensitization programs (at least annually) for adolescent girls on:

- i. Menstrual hygiene, sanitation and prevention of infection
- ii. Education on proper use and safe disposal of used sanitary pads
- iii. Education on the available disposal options
- iv. Environmental and public health concerns of inappropriate/poor disposal methods

The training can be done in conjunction with the school guidance counsellors, ministry of health, women affairs, ministry of education (gender desk), NGOs and organisations like UNICEF, Save the Children

### Section C – Asbestos Waste Management Protocol

Some of the schools currently have asbestos ceilings which will be removed and replaced during the AGILE project intervention. This process has to be properly managed because asbestos is toxic and a known carcinogen: Air pollution from asbestos dusts is carcinogenic, presence of asbestos waste on site is toxic, inhalation of Asbestos fibre can cause respiratory illness.

This Asbestos Management Protocol has been prepared to outline the requirements and procedures for asbestos management for the project in line with national and state environmental regulations, and environmental best practices, it outlines procedures for removal, handling, transportation and disposal.

| Activity<br>Description                       | Action to be taken  | Timing (When it should be done)   | Responsibility<br>(Who to do it)   | Monitoring<br>Indicator  |
|---|---|---|--|--|
| Removal of<br>asbestos<br>ceiling             | Sensitise workers on asbestos hazard,<br>handling of asbestos material, use of<br>adequate PPEs and storage of asbestos<br>material on-site prior to evacuation and<br>disposal   | Pre-rehabilitation<br>phase during<br>mobilization to site                        | <ul> <li>Project<br/>Committee</li> <li>Contractor</li> <li>SPIU E&amp;S</li> <li>NPCU E&amp;S</li> <li>State Ministry of<br/>Environment</li> </ul>                                   | <ul> <li>Evidence of<br/>training report<br/>including<br/>participants</li> <li>Interview with<br/>workers</li> </ul> |
|   | Give prior notice of 3 days to the state<br>ministries of environment/EPA before<br>removal of asbestos activity  | During demolition/<br>rehabilitation phase  | <ul> <li>Project<br/>Committee</li> <li>Contractor</li> <li>SPIU E&amp;S</li> </ul>  | Evidence of<br>documented notice   |
|   | <ul> <li>Workers should use adequate PPES<br/>(disposable nose mask, gloves, overall,<br/>boot, eye goggles) to avoid exposure to<br/>asbestos particles</li> <li>Coveralls should be type 5, category 3<br/>(prEN ISO 13982–1 Protective clothing for<br/>use against solid particulates) or<br/>equivalent</li> </ul>   | Throughout period<br>of removal of<br>asbestos and<br>handling toxic<br>materials | <ul> <li>Project workers</li> <li>Contractor</li> <li>Project<br/>Committee</li> <li>SPIU E&amp;S, NPCU<br/>E&amp;S, State<br/>Ministry of<br/>Environment<br/>(monitoring)</li> </ul> | Compliance by<br>workers, observed<br>during site<br>inspection  |
| Handling of<br>removed<br>asbestos<br>ceiling | <ul> <li>Removed asbestos ceiling should be properly stacked at a designated, demarcated (red tape) and restricted area on-site</li> <li>Site should have an impermeable platform and covered with tarpoline</li> <li>Should not be left for more than 4 working days on-site</li> </ul>  | During demolition/<br>rehabilitation phase  | <ul> <li>Project workers</li> <li>Contractor</li> <li>Project<br/>Committee</li> <li>SPIU E&amp;S, NPCU<br/>E&amp;S, State<br/>Ministry of<br/>Environment<br/>(monitoring)</li> </ul> | Compliance<br>observed during site<br>inspection   |
|   | Used disposable PPE is to be placed in a<br>sealed heavy-duty 200µm (micrometres)<br>(minimum thickness) polythene bag no more<br>than 1,200mm long and 900mm wide. The<br>outside of the bag should be wiped down<br>using a damp cloth. The bag should then be<br>sealed with duct tape and labelled as<br>"Asbestos Waste". This should also be<br>evacuated along with the asbestos waste by<br>the EPA | During demolition/<br>rehabilitation phase  | <ul> <li>Project workers</li> <li>Contractor</li> <li>Project<br/>Committee</li> <li>SPIU E&amp;S, NPCU<br/>E&amp;S, State<br/>Ministry of<br/>Environment<br/>(monitoring)</li> </ul> | Compliance<br>observed during site<br>inspection   |
|   | Following removal of PPE, personnel are to<br>thoroughly clean their face, hands and<br>fingernails with soapy water  | During demolition/<br>rehabilitation phase  | <ul><li>Contractor</li><li>Project<br/>Committee</li></ul>   | Workers<br>Compliance  |

| Activity<br>Description   | Action to be taken   | Timing (When it should be done)                    | Responsibility<br>(Who to do it)  | Monitoring<br>Indicator                        |
|---|--|--|---|--|
| Evacuation of<br>asbestos<br>waste from<br>site and<br>transportation | • Evacuation of asbestos waste should be coordinated by the state ministry of environment/EPA.   | During demolition/<br>rehabilitation phase         | <ul> <li>State ministry of<br/>environment/EP<br/>A</li> <li>Licensed<br/>Hazardous<br/>Waste Vendor</li> </ul>   | Site evacuation<br>register including<br>dates |
|   | <ul> <li>Transport vehicles must meet regulatory specifications must have tarpaulin covers</li> <li>Loads must be handled, unloaded and placed in the cell carefully to avoid damaging packaging and generation of dust in accordance to hazardous waste regulations</li> <li>Use of appropriate PPEs (disposable nose mask, gloves, overall, boot, eye goggles)</li> <li>Driver/Personnel must be trained personnel on hazardous waste management</li> <li>All asbestos loads should be well documented in a register on-site including dates of evacuation</li> </ul>  | During demolition/<br>rehabilitation phase         | <ul> <li>State ministry of<br/>environment/EP<br/>A</li> <li>Licensed Waste<br/>Vendor</li> </ul>                 | Visual observation<br>and inspection           |
| Management<br>and Disposal<br>of Asbestos<br>waste                    | <ul> <li>Waste should be handled in line with the state environmental policy and best practice in an approved hazardous waste disposal site. Some recommendations are as follows:</li> <li>Immobilize the waste by encapsulation with cement or other acceptable material</li> <li>Subsequently, it can be used as interlocking blocks or incinerated at an environmentally appropriate incinerating facility</li> <li>A copy of the waste disposal certificate should be given to the school project committee</li> <li>Minimum requirements for management include: <ul> <li>an exclusion zone must be established during the unloading of asbestos;</li> <li>all untrained personnel must remain outside the exclusion zone;</li> <li>all asbestos loads should be wet down (with a fine mist) prior to unloading;</li> <li>asbestos must be disposed using either front end loader or excavator;</li> <li>loads should be dropped off as close to the active monocell as possible to minimise handling of the material and potential for damage to packaging to occur</li> </ul> </li> </ul> | During disposal                                    | <ul> <li>State ministry of<br/>environment/EP<br/>A</li> <li>Licensed Waste<br/>Vendor</li> </ul>                 | Waste Disposal<br>Certificate                  |
| Incidents and<br>Accidents<br>Management                              | <ul> <li>All incidents, asbestos spills etc. must be reported to the site manager immediately</li> <li>Spill area to be zoned off and restricted immediately</li> <li>If a person is exposed to asbestos without</li> </ul>  | During removal of<br>asbestos<br>During evacuation | <ul> <li>Project Workers</li> <li>Contractor</li> <li>Project<br/>Committee</li> <li>State ministry of</li> </ul> | Incident Report                                |

| Activity<br>Description | Action to be taken   | Timing (When it should be done) | Responsibility<br>(Who to do it)                  | Monitoring<br>Indicator                            |
|-------------------------|--|---------------------------------|---|--|
|                         | <ul> <li>the use of appropriate PPE the following decontamination procedure must be undertaken:</li> <li>immediately wet down the person with fine spray/mist of water;</li> <li>the person must then walk to the nearest shower facility (if not, vehicles or machinery may be contaminated);</li> <li>gently remove all contaminated clothing and place in a sealed bag;</li> <li>shower to remove all dust and asbestos fibres with particular focus on the hair, face, hands and fingernails; Change into clean clothing; and</li> <li>the bag must be labelled with "Asbestos Waste" and disposed of appropriately.</li> <li>All personnel assisting with the decontamination procedure must wear, as a minimum, a P2 dust mask</li> <li>Incidents must be duly documented</li> </ul> | and transportation<br>of waste  | environment/EP<br>A<br>• Licensed Waste<br>Vendor |  |
| Record<br>keeping       | Records to track the lifecycle of the asbestos<br>waste must be kept by every institution<br>involved  | As required                     |   | Evidence of records<br>and disposal<br>certificate |
|                         | Store all records for a minimum of 40 years  | As required                     | State Ministry of<br>Environment/EPA              | Evidence of records                                |

### ANNEX 6 Occupational Health and Safety Plan

Considering the potential for civil works to require medium to large scale labor, and the peculiarity of the civil, the project requires a Project Occupational Health and Safety Management Plan. The plan will focus on workers' health and safety during the major civil works.

### **COMPETENCY**

All personnel required to operate or work with any equipment or machine must be competent, be tested for each equipment that he/she shall be operating. All personnel who as part of their profession require licensing or certification must obtain the necessary certification before he/she shall be allowed to work on the site.

### **FITNESS**

All personnel working on site shall be required to be certified medically fit to do so by an approved medical facility or Medical Doctor (pre-employment medical examination).

### HSE TRAINING

### Induction/Orientation

Every new or rehired employee and Subcontractors employees must undergo mandatory OHS orientation / induction. The purpose of the Induction is to educate workers and make them aware of the major potential hazards he or she shall come into contact with while working on the site; also, it is one more opportunity to stress the importance of HSE being the first priority in the operations. The content of the HSE orientation / induction shall cover the following subjects:

 $\checkmark$  Site safety rules.

- ✓ Site safety rules.
   ✓ Personnel protective equipment requirements (PPE).
- ✓ Environmental sensitivity and protection.
- ✓ Preparation and planning of the job (Daily Pre-task talk).
- ✓ Emergency plan and muster points.
- ✓ SEA/SH and GBV prevention strategies
- ✓ COVID-19 prevention strategies

### **Project Specific HSE Training**

In addition to the HSE orientation /induction, there shall be specific site HSE trainings which shall cover the following topics:

- ✓ Manual handling.
- ✓ Electrical Safety
- ✓ Emergency Prevention, Preparedness and Response
- ✓ Work at height training
- ✓ First Aid training (for site First Aiders)
- ✓ Lifting and Rigging
- ✓ Safe Driving techniques (for drivers)

### • EMERGENCY PREPAREDNESS AND RESPONSE

Emergency procedures and evacuation plan shall be developed by the HSE Department and displayed on the notice board. These procedures shall be communicated to all staff. Also, each section/department shall have at least a trained first aider at all times.

The contractor team should have a trained first-aider present at all times with well-equipped first aid box. For accidents which are beyond first aid/require medical attention, ill-health, disease outbreaks, health emergencies the contractor to liaise with the Primary Healthcare Centres present in each Ward and registered hospitals in the project areas to ensure timely medical attention (list of health facilities - <u>https://hfr.health.gov.ng/facilities/hospitals-list?page=1055</u>). The emergency numbers for the Katsina State Ministry of health can be contacted as well: 09035037114, 09047092428.

### HSE IMPLEMENTATION AND PERFORMANCE MONITORING

### **HSE Meetings**

HSE management meetings shall be held once a month. The meeting is to help identify safety problems, develop solutions, review incident reports, provide training and evaluate the effectiveness of our safety program. Some of the meetings shall be:

- ✓ Project/Site Management HSE Meeting for management and supervision (Monthly).
   ✓ Tool box talk meetings for all workforce (Weekly).
   ✓ Pre-task briefing for all workforces (Daily).

- ✓ Special situation meeting (As required).

### **HSE Reporting**

All incidents and illnesses must be reported to site supervisor after which investigation shall commence and recorded so that appropriate corrective actions shall be implemented to prevent any re-occurrence and report findings shall be forwarded to management for review. Reporting requirements shall include notification of incident, investigation report, and monthly report. Notification of Incident form shall be developed which shall be filled and submitted to HSE department for investigation.

### **HSE Inspection and Audits**

For continual improvement of HSE management system, HSE inspection and audit shall be conducted. An inspection checklist shall be developed. This is to ensure that the HSE management system is being adhered to. The inspection shall be conducted by the HSE department together with site management.

### **Corrective and Preventive Actions and Non-Conformities**

During the cause of inspections, concerns raised shall be addressed and closed out. It is expected that in a period of two weeks, a close out inspection shall take place to verify that the corrective actions have been closed.

### **Project HSE Rules**

The project HSE rules shall be developed and supervision shall develop specific rules and procedures when necessary. The following site rules shall be implemented at all times. The Site Manager shall draw these rules to the attention of their own workmen or staff. All sub-contractors must ensure that these rules are drawn to the attention of their workmen and staff. The Principal Contractor may implement additional site rules during the contract programme. Any such additional rules shall be notified to all personnel engaged on the project prior to their implementation. The HSE rules shall include but not limited to:

- ✓ Personal Protective Equipment must be worn at all times.
- $\checkmark$  All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed.
- ✓ All vehicles must be parked in the designated areas.
- $\checkmark$  Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work.
- ✓ All site tools shall either be battery operated or 110 volts.
- ✓ No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs.
- ✓ Vehicles must not reverse without a banksman in attendance.
- $\checkmark$ All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times.
- ✓ All excavations must be secured.
- ✓ Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.
- ✓ No hot works operations are permitted without a hot work permit in place.
- ✓ There shall be no radios or other music playing devices on site.
- ✓ Good housekeeping practices to be adopted.
- ✓ Compliance with all Ethical Power Permit to Work systems
- ✓ The site keyed access procedure must be strictly adhered to.
- ✓ All Contractors must comply with Site Health & Safety Guidelines / Site Safety Method Statement
- ✓ No untrained worker shall be permitted to operate heavy machineries.
- $\checkmark$ COVID-19 protocols are to be adhered to including frequent handwashing, use of nose masks when in crowded spaces, timely reporting of any symptoms to HSE officer and immediate isolation.

### SAFE WORK PRACTICES/PERSONAL PROTECTIVE EQUIPMENT (PPE)

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat, ear plugs and Coverall. Any other PPE shall be used as applicable. Management is responsible for the provision of PPE and usage shall be enforced at all time.

PPE shall be provided in circumstances where exposure to hazards cannot be avoided by other means or to supplement existing control measures identified by a risk assessment. An assessment shall be made to ensure that the PPE is suitable for purpose and is appropriate to the risk involved.

Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE. Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced.

PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued. *WELFARE FACILITIES* 

The provision of welfare facilities on the site shall be communicated to all operatives at site induction.

A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.

If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.

### SIGNAGE

Adequate provision for warning and directional signs shall be made.

### RESPONSIBILITIES

### The PROJECT COMMITTEE (OHS Responsibilities)

- 1. The committee has a responsibility to ensure the health and safety of all persons working on all the components and sub-components, their own employees, Contractors, Subcontractors and agency employees.
- 2. Define systems of work and requirements for Contractors and Subcontractors to ensure their health and safety on the site. This means that PIU will require Contractors and Subcontractors to follow safe systems of work, meet statutory and other requirements (Nigerian and International), and audit their capability to safely manage work performed by their own employees.
- 3. Provide information needed by the workers to document and carry our work in a safe manner.
- 4. Review Safe Work Mode Method Statements to ensure they comply with Bank's Environmental and Social safeguards and statutory HSE Requirements.
- 5. Ensure that Contractors follow all safety and environmental requirements.
- 6. Monitor health and safety during rehabilitation works. Pre-start checks, inspections and audits will be conducted while on-site. These checks will look at work practices and methods, equipment conditions and suitability, and competency of people through checking the permits, licenses etc. Individuals are not permitted to bring, use or be under the influence of alcohol or non-prescribed drugs

site.

### ANNEX 7 Traffic Management Plan

Managing traffic at a construction workplace is an important part of ensuring the workplace is without risks to health and safety. Vehicles including powered mobile plant moving in and around a workplace, reversing, loading and unloading are often linked with death and injuries to workers and members of the public. Traffic includes cars, trucks and powered mobile equipment like excavators or graders, and pedestrians like workers and visitors. The most effective way to protect pedestrians is to eliminate traffic hazards. The objective of this Traffic Management Plan (TMP) is to provide safe passage for community members, pedestrians, motorcyclist, cyclists and vehicular traffic in the project areas during the construction.

The Contractor should designate a TMP Supervisor who will oversee traffic management along major roads within the project corridors. The following are the minimum requirements for traffic management on the project:

### Liaisons with Government Traffic Agencies

The TMP will ensure liaisons with the FRSC at the State level. In situations where heavy traffic impacts are envisaged, the Contractor will liaise with the FRSC to ensure traffic coordination and mitigate adverse traffic impacts.

### Pedestrians

a) Provide separate routes for pedestrians and where needed provide suitable barriers.

- b) If traffic routes are used by both pedestrians and vehicles they should be wide enough.
- c) Provide suitable well marked crossing points.

| S/N | Aspects        | Descriptions  | Responsible | Party   |
|-----|----------------|---|-------------|---------|
| 1   | Traffic/Safety | Safety signage should be put at strategic locations to warn road users of the     | Workers     |         |
|     | Signage        | ongoing construction activities.  |             |         |
|     |                | Signages should also be located along burrow pits, engineering yards and workers' |             |         |
|     |                | camp.   |             |         |
| 2   | Movement of    | Mobilization of equipment and materials should be done at off-peak period (10am   | Workers/    | Project |
|     | Vehicles and   | – 4pm), mainly on weekends, holidays  | Committee   |         |
|     | Equipment      | Enforce speed limit.  |             |         |
|     |                | Ensure vehicles and equipment are parked at Camp site and designated areas        |             |         |
|     |                | ONLY.   |             |         |
|     |                | Untarred access roads shall be sprinkled with water frequently to suppress dust   |             |         |
|     |                | emissions.  |             |         |
|     |                | The contractor must ensure that trucks carrying sand/soil to and from the sites   |             |         |
|     |                | are well covered in order not to cause injury to the public.                      |             |         |
|     |                | Station flagmen at junctions, diversion points, near public crossings such as     |             |         |
|     |                | schools and speed bumps will be installed in built up areas and near public       |             |         |
|     |                | facilities such as schools, mosques, churches to reduce speed and dust            |             |         |
|     |                | During peak periods, such as market days FRSC will also be involved in assisting  |             |         |
|     |                | traffic and road safety management. Furthermore, the contractor will engage the   |             |         |
| -   |                | services of FRSC to train all project drivers.                                    |             | -       |
| 3   | Training       | Hire drivers with appropriate driver's license.                                   | Project Com | mittee  |
|     |                | Liaise with FRSC to train drivers   |             |         |
|     |                | As part of refresher course for construction workers, train drivers on defensive  |             |         |
|     |                | driving and enforce speed limits  |             |         |
| 4   | Communication  | All Traffic and Safety signages should be boldly written in English & local       | NPCU        |         |
|     |                | languages.  |             |         |
|     |                | Any incident/ accidents should be reported immediately to the NPCU within         |             |         |
|     |                | 24hrs. The NPCU should also report fatalities to the Bank within 48hrs including  |             |         |
|     |                | immediate action taken  |             |         |

### **Traffic Management Steps**

Additional measures are provided in the Word BANK (WB) Good Practice Note on Road Safety (2019) https://thedocs.worldbank.org/en/doc/648681570135612401-0290022019/original/GoodPracticeNoteRoadSafety.pdf

### ANNEX 8 Sample Code of Conducts

### **Individual Code of Conduct**

#### <u>Preventing Gender Based Violence and Violence Against Children</u> Definitions:

**Gender Based Violence (GBV)** – is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

**Sexual Exploitation and Abuse (SEA)** is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behavior of a sexual nature

**Violence Against Children (VAC)** is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

I, \_\_\_\_\_\_, acknowledge that preventing gender-based violence (GBV) and violence against children (VAC) is important. The company considers that GBV or VAC activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV or VAC are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or VAC may be pursued if appropriate.

I agree that while working on the project I will:

Consent to police background check.

Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.

Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.

Not participate in sexual contact or activity with children—including grooming or contact through digital media. Mistaken belief regarding the age of a child is not a defence. Consent from the child is also not a defence or excuse.

Not engage in sexual favours—for instance, making promises or favourable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behaviour.

Unless there is the full consent by all parties involved, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.

Attend and actively partake in training courses related to HIV/AIDS, GBV and VAC as requested by my employer.

Consider reporting through the GRM or to my manager any suspected or actual GBV or VAC by a fellow worker, whether employed by my company or not, or any breaches of this Code of Conduct.

With regard to children under the age of 18:

Wherever possible, ensure that another adult is present when working in the proximity of children.

Not invite unaccompanied children unrelated to my family into my home unless they are at immediate risk of injury or in physical danger.

Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.

Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes" below).

Refrain from physical punishment or discipline of children.

Refrain from hiring children for domestic or other labour which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.

Comply with all relevant local legislation, including labour laws in relation to child labour.

### Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.

Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.

Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.

Ensure images are honest representations of the context and the facts.

Ensure file labels do not reveal identifying information about a child when sending images electronically.

### Sanctions

I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include: Informal warning. Formal warning. Additional Training.

Loss of up to one week's salary.

Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.

Termination of employment.

Report to the police if warranted.

I understand that it is my responsibility to avoid actions or behaviors that could be construed as GBV or VAC or breach this Individual Code of Conduct. I do hereby acknowledge that I have read the foregoing Individual Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and VAC. I understand that any action inconsistent with this Individual Code of Conduct or failure to take action mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

| Signature:    |  |
|---------------|--|
| Printed Name: |  |
| Title:        |  |
| Date:         |  |

#### <u>Contractor's Code of Conduct</u> <u>Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)</u> Definitions:

**Gender Based Violence (GBV)** – is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

**Sexual Exploitation and Abuse (SEA)** is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behavior of a sexual nature

**Violence Against Children (VAC)** is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

The company is obliged to create and maintain an environment which prevents Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA) issues. The company is also required to maintain an environment where the unacceptability of GBV and actions against children are clearly communicated to all those involved in the project. In order to prevent GBV and SEA, the following core principles and minimum standards of behaviour will apply to all employees without exception:

GBV/SEA constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV/SEA including grooming are unacceptable, be it on the work site, the work site surroundings, project neighbourhoods or at worker's camps. Prosecution of those who commit GBV or SEA will be followed.

Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.

Do not use inappropriate language or behaviour towards women, children and men. This includes harassing, abusive, sexually provocative, derogatory, demeaning or culturally inappropriate words, gestures or actions.

Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.

Sexual favours or other forms of humiliating, degrading or exploitative behaviour are prohibited.

Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.

All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV/SEA Code of Conduct.

All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and SEA Code of Conduct.

All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and SEA activities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

FOR THE COMPANY

| Signed by | _ |
|-----------|---|
| Title:    | _ |
| Date:     | _ |

### <u>Manager's Code of Conduct</u> <u>Preventing Gender Based Violence (GBV) and Sexual Exploitation & Abuse (SEA)</u> Definitions:

**Gender Based Violence (GBV)** – is an umbrella term for any harmful act that is perpetrated against a person's will, and that is based on socially ascribed (gender) differences between males and females. It can be sexual, physical, psychological and economic in nature, and includes acts, attempted or threatened, committed with force, manipulation, or coercion and without the informed consent of the survivor. A SURVIVOR is a person who has experienced GBV.

**Sexual Exploitation and Abuse (SEA)** is the actual or attempted abuse of a position of vulnerability, power, or trust for sexual purposes including but not limited to profiting monetarily or socially from sexually exploitation of another

Sexual harassment (SH) is the unwanted behavior of a sexual nature

**Violence Against Children (VAC)** is both physical and non-physical forms including neglect, maltreatment, exploitation and sexual abuse

Managers at all levels have particular responsibilities to create and maintain an environment that prevents GBV and SEA. They need to support and promote the implementation of the Company Codes of

Conduct. To that end, Project Managers are required to sign up to Codes of Conduct applicable to their managerial duties within the context and also sign the Individual Codes of Conduct. This commits them to support and develop systems that facilitate the implementation of this action plan and maintain a GBV-free, child-safe and conflict-free work environment. These responsibilities include but are not limited to: Mobilization

Establish a GBV/SEA Compliance Team from the contractor's and consultant's staff to write an Action Plan that will implement the GBV and SEA Codes of Conduct.

The Action Plan shall, as a minimum, include the

Standard Reporting Procedure to report GBV and SEA issues through the project Grievance Redress Mechanism (GRM);

Accountability Measures to protect confidentiality of all involved; and,

Response Protocol applicable to GBV survivors/survivors (including access to support coping and post-trauma management strategies) and perpetrators.

Engagement of the services of social service providers (NGOs) with requisite skill in the prevention and management of GBV and SEA.

Coordinate and monitor the development of the Action Plan and submit for review to the RAMP-PIU safeguards teams, as well as the World Bank prior to mobilization.

Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.

Provide appropriate resources and training opportunities for capacity building so members of the compliance team will feel confident in performing their duties. Participation in the Compliance tame will be recognized in employee's scope of work and performance evaluations.

Ensure that contractor, consultant and client staff are familiar with the RAMP GRM and that they can use it to anonymously report concerns over GBV and SEA.

Hold quarterly update meetings with the compliance team to discuss ways to strengthen resources and GBV/SEA support for employees and community members.

In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.

Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements a) incorporate this Code of Conduct as an attachment;

b) include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers to comply with this Code of Conduct; and

c) expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and SEA, to investigate allegations thereof, or to take corrective actions when GBV/SEA has occurred, shall constitute grounds for sanctions and penalties.

Training

All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV/SEA Codes of Conduct.

Provide time during work hours to ensure that direct recruits attend the mandatory induction training which covers GBV/SEA training required of all employees prior to commencing work on site.

Managers are required to attend and assist with the NGO-facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce results of consequential evaluations.

Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Prevention

All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV/SEA in addition to the training.

Managers must verbally and in writing explain the company and individual codes of conduct to all direct recruits.

All managers and employees must sign the individual 'Code of Conduct for GBV and SEA, including acknowledgment that they have read and agree with the code of conduct.

To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.

Managers will explain the GRM process to all employees and encourage them to report suspected or actual GBV/SEA

Mangers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the compliance team, service providers and in accordance to the Action Plan.

Managers must provide support and resources to the compliance tea and service provider NGOs to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.

### Response

Managers will be required to provide input, final decisions and sign off on the Standard Reporting Procedures and Response Protocol developed by the compliance team as part of the Action Plan.

Once signed off, managers will uphold the Accountability Measures set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV/SEA (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).

Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.

Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:

Informal warning

ii. Formal warning

Additional Training

iv. Loss of up to one week's salary.

Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.

vi. Termination of employment.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and SEA. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

FOR THE EMPLOYER

Signed by \_\_\_\_\_ Title: \_\_\_\_\_

Date: \_\_\_\_\_

### ANNEX 9 Community Health and Safety Plan

The project committee/contractor recognizes that failure to perform its duties with the highest sense of responsibility and in line with laid down procedures, regulations and standards could result in accidents, incidents or dire consequences. We shall therefore:

- Provide and maintain safe and healthy working environment and conditions, taking account of any statutory requirement of our client and the national regulatory agencies.
- Ensure that no activity shall be carried out unless it is safe to the environment, workers and third parties.
- Provide training and instruction to enable employees to perform their job safely and efficiently.
- Make available all necessary safety devices and protective equipment and enforce their use.
- Maintain a constant and continuing interest in environment, health and safety matters application to the company's activities, in particular by consulting and involving employees and clients where ever possible.
- Ensure that there exist adequate facilities and avenues for consultation between our company and clients/projects host communities.
- Comply with the provisions and implementation of supplementary plans in this ESMP such as the Traffic Management Plan, Waste Management Plan, OHS Plan, Code of Conducts and General Conditions for Contract etc.

A sample generic CASHES Plan is presented in table below:

| Potential Risk  | Mitigation Plan   |
|---|---|
| Disturbance from project<br>activities such as noise,<br>emissions, movement of<br>vehicles/equipment | <ul> <li>Contractors to minimise noise by retrofitting equipment with noise mufflers</li> <li>Contractors to maintain equipment regularly and use technologies to minimise emissions</li> <li>Water roads in built up areas frequently to reduce dust</li> <li>Avoid construction activities before 8.00am and after 7.00pm</li> <li>Project committee to establish and implement an effective GRM to enable timely receipt and resolution of complaints</li> </ul>   |
| Increased risks of accidents<br>from project activities   | <ul> <li>Contractors to demarcate/cordon off construction areas and lit up adequately at night, fence out danger zones and keep out of reach.</li> <li>Restricted access to be placed at construction sites using caution signs and manned personnel</li> <li>Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.</li> <li>Drivers should be competent and trained by FRSC</li> <li>Implement speed limits of 30km/hr in built up areas and 50km/hr on highways</li> <li>Ensure the use of flagmen at strategic locations such as junctions, pedestrian crossings, near schools and other public facilities etc.</li> <li>Avoid movement of heavy duty vehicles during peak periods such as school resumption time (7am-8am on Monday to Friday), during market days, during peak prayer times (1pm – 2.30pm on Friday, 7am-1pm on Sunday).</li> <li>Implement associated plans including Traffic Management Plan, Burrow pit reclamation plan, OHS plan, WMP etc.</li> </ul> |

Community Health and safety Mitigation Plan

|  | • Inclusion of buffer strips or other methods of physical separation<br>around project sites to protect the public from major hazards<br>associated with hazardous materials incidents or process failure,<br>as well as nuisance issues related to noise, odors, or other<br>emissions   |
|--|---|
| Exposure to social risks such<br>as theft, vandalism,<br>STIs/STDs, GBV/SEA/SH,<br>child labor | <ul> <li>Contractor to strictly implement the code of conduct for all workers</li> <li>Ensure that children and minors are not employed directly or indirectly on the project</li> </ul>  |
| Increased risk of COVID-19<br>and other infectious diseases<br>spread                          | <ul> <li>COVID-19 prevention mechanisms shall also be put in place including access to handwashing, regular health checks and reporting.</li> <li>Minimise the need for public gatherings and where required safe practices such as use of nose masks, handwashing/sanitisers should be used</li> <li>Providing surveillance and active screening and treatment of workers</li> </ul> |
|  | • Conduct immunization programs for workers in local communities to improve health and guard against infection  |
| Competition for scarce resources such as water   | <ul> <li>Contractors to provide alternative source of water for construction, staging area and work stations.</li> <li>Community sources of water will not be exploited by the contractors</li> </ul>   |
| Pollution of the environment<br>from different waste<br>categories                             | <ul> <li>Contractor to sensitise workers on the provisions and<br/>implementation of the WMP and monitor compliance</li> <li>Contractor to avoid littering the project areas with<br/>spoils/unsuitable and shall not restrict access to community assets<br/>with waste.</li> <li>Air emissions, wastewater effluents, oil and hazardous materials,</li> </ul>                       |
|  | in the respective sections of the IFC General EHS Guidelines as<br>summarised in the sections above   |
| Water contamination  | • Water Quality Drinking water sources, whether public or private, should at all times be protected so that they meet or exceed applicable national acceptability standards or in their absence the current edition of WHO Guidelines for Drinking-Water Quality  |

More details on https://www.ifc.org/content/dam/ifc/doc/2023/ifc-general-ehs-guidelines.pdf

## ANNEX 10 List of Schools according to Types and Baseline Information

### **BASELINE INFORMATION OF THE FUCS**

| SOUT | OUTH EAST ZONE |                        |                       |                  |        |                 |   |  |  |
|------|----------------|------------------------|-----------------------|------------------|--------|-----------------|---|--|--|
| S/N  | STATE          | SCHOOL                 | GIRLS/BOYS<br>/ MIXED | DAY/<br>BOARDING | FENCED | URBAN/<br>RURAL | School Baseline   | WASH Status  | Environmental and Social<br>Sensitivities<br>(flooding/erosion)                                |
| 1    | Imo            | FGC OKIGWE<br>(MIXED   | Mixed                 | Day/Boarding     | Fenced | Urban           | No. of students=2,313<br>No. of teachers=121<br>School buildings/Classrooms= 56<br>buildings. The classrooms are enough<br>but about 50 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 2 nurses but drugs and bed spaces<br>are inadequate  | Water tank= 3 tanks but is not<br>adequate<br>Borehole=4 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=24 water closet, 21 water<br>closets are functional while 3 are no<br>longer in use    | Flooding in the area which<br>has affected portions of<br>school buildings, or school<br>fence |
| 2    | _              | FGGC OWERRI<br>(GIRLS) | Girls                 | Day/Boarding     | Fenced | Urban           | No. of students=2,783<br>No. of teachers=157<br>School buildings/Classrooms= 60<br>buildings. The classrooms are enough<br>but about 15 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate  | Water tank= 6 tanks but is not<br>adequate<br>Borehole=4 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=134 water closet, 122 water<br>closets are functional while 12 are no<br>longer in use | Poor landscape in the school   |
| 4    |                | FSTC, UMUAKA           | Mixed                 | Day/Boarding     | Fenced | Urban           | No. of students=912<br>No. of teachers=57<br>School buildings/Classrooms= 25<br>buildings. The classrooms are not<br>enough and about 10 buildings need<br>renovations.<br>School healthcare=there is no sickbay<br>within the school premises, however,<br>emergency cases are referred to Owerri<br>general hospital. No special facility or<br>access for people with disabilities | Water tank= 2 tanks but is not<br>adequate<br>Borehole=1 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=31 water closet, 10 water<br>closets are functional while 21 are no<br>longer in use   | Poor landscape in the school   |
| 5    | Abia           | FGGC UMUAHIA           | Girls                 | Day/Boarding     | Fenced | Urban           | No. of students=2,783<br>No. of teachers=107<br>School buildings/Classrooms= 47   | Water tank= 6 tanks but is not<br>adequate<br>Borehole=4 boreholes, functional but   | Poor landscape in the school   |

|   |         |                        |       |              |        |               | buildings. The classrooms are enough<br>but about 7 buildings need renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities   | inadequate and additional one is<br>needed for the hostel area<br>Toilets=151 water closet, 126 water<br>closet are functional while 25 are no<br>longer in use  |   |
|---|---------|------------------------|-------|--------------|--------|---------------|--|--|---|
| 6 |         | FGC OHIAFIA            | Mixed | Day/Boarding | Fenced | Urban         | No. of students=1,256<br>No. of teachers=91<br>School buildings/Classrooms= 42<br>buildings. The classrooms are enough<br>but about 22 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 2 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities     | Water tank= 3 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=47 water closet, 33 squat<br>toilets. 42 water closets are functional<br>while 38 are no longer in use |   |
| 7 |         | FSTC OHANSO            | Mixed | Day/Boarding | Fenced | Urban         | No. of students=1,490<br>No. of teachers=91<br>School buildings/Classrooms= 36<br>buildings. The classrooms are not<br>enough and about 10 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 2 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 4 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=72 water closet, 40 water<br>closets are functional while 32 are no<br>longer in use                   |   |
| 8 | Anambra | FGC NISE<br>(MIXED)    | Mixed | Day/Boarding | Fenced | Semi<br>Urban | No. of students=2,326<br>No. of teachers=91<br>School buildings/Classrooms= 42<br>buildings. The classrooms are enough<br>but about 22 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 4 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities     | Water tank= 6 tanks but is not<br>adequate<br>Borehole=4 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=147 water closet, 109 water<br>closets are functional while 38 are no<br>longer in use                 | Poor landscape caused by<br>erosion due to inadequate<br>good drainage system<br>Low yield water aquifer due<br>to the geological formation |
| 9 |         | FGGC<br>ONITSHA(GIRLS) | Girls | Day/Boarding | Fenced | Urban         | No. of students=2,800<br>No. of teachers=157<br>School buildings/Classrooms= 55  | Water tank= 6 tanks but is not<br>adequate<br>Borehole=4 boreholes, functional but   | Poor landscape<br>Low yield water aquifer   |

|    |        |                             |       |                  |        |       | buildings. The classrooms are enough<br>but about 5 buildings need renovations.<br>School healthcare=there is a sickbay<br>with 4 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities  | inadequate and additional one is<br>needed for the hostel area<br>Toilets=238 water closet, 224 water<br>closets are functional while 14 are no<br>longer in use   |  |
|----|--------|-----------------------------|-------|------------------|--------|-------|---|--|--|
| 10 |        | FSTC AWKA<br>(MIXED)        | Mixed | Day/Boarding     | Fenced | Urban | No. of students=2,685<br>No. of teachers=91<br>School buildings/Classrooms= 36<br>buildings. The classrooms are not<br>enough and about 5 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities   | Water tank= 6 tanks but is not<br>adequate<br>Borehole=3 boreholes, functional but<br>inadequate and additional one is<br>needed for the hostel area<br>Toilets=72 water closet, 40 water<br>closets are functional while 32 are no<br>longer in use         |  |
| 11 | Ebonyi | FGC OKPOSI<br>(MIXED)       | Mixed | Day/Boarding     | Fenced | Urban | No. of students=1,741<br>No. of teachers=112<br>School buildings/Classrooms= 42<br>buildings. The classrooms are not<br>enough and about 22 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 2 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 6 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one<br>is needed for the hostel area<br>Toilets=97 water closet, 24 water<br>closets are functional while 73 are no<br>longer in use | Salty water aquifer resulting<br>from the geological formation<br>of the area<br>Failed sewage systems |
| 12 |        | FGGC<br>EZZAMGBO<br>(GIRLS) | Girls | DAY/<br>BOARDING | Fenced | Urban | No. of students=963<br>No. of teachers=97<br>School buildings/Classrooms= 30<br>buildings. The classrooms are not<br>enough and about 18 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities    | Water tank= 4 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one<br>is needed for the hostel area<br>Toilets=86 water closet, 65 water<br>closets are functional while 21 are no<br>longer in use | Limey water aquifer resulting<br>from the geological formation<br>of the area                          |
| 13 |        | FSTC AMUZU<br>(BOYS)        | Boys  | DAY/<br>BOARDING | Fenced | Urban | No. of students=912<br>No. of teachers=57<br>School buildings/Classrooms= 25  | Water tank= 4 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but   | Salty yield water aquifer resulting from the geological formation of the area                          |

|    |       |             |       |                  |        |       | buildings. The classrooms are not<br>enough and about 10 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities   | inadequate and additional treated one<br>is needed for the hostel area<br>Toilets=31 water closet, 20 water<br>closets are functional while 11 are no<br>longer in use   |  |
|----|-------|-------------|-------|------------------|--------|-------|--|--|--|
| 14 | Enugu | FGC, ENUGU  | Mixed | DAY/<br>BOARDING | Fenced | Urban | No. of students= 4,099<br>No. of teachers=204<br>School buildings/Classrooms= 25<br>buildings. The classrooms are not<br>enough and about 10 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 3 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 4 tanks but is not<br>adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one<br>is needed for the hostel area<br>Toilets=31 water closet, 20 water<br>closets are functional while 11 are no<br>longer in use |  |
| 16 |       | FGGC, LEJJA | Girls | DAY/<br>BOARDING | Fenced | Urban | No. of students=1,768<br>No. of teachers=110<br>School buildings/Classrooms= 64<br>buildings. The classrooms are not<br>enough and about 2 buildings need<br>renovations.<br>School healthcare=there is a sickbay<br>with 2 nurses but drugs and bed spaces<br>are inadequate<br>No special facility or access for people<br>with disabilities   | Water tank= 1 empty reservoir tank<br>Borehole=no boreholes is functional<br>within the premises and it is a serious<br>concern for the school management<br>Toilets=24 water closet, 24 water<br>closets are functional but insufficient                    | Flooding in the area which<br>has affected portions of<br>school buildings,<br>Administrative building or<br>school fence<br>Poor landscape caused by<br>erosion due to inadequate<br>good drainage system<br>Poor aquifer resulting from<br>the geological formation of<br>the area |

| SOUTH WEST ZONE |       |                 |              |               |        |              |  |  |                                  |
|-----------------|-------|-----------------|--------------|---------------|--------|--------------|--|--|----------------------------------|
| S/N             | State | School          | Girls/Boys / | Day/ Boarding | Fenced | Urban/ Rural | School Baseline                            | WASH Status                              | Environmental and Social         |
|                 |       |                 | Mixed        |               |        |              |  |  | Sensitivities (flooding/erosion) |
| 1               | Ekiti | FGC IKOLE-EKITI | Mixed        | Day/Boarding  | Fenced | Semi Urban   | No. of students=1,486, (868 males and      | Motorized Boreholes functional but       | poor waste management as         |
|                 |       |                 |              |               |        |              | 618 females)                               | inadequate due to epileptic power supply | waste generated by the           |
|                 |       |                 |              |               |        |              | No. of staff= 96 (65 working full-time and | thus need to construct 4 new Solar       | students in the female hostels   |
|                 |       |                 |              |               |        |              | 31 part-time                               | powered borehole                         | are being dumped in the          |
|                 |       |                 |              |               |        |              |  | Toilet (Girls)=1unit VIP toilet of 3     | shallow dug open dump site       |

|   |       |                      |       |              |        |            |   | compartment; non-functional<br>1 unit of 4 compartments water closets<br>functional but inadequate.<br>Toilet for boys=1 unit of 4 compartment<br>functional but inadequate.  | while the waste generated in<br>the male hostels are being<br>disposed in an already<br>abandoned building structure. |
|---|-------|----------------------|-------|--------------|--------|------------|---|---|---|
| 2 |       | FGGC EFON-ALAYE      | Girls | Boarding     | Fenced | Semi Urban | No. of students= 841<br>No. of Staff=114<br>The school has 61 members of staff with<br>49 full-time staff and 12 part-time staff. Of<br>the 49 full-time staff, 24 are male while 25<br>are female.                 | Borehole=functional but inadequate due<br>to the topography of the area coupled<br>with shortage of power to pump the<br>water, thus additional one is needed to<br>serve the hostel area.<br>Toilets Hostel=50<br>Classrooms (Students)=23<br>Teachers=30 all water closets but no<br>water reticulation |   |
| 3 |       | FSTC USI-EKITI       | Mixed | Boarding     | Fenced | Semi Urban | Total No. of = Students 1,127<br>(635 male and 492 female).<br>Total No. of Staff =118 with 52 male (41<br>permanent staff and 11 temporary staff)<br>and 66 female (48 permanent staff and 18<br>temporary staff). | Borehole = functional borehole but not<br>adequate.<br>The existing types of toilets in the school<br>are water closet and pour flush.<br>Boys: 20; Girls: 25<br>Teachers toilet- Male: 11; Female: 11<br>These toilets are functional but not<br>adequate  |   |
| 4 | Lagos | KINGS COLLEGE LAGOS  | Boys  | Day/Boarding | Fenced | Urban      | No. of students= 2300 (main campus-<br>1400: junior campus- 900)<br>No. of teachers= 172<br>School healthcare= there is a sickbay with<br>5 nurses  | <b>Toilets=</b> 102 water closet and Pour flush. More than 50% are functional   | Groundwater has excessive<br>Iron content but has been<br>mitigated with a water<br>treatment plant                   |
| 5 |       | FGC IJANIKAN         | Mixed | Day/Boarding | Fenced | Urban      | No. of students= 3485<br>No. of teachers= 268<br>School healthcare= there is a sickbay with<br>only 1 doctor (Adjunct) and 5 nurses   | <b>Toilets=</b> water closet and Pour flush 385 (111 are not functional)  | Swampy area behind the<br>classroom area  |
| 6 |       | QUEENS COLLEGE LAGOS | Girls | Day/Boarding | Fenced | Urban      | No. of students= 3900<br>No. of teachers= 485<br>School healthcare= there is a sickbay  | <b>Toilets=</b> 520 water closet. Bout 70% is functional  | Water retention during rainfall<br>in some areas due to poor<br>drainage facilities                                   |
| 7 |       | FSTC YABA (MIXED)    | Mixed | Day/Boarding | Fenced | Urban      | No. of students=5253<br>No. of teachers=389<br>School healthcare= there is a sickbay with<br>6 nurses   | Toilets= 164 water closet. About 70% are functional   |   |
| 8 | Ogun  | FGC ODOGBOLU         | Mixed | Day/Boarding | Fenced | Urban      | No. of students=2469<br>No. of teachers=179<br>School healthcare= there is a sickbay with<br>7 nurses.  | Toilets= 261 water closet. More than half are non functional  | Erosion in some part of the school, and poor access road to the school  |

| 9        |      | FGGC SHAGAMU (GIRLS)                         | Girls          | Day/Boarding             | Fenced           | Urban                    | No. of students=2019<br>No. of teachers=141<br>School healthcare= there is a sickbay with<br>2 nurses.   | Toilets= 65; 42 are not functional(WC and Pour flush)   | Erosion problems in some part of the school                                    |
|----------|------|--|----------------|--------------------------|------------------|--------------------------|--|---|--|
| 10       |      | FSTC IJEBU MUSHIN<br>(MIXED)                 | Mixed          | Day/Boarding             | Fenced           | Urban                    | No. of students=2377<br>No. of teachers=153<br>School healthcare= there is a sickbay with<br>casual nurses. no permanent nurses<br>allocated to the school   | <b>Borehole=</b> 3 boreholes<br><b>Toilets=</b> 169 (WC and Pour flush)<br>About 70% non functional   |  |
| 11       | Ondo | FGC IDOANI (MIXED)                           | Mixed          | Boarding                 | Fenced           | Urban                    | Total students = 1,378 - Girls = 528, Boys<br>= 850<br>Total teachers = 109 - Male = 59, Female<br>= 50<br>Full time = 59<br>Volunteer/NYSC etc = 41<br>31 classrooms accommodating 803<br>students  | Type of toilet = WC<br>How many toilets for boys = 60<br>How many toilets for girls = 40<br>How many toilets for teachers = 40<br>Are the toilets enough/functional = The<br>toilets are enough but few are functional<br>due to lack of water supply.<br>The school has a borehole but additional<br>one is needed to cater for the population |  |
| 12       |      | FGGC AKURE (GIRLS)                           | Girls          | Boarding                 | Fenced           | Urban                    | Total students = 1,867 Girls<br>Teachers Total = 153 - Male = 57, Female<br>= 96<br>Full time = 73<br>Volunteer/NYSC = 27<br>Dilapidated classrooms which need<br>renovations and the classrooms are<br>enough.  | Toilet = WC (squatting closets)<br>103 toilets for girls<br>73 toilets for teachers<br>60% of the toilets are not functional due<br>to lack of water.   | School in need of incinerators<br>for proper and efficient waste<br>management |
| 13       | -    | FSTC IKARE-AKOKO<br>(MIXED)                  | Mixed          | Boarding                 | Fenced           | Urban                    | Total students = 1200 (Girls = 425, Boys =<br>775)<br>Total teachers = 120 (Male = 72, Female =<br>48)<br>Full time = 67<br>Volunteer/NYSC etc =33<br>The school's facilities are characterized by<br>a shortage of classrooms relative to the<br>student population | Type of toilet =WC (Squatting)<br>toilets for boys = 46<br>toilets for girls = 31 toilets<br>toilets for teachers = 17 toilets<br>The toilets are not enough with a total of<br>1200 students sharing a toilet of 77.   |  |
| 14<br>15 | Osun | FGC IKIRUN (MIXED)<br>FGGC IPETUMODU (GIRLS) | Mixed<br>Girls | Boarding<br>Day/Boarding | Fenced<br>Partly | Semi Urban<br>Semi Urban | Total = 2000<br>Girls = 2000<br>Total = 134<br>Male = 65<br>Female = 69<br>% Full time = 98  | Type of toilet = Semi pit (students have<br>to squat)<br>How many toilets for girls = 30<br>How many toilets for teachers = 12<br>Are the toilets enough/functional = Not<br>enough and some are in a torrible state  |  |
|          |      |  |                |                          |                  |                          | % Volunteer/NYSC etc = 38  | Borehole is present but not always  |  |

|    |     |                    |       |              |        |            | Poor/shortage of toilet facilities<br>Inadequate hostel accommodation  | adequate as the school depends on<br>electricity to pump water and high cost of<br>diesel   |   |
|----|-----|--------------------|-------|--------------|--------|------------|--|---|---|
| 16 | 0.0 | FSTC ILESA (MIXED) | Mixed | Boarding     | Fenced | Urban      | Total students = 1535 (Girls = 993)<br>Total teachers = 160 (Male = 77, Female =<br>48)<br>Full time = 125<br>Volunteer/NYSC etc = 35<br>some the classrooms are overcrowded | Type of toilet = Semi Pit<br>boys = 48<br>girls = 36<br>Teachers = 15<br>The toilets are grossly inadequate, and<br>the few existing ones are in very bad<br>shape couple with lack of water.<br>There are boreholes but grossly<br>inadequate. |   |
| 17 | Оуо | FGC OGBOMOSO       | Mixed | Boarding     | Partly | Urban      | No. of students=1477<br>No. of teachers=136<br>School healthcare= there is a sickbay with<br>3 nurses and 1 visiting doctor.   | <b>Toilets=</b> 125 (WC and Pour flush), almost 60% non functional  | Erosion problems in some part<br>of the school# |
| 18 |     | FGGC OYO (GIRLS)   | Girls | Day/Boarding | Fenced | Semi Urban | No. of students=1549<br>No. of teachers=169<br>School healthcare= there is a sickbay with<br>3 nurses, 9 health attendants, 2 PTA<br>nurses.                                 | <b>Toilets=</b> 148 (WC and Pour flush). More than 50% are non functional   | Erosion problems in some part<br>of the school  |
| 19 |     | FSTC IGANGAN       | Mixed | Boarding     | Fenced | Semi Urban | No. of students=307<br>No. of teachers=38<br>School healthcare= there is a sickbay with<br>4 nurses. No special facility or access for<br>people with disabilities           | Toilets= 26 (WC) 15 non functional  |   |

| SOU     | TH SOUTH ZC | NE                         |                          |               |        |                 |  |   |  |
|---------|-------------|----------------------------|--------------------------|---------------|--------|-----------------|--|---|--|
| S/<br>N | STATE       | SCHOOL                     | GIRLS/<br>BOYS/<br>MIXED | DAY/ BOARDING | FENCED | URBAN/<br>RURAL | School Baseline  | WASH Status   | Environmental and Social<br>Sensitivities (flooding/erosion) |
| 1       | Akwalbom    | FGC IKOT-EKPENE<br>(MIXED) | Mixed                    | Day/Boarding  | Fenced | Urban           | No. of students=3,392<br>No. of teachers=179<br>School buildings/Classrooms= 63<br>buildings. The classrooms are not enough<br>and about 46 buildings need renovations.<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 6 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=31 water closet, 20 water closets<br>are functional while 11 are no longer in<br>use | Failed sewage system in some<br>of the boy's hostel toilets  |
| 2       |             | FGGC IKOT-OBIO-ITONG       | Girls                    | Day/Boarding  | Fenced | Semi Urban      | No. of students=1,900  | Water tank= 8 tanks but is not adequate   |  |

|   |         | (GIRLS)          |       |              |        |            | No. of teachers=100<br>School buildings/Classrooms= 47<br>buildings. The classrooms are not enough<br>and about 12 buildings need renovations.<br>School healthcare=there is a sickbay with<br>4 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities                         | Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=237 water closet, 218 water<br>closets are functional and 19 are not<br>functioning  |  |
|---|---------|------------------|-------|--------------|--------|------------|---|--|--|
| 3 |         | FSTC UYO (GIRLS) | Girls | Day/Boarding | Fenced | Urban      | No. of students=1,300<br>No. of teachers=133<br>School buildings/Classrooms= 36<br>buildings. The classrooms are not enough<br>and about 5 buildings need renovations.<br>School healthcare=there is a sickbay with<br>4 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 6 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=31 water closet, 20 water closets<br>are functional while 11 are no longer in<br>use  |  |
| 4 | Bayelsa | FGC ODI          | Mixed | Day/Boarding | Fenced | Semi Urban | No. of students=1,166<br>No. of teachers=168<br>School buildings/Classrooms= 38<br>buildings. The classrooms are not enough<br>and about 13 buildings need renovations<br>School healthcare=there is a sickbay with<br>2 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 5 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=100 water closet, 62 water closets<br>are functional while 38 are no longer in<br>use | Fe-rich water aquifer caused<br>by the geologic formation of<br>the area |
| 5 |         | FGGC IMIRINGI    | Girls | Day/Boarding | Partly | Semi Urban | No. of students=600<br>No. of teachers=101<br>School buildings/Classrooms= 24<br>buildings. The classrooms are not enough<br>and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>2 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities   | Water tank= 4 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=31 water closet, 20 water closets<br>are functional while 11 are no longer in<br>use  | Fe-rich water aquifer caused<br>by the geologic formation                |
| 6 |         | FSTC TUNGHO      | Mixed | Day/Boarding | Fenced | Semi Urban | No. of students=1,250<br>No. of teachers=78<br>School buildings/Classrooms= 35<br>buildings. The classrooms are not enough  | Water tank= 4 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area  | Poor landscape   |

|    |                 |             |       |              |        |       | 1   |   |  |
|----|-----------------|-------------|-------|--------------|--------|-------|---|---|--|
|    |                 |             |       |              |        |       | and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>2 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities  | Toilets=42 water closet, 15 water closets<br>are functional while 27 are no longer in<br>use  |  |
| 7  | Cross<br>Rivers | FGC IKOM    | Mixed | Day/Boarding | Fenced | Urban | No. of students=1,458<br>No. of teachers=103<br>School buildings/Classrooms= 38<br>buildings. The classrooms are not enough<br>and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 7 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=138 water closet, 100 water<br>closets are functional while 38 are no<br>longer in use |  |
| 8  | -               | FGC CALABAR | Girls | Day/Boarding | Fenced | Urban | No. of students=2,150<br>No. of teachers=127<br>School buildings/Classrooms= 52<br>buildings. The classrooms are not enough<br>and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>4 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 6 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=100 water closet, 80 water closets<br>are functional while 20 are no longer in<br>use  |  |
| 9  | -               | FSC, OGOJA  | Mixed | Day/Boarding | Fenced | Urban | No. of students=1,256<br>No. of teachers=78<br>School buildings/Classrooms= 30<br>buildings. The classrooms are not enough<br>and about 27 buildings need renovations.<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 4 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=93 water closet, 62 water closets<br>are functional while 31 are no longer in<br>use   |  |
| 10 | Delta           | FGC WARRI   | Mixed | Day/Boarding | Fenced | Urban | No. of students=2,500<br>No. of teachers=146<br>School buildings/Classrooms= 67<br>buildings. The classrooms are not enough<br>but in good condition.<br>School healthcare=there is a sickbay with<br>5 nurses but drugs and bed spaces are   | Water tank= 7 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=114 water closet, 83 water closets<br>are functional while 31 are no longer in<br>use  |  |
|    |        |                              |       |              |        |            | inadequate<br>No special facility or access for people<br>with disabilities   |  |   |
|----|--------|------------------------------|-------|--------------|--------|------------|---|--|---|
| 11 |        | FGGC IBUSA                   | Girls | Day/Boarding | Fenced | Urban      | No. of students=1,736<br>No. of teachers=133<br>School buildings/Classrooms= 52<br>buildings. The classrooms are not enough<br>and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 8 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=127 water closet, 127 water<br>closets are functional but required<br>renovation                        |   |
| 12 | Edo    | FGGC BENIN (GIRLS)           | Girls | Day/Boarding | Fenced | Urban      | No. of students=1,876<br>No. of teachers=169<br>School buildings/Classrooms= 48<br>buildings. The classrooms are not enough<br>and about 8 buildings need renovations.<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 6 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=70 water closet, 50 water closets<br>are functional but required renovation                             |   |
| 13 |        | FGC IBILLO                   | Mixed | Boarding     | Fenced | Urban      | No. of students= 1100<br>No. of teachers=67<br>School buildings/Classrooms = 12<br>classrooms buildings. The classrooms are<br>enough but about 4 buildings need<br>renovations.<br>School healthcare = there is a sickbay<br>with two nurses and one attendant. Drugs<br>are not usually available   | Water tank= 20 tanks of 1500 liters each<br>but they are not enough. Borehole=2<br>boreholes, only one is functional<br>Toilets= 47 water closets and VIPs. The<br>VIP toilets are no longer in use, 30 water<br>closet are functional while the rest are<br>non functional. | looding is perennial. It has<br>affected the perimeter fencing<br>(pulling it down) and the girl's<br>hostel. There is need for<br>landscaping as erosion is a big<br>issue within school premises. |
| 14 |        | FSTC UROMI (MIXED)           | Mixed | Day/Boarding | Fenced | Semi Urban | No. of students=1,182<br>No. of teachers=104<br>School buildings/Classrooms= 39<br>buildings. The classrooms are not enough<br>and about 28 buildings need renovations.<br>School healthcare=there is no sickbay<br>within the school premises<br>No special facility or access for people<br>with disabilities                             | Water tank= 2 tanks but is not adequate<br>Borehole=1 borehole, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=15 water closet, 9 water closets<br>are functional and 5 are not in use                                  |   |
| 15 | Rivers | FGC PORT-HARCOURT<br>(MIXED) | Mixed | Day/Boarding | Fenced | Urban      | No. of students=3,182<br>No. of teachers=251  | Water tank= 10 tanks but is not adequate<br>Borehole=4 boreholes, functional but   |   |

|    |                      |       |              |        |            | School buildings/Classrooms= 67<br>buildings. The classrooms are not enough<br>and about 27 buildings need renovations.<br>School healthcare=there is a sickbay with<br>5 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities   | inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=114 water closet, 83 water closets<br>are functional while 31 are no longer in<br>use  |  |
|----|----------------------|-------|--------------|--------|------------|--|--|--|
| 16 | FGGC ABULOMA (GIRLS) | Girls | Day/Boarding | Fenced | Semi Urban | No. of students= 2,150<br>No. of teachers=127<br>School buildings/Classrooms= 52<br>buildings. The classrooms are not enough<br>and about 2 buildings need renovations.<br>School healthcare=there is a sickbay with<br>4 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities | Water tank= 8 tanks but is not adequate<br>Borehole=4 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=100 water closet, 80 water closets<br>are functional while 20 are no longer in<br>use |  |
| 17 | FSTC AHOADA (MIXED)  | Mixed | Day/Boarding | Fenced | Semi Urban | No. of students=1,273<br>No. of teachers=108<br>School buildings/Classrooms= 30<br>buildings. The classrooms are in good<br>shape but there is need for more<br>School healthcare=there is a sickbay with<br>3 nurses but drugs and bed spaces are<br>inadequate<br>No special facility or access for people<br>with disabilities            | Water tank= 4 tanks but is not adequate<br>Borehole=2 boreholes, functional but<br>inadequate and additional treated one is<br>needed for the hostel area<br>Toilets=90water closet, 52 water closets<br>are functional while 38 are no longer in<br>use   |  |

| NORTH | EAST ZONE |           |             |              |        |            |  |   |                                  |
|-------|-----------|-----------|-------------|--------------|--------|------------|--|---|----------------------------------|
| S/N   | STATE     | SCHOOL    | GIRLS/BOYS/ | DAY/         | FENCED | URBAN/     | School Baseline                          | WASH Status                                   | Environmental and Social         |
|       |           |           | MIXED       | BOARDING     |        | RURAL      |  |   | Sensitivities (flooding/erosion) |
| 1     | Adamawa   | FGC GANYE | Mixed       | Day/Boarding | Fenced | Semi Urban | 403 Girls, and 941 Boys, a Total of 1344 | There are 2 blocks of 2 compartments          | Part of the school is prone to   |
|       |           |           |             |              |        |            | 47 Permanent Teachers, 42 Male, 5        | VIP toilets for boys, and 1 block of 2        | erosion, and all the roads and   |
|       |           |           |             |              |        |            | Female, (47 Fulltime teachers), 14 PTA   | compartment VIP toilets for girls around      | untarred therefore generating    |
|       |           |           |             |              |        |            | Teachers and 11 Volunteers/NYSC.         | the academic area. Water is a major           | dust, the students practice      |
|       |           |           |             |              |        |            | There are fifteen (60) classrooms in the | challenge to the functionality of the toilets | open defecation but very         |
|       |           |           |             |              |        |            | school, 45 for the secondary school and  | which are generally inadequate for the        | minimal. The borehole is         |
|       |           |           |             |              |        |            | 15 for the primary school. Most of them  | students. Apart from the ones in the          | usually dry in the drier seasons |
|       |           |           |             |              |        |            | are in good condition.                   | management staff offices, there are 2         |                                  |
|       |           |           |             |              |        |            | There is a clinic in the school with a   | blocks of 2 compartments each for male        |                                  |
|       |           |           |             |              |        |            | senior nurse 3 other nurses and other    | and female. Water is generally very           |                                  |
|       |           |           |             |              |        |            | attendants, there are also adequate      | scarce in the school as is mostly             |                                  |

|   |        |              |       |              |        |            | drugs, and in the event of case<br>escalation, they refer it to General<br>Hospital Ganye  | improvised by water tank supply. Almost<br>all the boreholes in the school are not<br>functioning   |   |
|---|--------|--------------|-------|--------------|--------|------------|--|---|---|
| 2 |        | FGGC YOLA    | Girls | Boarding     | Fenced | Urban      | Total 1400 Girls, 98 Permanent Teachers,<br>60 Male Teachers, 38 Female (98<br>Fulltime Teachers) then 5<br>Volunteers/NYSC. There are thirty-one<br>(31) classrooms in the school, a good<br>number of them are in good condition but<br>some need repairs, particularly the<br>windows and the floor. Some of the<br>hostels are in deplorable condition and<br>they need some repairs.<br>There is a clinic in the school where the<br>nurses are permanent but doctors come<br>around only on weekends or when there<br>is an emergency issue. | There are 2 blocks of toilet with 10 compartments 10 for juniors and 10 for seniors. The toilets are not adequate, there is no water and light supply which encourages OD or urinating on the floor at the entrance for the fear of toilet infection and darkness and in some cases due to blockages in the toilets. There are four toilets for the teachers segregated for male and female and they are all functional |   |
| 3 |        | FSTC MICHIKA | Mixed | Boarding     | Partiy | Urban      | There are 156 Girls, 365 Boys, Total 521.<br>There are 24 Permanent Teachers, 22<br>Male Teachers, 2 Female Teachers, (24<br>Fulltime Teachers) then 2<br>Volunteers/NYSC.<br>There are fifteen (15) classrooms in the<br>school, however over 50% of them are<br>not in good shape, mostly with some<br>leakages and without light, and no fans.<br>The school has a clinic with a nurse and<br>they always have adequate drugs. If a<br>case escalates, they refer it to the general<br>hospital Michika.  | There are 3 VIP toilets for boys and 2 for<br>girls each with 3 compartments. All of<br>them are not connected with water. There<br>are 4 for teachers 4 for men and 4 for<br>women. Generally, the toilets are not<br>enough   | Low aquifer levels leading to<br>lack of water from borehole in<br>the school     |
| 4 | Bauchi | FGGC BAUCHI  | Girls | Day/Boarding | Fenced | Semi Urban | No. of students=943<br>No. of teachers=113<br>School buildings/Classrooms= 35<br>buildings. There are enough classrooms<br>but about 5 buildings need renovations.<br>School healthcare= The schools have 2<br>nurses and there are drugs in the school.   | Toilet facility= 21 water closet (10 functional while 11 are not functional)<br>Water tank= 5 water tanks<br>Borehole=3 boreholes, 2 functional but<br>there is need for additional ones to<br>compliment the number of students in the<br>school.  | There is an erosion in the school which claimed some portion of the school Fence. |
| 5 |        | FGC AZARE    | Mixed | Day/Boarding | Fenced | Urban      | No. of students=806<br>No. of teachers=90<br>School buildings/Classrooms= There are<br>15 blocks of classrooms and other<br>buildings of 3 and 4 rooms respectively.   | Water tanks= 4 water tanks in which 2 are<br>not functional<br>Toilet facility= 22 pit and 8 water closets,<br>9 are not functional<br>Borehole= There are 3 electric and 4   |   |

|    |       |               |       |          |        |            | Out of which 4 are not in used due to the level of dilapidation | solar powered boreholes out of which 2 (electric) and 2(solar powered) are |  |
|----|-------|---------------|-------|----------|--------|------------|---|--|--|
|    |       |               |       |          |        |            | School healthcare= The schools have 2                           | functional. Hence, the need for additional                                 |  |
|    |       |               |       |          |        |            | nurses and there are drugs in the school.                       | boreholes considering the number of the                                    |  |
|    |       |               |       |          |        |            | 5   | students.  |  |
| 6  |       | FSTC MISAU    | Mixed | Boarding | Fenced | Urban      | No. of students=150   | Water tanks= There are 3 water tanks in                                    |  |
|    |       |               |       | _        |        |            | No. of teachers=8   | the school with a well-connected borehole                                  |  |
|    |       |               |       |          |        |            | School buildings/Classrooms= The school                         | and are all functional.  |  |
|    |       |               |       |          |        |            | is newly opened and is currently                                |  |  |
|    |       |               |       |          |        |            | occupying a temporary site with enough                          | Toilet facility= There are 5 toilets for male                              |  |
|    |       |               |       |          |        |            | infrastructures.  | and 6 for female students all functional.                                  |  |
|    |       |               |       |          |        |            | School Healthcare= There are 2 health                           | Borehole= There are 2 boreholes in the                                     |  |
|    |       |               |       |          |        |            | Officers in the school and there are                            | school which serves the students (male                                     |  |
|    |       |               |       |          |        |            | the school  | and female)  |  |
| 7  | Borno | FGC MAIDUGURI | Mixed | Boarding | Fenced | Urban      | No. of students=1687  | Toilets facilities= The school has 12                                      |  |
|    |       |               |       |          |        |            | No. of teachers=79  | toilets (water closet). There is need for                                  |  |
|    |       |               |       |          |        |            | School buildings/Classrooms= The school                         | more toilet facilities to reduce the habit of                              |  |
|    |       |               |       |          |        |            | has about 57 buildings. About 10                                | open defecation in the school.   |  |
|    |       |               |       |          |        |            | classrooms and toilets needs to be                              | Boreholes= The school has 4 but only 2                                     |  |
|    |       |               |       |          |        |            | rehabilitated   | boreholes are working in the hostel and                                    |  |
|    |       |               |       |          |        |            | School Healthcare= There is only 1 Nurse                        | class area.  |  |
|    |       |               |       |          |        |            | in the whole school   | Water tanks= there are 3 water tanks                                       |  |
|    | -     | 500010101010  |       |          |        |            |   | functional in the school   |  |
| 8  |       | FGGC MONGUNO  | Girls | Boarding | Fenced | Urban      | No. of students=1180  | I oilet facility= The school has 90 toilets                                |  |
|    |       |               |       |          |        |            | No. of teachers=59  | but about 22 need renabilitations  |  |
|    |       |               |       |          |        |            | School buildings/Classrooms= The school                         | water tanks - The school has about 5                                       |  |
|    |       |               |       |          |        |            | alassrooms nood robabilitations                                 | Porcholos There are 5 functional   |  |
|    |       |               |       |          |        |            | About 12 classrooms need rehabilitations                        | boreholes in the school  |  |
|    |       |               |       |          |        |            | School Healthcare= Attendants but there                         |  |  |
|    |       |               |       |          |        |            | is no nurse   |  |  |
| 9  |       | FSTC LASSA    |       |          |        |            |   |  |  |
| 10 | Gombe | FGC BILIRI    | Mixed | Boarding | Fenced | Semi Urban | 350 Girls, 500 Boys, Total 850, 71                              | Three are 2 blocks of VIP toilets each with                                |  |
|    |       |               |       |          |        |            | Permanent Teachers, 62 Male Teachers,                           | 3 compartments around the academic   |  |
|    |       |               |       |          |        |            | 9 Female Teachers, 68 non-academic                              | area, one for girls and one for boys                                       |  |
|    |       |               |       |          |        |            | statt, and 19 Volunteers/NYSC.                                  | student. They are generally inadequate                                     |  |
|    |       |               |       |          |        |            | I nere are I wenty-rour (24) classrooms in                      | for the students, for the teachers they                                    |  |
|    |       |               |       |          |        |            | the school, and most of the dermiteries in the                  | nave 2 blocks of 4 compartments  |  |
|    |       |               |       |          |        |            | school are in had condition                                     | and they are functional. There are 6 UDDa                                  |  |
|    |       |               |       |          |        |            | There is a functional clinic in the cohool                      | and they are functional. There are 0 MPDS                                  |  |
|    |       |               |       |          |        |            | with adequate drugs and manned by a                             | 2 connected to the toilets   |  |
|    |       |               |       | 1        |        | 1          | man adoquate anayo ana mannea by a                              |  |  |

|    |        |               |       |              |        |            | nurse and other health workers   |   |   |
|----|--------|---------------|-------|--------------|--------|------------|--|---|---|
| 11 |        | FGGC BAJOGA   | Girls | Day/Boarding | Fenced | Semi Urban | <ul> <li>162 all girls, but still expecting more students. No learner with a disability</li> <li>43 Permanent Teachers, Male Teachers (32), Female Teachers, (11) full-time teachers) then 2 Volunteers/NYSC.</li> <li>There are fifteen (15) classrooms in the school, however over 5 of them are not in good shape, with no light, no fans.</li> <li>There is a functional clinic in the school with adequate drugs and manned by 2 nurses and other health workers</li> </ul> | Three are 2 blocks of toilet each with 3 compartments around the academic area, one each for junior and senior students. Although each of the hostels has its toilet, however, some are not functional and others are not in good shape, and are generally inadequate, particularly around the academic area. For the general teachers, there is one (1) block of toilet with two compartments (one each for male and female staff), again, it is inadequate. There are seven (7) boreholes in the school with five functioning | The school is forced to close<br>the main gate and open an<br>alternate gate due to a major<br>erosion which cut off the main<br>road to the school |
| 12 | Yobe   | FGC BUNI-YADI | Mixed | Boarding     | Fenced | Semi Urban | No. of students=784<br>No. of teachers=56<br>School buildings/Classrooms= The school<br>has about 39 structures but about 7<br>classrooms need rehabilitations.<br>School Healthcare= 1 nurse and no<br>adequate drugs in the school.  | Toilet facility= There are only 8 toilets in<br>the school and the students have<br>resolved to open defecation. Hence the<br>need for additional toilets in the school.<br>Water tanks= 3 water tanks in the schools<br>Boreholes = There are 3 boreholes in the<br>school and the school is squatting with<br>FGGC Potiskum.  |   |
| 13 |        | FGGC POTISKUM | Girls | Boarding     | Fenced | Urban      | No. of students=1430<br>No. of teachers=55<br>School buildings/Classrooms= The school<br>has about 33 structures but about 6<br>classrooms need rehabilitations.<br>School Healthcare= 2 nurses and no<br>adequate drugs in the school.  | Toilet facility= There are 36 toilets in the<br>school<br>Water tanks= 2 water tanks in the<br>schools.<br>Boreholes = There are 3 boreholes in the<br>school.  |   |
| 14 |        | FSTC, GASHUA  | Mixed | Boarding     | Partly | Semi Urban | No. of students=217<br>No. of teachers=36<br>School buildings/Classrooms= The school<br>has about 26 structures but about 6<br>classrooms need rehabilitations.<br>School Healthcare= 2 nurse and no<br>adequate drugs in the school.  | Toilet facility= There are 40 toilets in the<br>school.<br>Water tanks= 3 water tanks in the schools<br>Boreholes = There are 3 boreholes in the<br>school  |   |
| 15 | Taraba | FSTC, JALINGO | Mixed | Boarding     | Fenced | Urban      | A total of 625 (229 Girls, and 396 Boys).<br>95 Permanent Teachers 69, 50 men and<br>19 women, part-time 26 (20 men and 6<br>women) Volunteers/NYSC 2 (1 male and<br>1 female).<br>There are fifteen (16) classrooms in the  | The school has both VIP and water<br>system toilets, but not adequate for both<br>staff and students. Within the academic<br>area, there are four compartments for<br>boys and four compartments for girls.<br>Similarly, there are 2 toilets for teachers 1  |   |

|    |   |               |       |          |        |       | school, and six are under construction.<br>On average good with few requiring<br>renovations.<br>There is a functional clinic in the school<br>with adequate drugs and manned by<br>three (3) nurses  | for males and 1 for females which are functional but again, grossly inadequate.   |  |
|----|---|---------------|-------|----------|--------|-------|---|---|--|
| 16 | ] | FGC, WUKARI   | Mixed | Boarding | Fenced | Urban |   |   |  |
| 17 |   | FGGC, JALINGO | Girls | Boarding | Fenced | Urban | <ul> <li>1320 all girls, there is no student living with a disability in the school.</li> <li>The school 81 staff, with 57 permanent (39 Male Academic, 18 Female Academic), 13 PTA male academic, 4 PTA Female Academic, 3 male supporting staff, and 4 female supporting staff.</li> <li>The school has 31 classroom, but some (8) need repairs, they have sport arena, laboratories, ICT centre, clinic etc.</li> <li>There is a clinic in the school, with about five nurses and two attendants.</li> </ul> | academic area, 10 for junior girls and 10<br>for senior girls. Equally, there are four<br>toilets for staff 2 each for male and female<br>staff. Water reticulation is the major<br>problem making some of the toilet,<br>particularly the students wind not<br>convenient. Most of the students toilets<br>and water closet with a few as pit. | Erosion is affecting part of the staff quarters and school fence |

| NORTH | I CENTRAL ZO | DNE           |                      |                  |        |                 |  |   |  |
|-------|--------------|---------------|----------------------|------------------|--------|-----------------|--|---|--|
| S/N   | STATE        | SCHOOL        | GIRLS/BOYS/<br>MIXED | DAY/<br>BOARDING | FENCED | URBAN/<br>RURAL |  |   |  |
| 1     | Benue        | FGC VANDEIKYA | Mixed                | Boarding         | Fenced | Urban           | No. of Teachers =1,059<br>No. of Students = 92<br>No. of School/classroom structure =32 out<br>of which 10 classrooms needs<br>rehabilitations<br>School healthcare= There is a sickbay<br>with a visiting doctor, 1 nurse and 2<br>community workers. Drugs are always<br>available | Borehole = 5 functional but inadequate<br>Toilets= There are16 water system toilets<br>all functional but additional ones are<br>needed<br>Water tanks= There are 5 water tanks but<br>need renovation  | Some areas in the school<br>are affected by flash<br>flooding.                 |
| 2     | -            | FGGC GBOKO    | Girls                | Day/Boarding     | Fenced | Urban           | No. of Students = 1280<br>No. of Teachers = 97<br>School buildings/Classrooms= 60 out of<br>which 23 classrooms need renovations.<br>School healthcare=There is no sickbay. 4<br>CNOs, 5 CHEW nurses, drugs are always<br>available  | Water tank=35 overhead tanks all<br>functional.<br>Borehole= 15 boreholes, 10 functional, 5<br>need renovation<br>Toilets Facility = 56 toilets which are<br>inadequate. 32 toilets need rehabilitation | Low aquifer may be the problem of boreholes in the hostels not yielding water. |
| 3     |              | FGC OTOBI     | Mixed                | Boarding         | Fenced | Urban           | Total = 1,123 (Girls = 395, Boys = 728)  | Type of toilet = Pit latrine and water closet<br>toilets for boys = 4 pits<br>toilets for girls = 8 pits & 8 water closet   |  |

|   |       |             |       |              |        |       | Total =103 (Male = 35, Female = 14)<br>Full time =47.6<br>Volunteer/NYSC etc. = 54   | toilets for teachers = 8 water closet<br>Not enough/functional<br>28 are functioning and 54 are not  |   |
|---|-------|-------------|-------|--------------|--------|-------|--|--|---|
| 4 |       | FSTC OTUKPO | Mixed | Boarding     | Partly | Rural | Total = 1,519 (Girls = 467, Boys = 1,052)<br>Total =47 (Male = 34, Female = 13)<br>Full time =44<br>Volunteer/NYSC etc. = 3  | Type of toilet = water closet<br>toilets for boys = 4<br>toilets for girls = 8<br>toilets for teachers = 4   |   |
| 5 | Kogi  | FGC UWOLAWO | Mixed | Day/Boarding | Partly | Urban | No. of students=833<br>No. of teachers=73<br>School buildings/Classrooms=<br>School healthcare=there is a sickbay,<br>only one nurse is available. Two nurses<br>are retired   | Toilets=57 are functional, 4 are not functional. The toilet facilities available are a combination of pour flush, pit and water closet.  | Erosion in the area which<br>has affected portions of<br>school buildings.<br>Invasion of termites (in large<br>numbers), particularly<br>affecting wooden structures |
| 6 |       | FGGC KABBA  | Girls | Day/Boarding | Fenced | Urban | No. of students=1168<br>No. of teachers=83<br>School buildings/Classrooms= The school<br>classrooms are sufficient and well-<br>maintained, except for some laboratories,<br>which are in bad conditions.<br>School healthcare= there is a sickbay with<br>one nurse.  | Borehole= One functional borehole<br>Toilets=16 pour flush toilets, about 10 are<br>non-functional   | Low aquifer levels leading to<br>lack of water from boreholes   |
| 7 |       | FSTC OGUGU  | Mixed | Boarding     | Fenced | Urban | No. of students=235<br>No. of teachers=23<br>School healthcare=Yes, a class is used<br>temporarily, But currently land clearing for<br>construction in progress with only one<br>nurse available   | Borehole= 3 available boreholes with only<br>2 functional. The one that is not functional<br>has issues with its solar panel<br>Toilets= 38 WC toilets, about 50% are<br>non functional  | Erosion in the area which has affected portions of school buildings.  |
| 8 | Kwara | FGC ILORIN  | Mixed | Day/Boarding | Fenced | Urban | Total students = 2,500 - Girls = 1,000,<br>Boys = 1,500<br>Teachers = 200 - Male = 130, Female =<br>70<br>% Full time = 80%<br>% Volunteer/NYSC etc = 20%<br>Shortage of classrooms relative to the<br>student population, with only 50<br>classrooms accommodating 2,500<br>students, with deteriorating infrastructure,<br>including spoilt ceilings and windows | Type of toilet = VIP - boys = 35 toilets,<br>girls = 35 toilets<br>Toilets for teachers = 5 toilets<br>The toilets are not enough with a total of<br>2,500 students sharing 70 toilets. Some of<br>the toilets do not have running water,<br>hence difficult to maintain.<br>There are 10 mechanically powered<br>borehole and 2 electric/motorised<br>borehole. However, due to the epileptic<br>power condition, the motorised borehole<br>are not readily available | Inadequate power supply for<br>students<br>Inadequate teachers<br>Modern textbooks in the<br>library<br>Not enough sporting<br>equipment                              |

| 9  |     | FGGC OMU-ARAN   | Girls | Boarding | Fenced | Urban | Total Students (Girls) = 803<br>Teachers Total = 93<br>Male = 64, Female = 29<br>% Full time = 85%<br>% Volunteer/NYSC = 15%<br>31 classrooms accommodating 803<br>students   | Type of toilet = VIP<br>Students 31 toilets<br>Teachers 17 toilets<br>There is borehole in the school which<br>supplies water   | Inadequate power supply for<br>students in the hostel and<br>class area.<br>Lack of proper drainage<br>system<br>Lack of proper waste<br>disposal system  |
|----|-----|-----------------|-------|----------|--------|-------|---|---|---|
| 10 | FCT | FGC KWALI       | Mixed | Boarding | Fenced | Urban | No. of students=1700<br>No. of teachers= 206<br>School buildings/Classrooms/staff<br>quarters=52 buildings. The classrooms<br>are enough but about 10 buildings need<br>renovations.<br>School healthcare=there is a sickbay with<br>4 nurses but drugs are not always<br>available                               | Water tank= 6 tanks grossly inadequate<br>Borehole= 6 boreholes, only 4 are<br>functional and they are inadequate and<br>additional boreholes are needed for the<br>hostel and classrooms area<br>Toilets=83 (Girls = 35 VIP, BOYS =48<br>VIP)<br>12 toilets for girls and 20 toilets for boys<br>needs renovation.<br>There is also needs for water reticulation | Some areas had low aquifer<br>level leading to lack of water<br>from boreholes and therefore<br>not in use  |
| 11 |     | FGGC BWARI      | Girls | Boarding | Fenced | Urban | No. of students= 1800<br>No. of teachers= 238<br>School buildings/Classrooms = They have<br>about 13 classroom buildings. The<br>classrooms are enough but some<br>buildings need renovations.<br>School healthcare=there is a clinic with 2<br>volunteer doctors and 7 nurses, there is<br>availability of drugs | Water tank = 34 tanks<br>Borehole= 13 boreholes, 3 non functional<br>Toilets=22 water closet and 5 pit latrine.<br>The pits are no longer in use, 15 water<br>closet are functional while 7 are no longer<br>in use   | Low aquifer levels leading to<br>lack of water from boreholes.<br>There are erosion sites<br>within the school that need<br>to be managed.  |
| 12 |     | FGGC ABAJI      | Girls | Boarding | Fenced | Urban | No. of students=1150<br>No. of teachers=94<br>Male Teachers = 52<br>Female Teachers = 42<br>School Buildings/Classrooms= 5<br>buildings. The classrooms are not enough<br>and need renovations.<br>School Healthcare= there is a clinic with<br>no doctor only three nurses and they have<br>enough drugs.        | Water tank= 18 tanks but is not adequate.<br>They have one water tanker of 5000<br>Liters<br>Borehole=4 boreholes, only one is<br>functional but the rest have dried up.<br>Toilets = 56 (30 for students, 24 for<br>teachers) ventilated improved toilets<br>(VIP). With two (2) VIPs non-functional.  | They have areas prone to<br>flooding outside and inside<br>the school premises. The<br>flooding coupled with rainfall<br>led to the collapse of the<br>fence behind the school<br>leaving it exposed which is<br>unsafe for the students. |
| 13 |     | FGC RUBOCHI/Apo | Mixed | Boarding | Fenced | Urban | No. of students=3503<br>No. of teachers=100<br>Male Teachers = 49<br>Female Teachers = 51<br>School Buildings/Classrooms= There are<br>7 classroom buildings The classrooms are<br>not enough, pending population increase  | Water= They have 2 water tankers (3m3<br>and 13m3) which source water from Abaji,<br>but is not sufficient.<br>Borehole= Borehole is the major source<br>of water in the school. There are only two<br>functioning boreholes in the school. The<br>rest have dried up.  | there is need for landscaping<br>or other erosion control<br>measures to manage the<br>issue of flooding  |

|    |          |            |       |              |        |       | of students. The classrooms however,<br>should be rehabilitated as many of the<br>classrooms have old ceilings made with<br>asbestos.<br>School Healthcare= there is a clinic and<br>they have three CHEWS that handle<br>medical cases. There are no doctors in<br>the school.   | There is also lack of electrical power to<br>pump water in many cases.<br><b>Toilets=132 (boys=70, girls=60)</b><br>Ventilated Improved (VIP) toilets. The<br>toilets are small in number compared to<br>the number of students in the school.<br>The teachers have 14 toilets for sue.<br>There is no water reticulation in the<br>school compound, this makes proper use<br>of toilets very hard as students cannot<br>adequately employ hygienic practices<br>without the use of clean water.   |   |
|----|----------|------------|-------|--------------|--------|-------|---|--|---|
| 14 |          | FSTC OROZO | Mixed | Day/Boarding | Fenced | Urban | No. of students= 2506<br>Male Students = 1701<br>Female Students = 805<br>No. of teachers= 324<br>Male Teachers = 79<br>Female Teachers = 225<br>School Buildings/Classroom = 5 buildings.<br>The classrooms are not enough and need<br>renovations.<br>School Healthcare_= there is a clinic with<br>no doctor only five nurses and two<br>CHEWs; they have enough drugs | Water tank= 15 tanks but is not adequate.<br>The tanks are of varying capacities most<br>of them being 2000L to a large distribution<br>tank of about 40 thousand liters<br>Borehole=3 boreholes, the boreholes are<br>plagued by faulty solar panels<br>Toilets=122 (ventilated improved toilets<br>(VIP). With two (2) VIPs non-functional.  | The school has flooding<br>issues as well as erosion<br>issues, there is need for<br>landscaping or other erosion<br>control measures |
|    |          | FGBC APO   | Boys  | Boarding     | Partly | Urban | No. of students=1452<br>No. of teachers= 288<br>Male Teachers = 68<br>Female Teachers = 228<br>School buildings/ Classrooms = 20<br>buildings including 6 classroom blocks.<br>The classrooms however, should be<br>rehabilitated as many of the classrooms<br>have old ceilings made with asbestos.<br>The floors are also bad and most of them<br>have potholes.        | Water tank = 2 tanks but is not adequate.<br>The major source of water to the school is<br>from the Abuja Water Board. They have<br>two backup boreholes.<br><u>Borehole=</u> There are only two boreholes<br>in the school. One of the boreholes is<br>partially functional and the other is non-<br>functional. The water from the waterboard<br>supplies the general school premises but<br>does not get to the toilet areas and so<br>students have to go fetch water<br>Toilets= 132 Ventilated Improved (VIP)<br>toilets.<br>The toilets are small in number compared<br>to the number of students in the school |   |
| 15 | Nasarawa | FGC KEFFI  | Mixed | Day/Boarding | Partly | Urban | No. of students=1143<br>No. of teachers=200<br>School buildings/Classrooms= 36<br>buildings. The classrooms are enough but  | Water tank= 6 tanks but is not adequate<br>Borehole=4 boreholes, functional but<br>inadequate and additional 2 is needed for<br>the hostel area and classroom area.  | Flooding in the area which<br>has affected portions of<br>school buildings  |

|    |       |               |       |               |        |            | about 22 classrooms buildings need          | Toilets=58 water closet and 6 pit latrine   |                              |
|----|-------|---------------|-------|---------------|--------|------------|---|---|------------------------------|
|    |       |               |       |               |        |            | renovations.                                | not functional. The pits are no longer in   |                              |
|    |       |               |       |               |        |            | School healthcare=there is a sickbay.       | use, 13 water closet are not functional.    |                              |
|    |       |               |       |               |        |            | There have two nurses but drugs are not     | And there is need for water reticulation    |                              |
|    |       |               |       |               |        |            | always available                            | into the water closets.                     |                              |
| 16 |       | FGGC KEANA    | Girls | Boarding      | Fenced | Semi Urban | No of Students= 250                         | Water Tanks = 4 tanks but is not            | Dining Hall area and Classes |
|    |       |               |       |               |        |            | No. of Teachers = 73                        | adequate                                    | area have been eroded with   |
|    |       |               |       |               |        |            | No. of Classrooms = 32                      | Only 2 are functional                       | flood                        |
|    |       |               |       |               |        |            | 3 Blocks of 8 Classes need                  | Boreholes = 6 boreholes but only 2 are      |                              |
|    |       |               |       |               |        |            | School healthcare = there is a Sick Bay     | functional                                  |                              |
|    |       |               |       |               |        |            | with only 2 two nurses (Community health    | Toilets = 22 water closet 5 pits.           |                              |
|    |       |               |       |               |        |            | and extension worker), no doctor,           | There is need for water reticulation to the |                              |
|    |       |               |       |               |        |            | Insufficient Supply of Drugs.               | toilets, and the toilets are not adequate,  |                              |
|    |       |               |       |               |        |            |   | there is need for more                      |                              |
| 17 |       | FSTC DOMA     | Mixed | Boarding      | Partly | Semi Urban | No. of students=700                         | Water tank= 17 tanks but is not adequate    | Erosion in the school area   |
|    |       |               |       |               |        |            | No. of teachers=115                         | Borehole =8 boreholes, functional power     | which has affected the       |
|    |       |               |       |               |        |            | School buildings/Classrooms= 42             | national electricity but inadequate and     | internal roads within the    |
|    |       |               |       |               |        |            | buildings. The classrooms are enough but    | there is need for water reservoir and       | school                       |
|    |       |               |       |               |        |            | about 27 buildings need renovations.        | water reticulations in the college          |                              |
|    |       |               |       |               |        |            |   | Toilets=32 water closet 20 water closet     |                              |
|    |       |               |       |               |        |            |   | are functional while 12 are no longer in    |                              |
|    |       |               |       |               |        |            |   | use   |                              |
| 18 | Niger | FGC MINNA     | Mixed | Day/Boarding  | Partly | Urban      | No. of students=3202                        | Water tank= 9 tanks but is not adequate     |                              |
|    |       |               |       |               |        |            | No. of teachers=330                         | Borehole=7boreholes, 5 are 2 are not        |                              |
|    |       |               |       |               |        |            | School buildings/Classrooms= 43             | bad, but inadequate and additional one is   |                              |
|    |       |               |       |               |        |            | buildings. The classrooms are enough but    | needed for the hostel area and classroom    |                              |
|    |       |               |       |               |        |            | about 5 buildings need renovations.         | area  |                              |
|    |       |               |       |               |        |            | School healthcare=there is a sickbay with   | Toilets=55 water closet and 1 pit latrine.  |                              |
|    |       |               |       |               |        |            | no doctor only 2 nurses and auxiliary staff | The pits are no longer in use, water        |                              |
|    |       |               |       |               |        |            | but drugs are not always available          | closet are functional no water while 10 are |                              |
|    |       |               |       |               |        |            |   | no longer in use                            |                              |
| 19 |       | FGGC BIDA     | Mixed | Day/Boarding  | Partly | Urban      | of students=1315                            | tank= 10 tanks but is not adequate          |                              |
|    |       |               |       |               |        |            | No. of teachers=45                          | Borehole=6 boreholes, functional but        |                              |
|    |       |               |       |               |        |            | School buildings/Classrooms= 36             | inadequate and additional one is needed     |                              |
|    |       |               |       |               |        |            | buildings. The classrooms are enough but    | for the hostel area                         |                              |
|    |       |               |       |               |        |            | about 1 buildings need renovations.         | Tollets=100 water closet no pit latrine.    |                              |
|    |       |               |       |               |        |            | School nealthcare=there is a sickbay no     | water closet are functional while 12 are no |                              |
|    |       |               |       |               |        |            | actor only 2 Community Health               | ionger in use                               |                              |
|    |       |               |       |               |        |            | Extension Workers (CHEW) but drugs are      |   |                              |
| 20 |       |               | Mixed | Deu/Deendine: | Deutly | l lub e e  | not always available                        | Water tenks 25 tenks but is not a domeste   |                              |
| 20 |       | FGC NEW-BUSSA | wixed | Day/Boarding  | Partiy | Insan      | NO. OF STUDENTS=492                         | vvaler tank= 35 tanks but is not adequate   |                              |
|    |       |               |       |               |        |            | NO. OT TEACHERS=01                          | Borenole=9 porenoles, functional but        |                              |
|    |       |               |       |               | 1      | 1          |   |   |                              |

|    |         |              |       |              |         |            | buildings. The classrooms are enough but<br>about 5 buildings need renovations.<br>School healthcare=there is a sickbay no<br>doctor only 2 nurses drugs are not<br>always available  | for the classroom and senior quarters<br>area<br>Toilets= 40 water closet and 17 pit latrine.<br>The pits are no longer in use, 25 water<br>closet are functional while 15 are no<br>longer in use  |  |
|----|---------|--------------|-------|--------------|---------|------------|---|---|--|
| 21 |         | FSTC SHIRORO | Mixed | Day/Boarding | Fenced  | Urban      | No. of students=491<br>No. of teachers=72<br>School buildings/Classrooms= 35<br>buildings. The classrooms are enough but<br>about 3 buildings need renovations.<br>School healthcare=there is a sickbay with<br>no doctor only 2 Community Health<br>Extension Workers (CHEW) but drugs are<br>not always available | Water tank= 10 tanks but is not adequate<br>Borehole=6 boreholes,3 are functional<br>while 3are non functional but inadequate<br>and additional one is needed for the staff<br>quarters, dinning hall and hostel area<br>Toilets=104 water closet no water<br>connected to the toilets they need<br>reticulation. The have no pit. 85 water<br>closet are functional while 19 are no<br>longer in use | Flooding around the fence<br>which has affected portions<br>and collapse the school<br>fence |
| 22 |         | FGA SULEJA   | Mixed | Boarding     | Partly  | Urban      | No. of students=1620<br>No. of teachers=140<br>School buildings/Classrooms= 32<br>buildings. The classrooms are enough but<br>about 5 buildings need renovations.<br>School healthcare=there is a sickbay no<br>doctor with 2 nurses but drugs are not<br>always available  | Water tank= 7 tanks but is not adequate<br>Borehole= 12 boreholes 6 functional and<br>6 non functional, but inadequate and<br>additional one is needed for the staff<br>quarters 4 need repairs.<br>Toilets =36 water closet. 15 water closet<br>are functional while 30 are no longer in<br>use  |  |
| 23 | Plateau | FGC JOS      | Mixed | Boarding     | Partly  | Semi Urban | No. of Teachers =2245<br>No. of Students = 312<br>No. of School/classroom structure =19<br>2 structures need rehabilitation.<br>11 hostels, 1under construction at hostel.<br>School healthcare= There is a sickbay<br>with a qualified doctor and 2 nurse's<br>drugs are always available                          | Borehole = 9 functional but inadequate<br>and additional one is needed for the<br>hostel area.<br>Toilets= 96 water system toilets all<br>functional. No pit toilets in use in school.  |  |
| 24 |         | FGGC LANTANG | Girls | Boarding     | ⊢ enced | Semi Urban |   |   |  |

| NORTH | WEST ZONE |            |             |          |        |        |   |   |                          |
|-------|-----------|------------|-------------|----------|--------|--------|---|---|--------------------------|
| S/N   | STATE     | SCHOOL     | GIRLS/BOYS/ | DAY/     | FENCED | URBAN/ | School Baseline                         | WASH Status                                   | Environmental and Social |
|       |           |            | MIXED       | BOARDING |        | RURAL  |   |   | Sensitivities            |
|       |           |            |             |          |        |        |   |   | (flooding/erosion)       |
| 1     | Kaduna    | FGC KADUNA | Mixed       | Boarding | Fenced | Urban  | No. of students=2540                    | Toilet facility= There are 102 toilets in the |                          |
|       |           |            |             |          |        |        | No. of teachers=244                     | school.                                       |                          |
|       |           |            |             |          |        |        | School buildings/Classrooms= The school | Water tanks= 6 water tanks in the schools     |                          |
|       |           |            |             |          |        |        | has about 60 structures but about 14    | Boreholes = There are 5 boreholes but         |                          |
|       |           |            |             |          |        |        | classrooms need rehabilitations.        | need reticulation                             |                          |

|   |         |                |       |              |        |            | School Healthcare= 2 nurses and           |   |  |
|---|---------|----------------|-------|--------------|--------|------------|---|---|--|
|   |         |                |       |              |        |            | adequate drugs                            |   |  |
| 2 |         | FGGC ZARIA     | Girls | Boarding     | Fenced | Urban      | No. of students=1440                      | Toilet facility= There are 60 toilets in the  |  |
|   |         |                |       |              |        |            | No. of teachers=115                       | school.                                       |  |
|   |         |                |       |              |        |            | School buildings/Classrooms= The school   | Water tanks= 3 water tanks in the schools     |  |
|   |         |                |       |              |        |            | has about 52 buildings but about 11       | but 2 are functional                          |  |
|   |         |                |       |              |        |            | classrooms need rehabilitations.          | Boreholes = There are 3 boreholes in the      |  |
|   |         |                |       |              |        |            | School Healthcare= 2 nurses and           | school.                                       |  |
|   |         |                |       |              |        |            | adequate drugs                            |   |  |
| 3 |         | FSTC KAFANCHAN | Mixed | Boarding     | Fenced | Urban      | Total students = 1440 - Girls = 475, Boys | Type of toilet = Water Closet - boys = 24,    |  |
|   |         |                |       |              |        |            | = 965                                     | girls = 20                                    |  |
|   |         |                |       |              |        |            | Teachers 98 – Male 73, female 25          | Toilet for teachers = 16                      |  |
|   |         |                |       |              |        |            | Full time = 74                            | The school has a borehole which supplies      |  |
|   |         |                |       |              |        |            | Volunteer/NYSC etc = 8                    | water but it is not adequate to cater for     |  |
|   |         |                |       |              |        |            |   | the whole school                              |  |
| 4 | Jigawa  | FGC KIYAWA     | Mixed | Boarding     | Fenced | Urban      | No. of students=1902                      | Toilet facility= The school is seriously      |  |
|   |         |                |       |              |        |            | No. of teachers=46                        | battling with the issue of toilets. It is as  |  |
|   |         |                |       |              |        |            | School buildings/Classrooms= The school   | good as they don't have toilets at all,       |  |
|   |         |                |       |              |        |            | has about 39 buildings but about 9        | especially the boy's hostels.                 |  |
|   |         |                |       |              |        |            | classrooms need rehabilitations.          | Water tanks= 3 water tanks in the schools     |  |
|   |         |                |       |              |        |            | School Healthcare= There are 2 nurses     | but 2 are functional                          |  |
|   |         |                |       |              |        |            | but the drugs are not available all the   | Boreholes = There are 3 boreholes in the      |  |
|   |         |                |       |              |        |            | times.                                    | school.                                       |  |
| 5 |         | FGGC KAZAURE   | Girls | Day/Boarding | Fenced | Semi Urban | No. of students=661                       | Toilet facility= The school has 40 toilets    |  |
|   |         |                |       |              |        |            | No. of teachers=81                        | (water closet and pit latrines)               |  |
|   |         |                |       |              |        |            | School buildings/Classrooms= The school   | Water tanks= 4 water tanks in the schools     |  |
|   |         |                |       |              |        |            | has about 41 buildings but about 8        | but 2 are functional                          |  |
|   |         |                |       |              |        |            | classrooms need rehabilitations.          | Boreholes = There are 2 boreholes in the      |  |
|   |         |                |       |              |        |            | School Healthcare= There are 2 nurses     | school.                                       |  |
|   |         |                |       |              |        |            | with not enough drugs                     |   |  |
| 6 |         | FSTC HADEJIA   | Mixed | Boarding     | Fenced | Semi Urban | No. of students=421                       | Toilet facility= There are 5 pit latrines for |  |
|   |         |                |       |              |        |            | No. of teachers= 23                       | boys and 5 water closets for girls. Hence     |  |
|   |         |                |       |              |        |            | School buildings/Classrooms= The school   | the need for additional toilets to reduce     |  |
|   |         |                |       |              |        |            | has about 16 buildings and all are        | open defecation in the school.                |  |
|   |         |                |       |              |        |            | functional                                | Water tanks= 4 water tanks in the schools     |  |
|   |         |                |       |              |        |            | School Healthcare= There are 2            | all are functional                            |  |
|   |         |                |       |              |        |            | attendants in the school.                 |   |  |
| 7 | Katsina | FGC DAURA      | Girls | Boarding     | Fenced | Urban      | No. of students=1823                      | Toilet facility= There are 26 functional      |  |
|   |         |                |       |              |        |            | No. of teachers=103                       | toilets facilities in the school (water       |  |
|   |         |                |       |              |        |            | School buildings/Classrooms= There are    | closet).                                      |  |
|   |         |                |       |              |        |            | 37 functional classrooms and 3 non        | Water tanks= There are 4 water tanks in       |  |
|   |         |                |       |              |        |            | functional                                | the schools and all functional.               |  |
|   |         |                |       |              |        |            | School Healthcare= There are 4 nurses in  | Boreholes = The school have 3 boreholes       |  |

|    |        |                  |       |                |        |            | the school                               |   |                               |
|----|--------|------------------|-------|----------------|--------|------------|--|---|-------------------------------|
| 8  |        | FGGC BAKORI      | Girls | Boarding/Day   | Fenced | Urban      | No. of students =2627                    | Toilet facility= There are 22 toilets         |                               |
|    |        |                  |       |                |        |            | No. of Teachers =67                      | facilities in the school (water closet)       |                               |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   | Water tanks= 4 water tanks in the schools     |                               |
|    |        |                  |       |                |        |            | 34 functional classrooms and 7 non       | and 1 non functional                          |                               |
|    |        |                  |       |                |        |            | functional                               |   |                               |
|    |        |                  |       |                |        |            |  | Boreholes = There are 4 boreholes in the      |                               |
|    |        |                  |       |                |        |            | School Healthcare= There are 2 nurses in | school.                                       |                               |
|    |        |                  |       |                |        |            | the school                               |   |                               |
| 9  |        | FSTC DAYI        | Mixed | Boarding       | Fenced | Rural      | No. of students=564                      | Toilet facility= There are only 2 toilets for |                               |
|    |        |                  |       | Ŭ              |        |            | No. of teachers=37                       | boys and 1 for girls. Hence the need for      |                               |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   | more additional toilets facility. All the     |                               |
|    |        |                  |       |                |        |            | 8 functional classrooms and 3.           | remaining toilets are blocked.                |                               |
|    |        |                  |       |                |        |            | School Healthcare= There is 1 nurse in   | Water tanks= There no water tank              |                               |
|    |        |                  |       |                |        |            | the school                               | Boreholes = only 1 water tank                 |                               |
| 10 | Kebbi  | FGC BIRNIN-YAURI | Mixed | Boarding/Day   | Fenced | Rural      |  |   |                               |
| 11 |        | FGGC GWANDU      | Girls | Boarding       | Fenced | Rural      | No. of students=1,400                    | Toilet facility= There are 23 toilets         |                               |
|    |        |                  |       | -              |        |            | No. of teachers=52                       | facilities in the school (water closet)       |                               |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   | Water tanks= 6 water tanks in the schools     |                               |
|    |        |                  |       |                |        |            | 34 functional classrooms and 6 need      | and all functional                            |                               |
|    |        |                  |       |                |        |            | rehabilitations                          | Boreholes = There are 6 boreholes in the      |                               |
|    |        |                  |       |                |        |            | School Healthcare= There is only 1 nurse | school.                                       |                               |
|    |        |                  |       |                |        |            | in the school                            |   |                               |
| 12 |        | FSTC ZURU        | Mixed | Boarding/Day   | Fenced | Rural      |  |   |                               |
| 13 | Sokoto | FGC SOKOTO       | Mixed | Boarding/Day   | Fenced | Semi Urban | No. of students=2004                     | Toilet facility= There are 24 toilets         |                               |
|    |        |                  |       |                |        |            | No. of teachers=99                       | facilities in the school (water closet)       |                               |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   | Water tanks= 11 water tanks in the            |                               |
|    |        |                  |       |                |        |            | 37 functional classrooms and 3 non       | schools and all functional                    |                               |
|    |        |                  |       |                |        |            | functional                               | Boreholes = There are 4 motorized and 7       |                               |
|    |        |                  |       |                |        |            | School Healthcare= There are 4 nurses in | solar boreholes in the school                 |                               |
|    |        |                  |       |                |        |            | the school                               |   |                               |
| 14 |        | FGGC TAMBUWAL    | Mixed | Boarding/Day   | Fenced | Urban      | No. of students=1,400                    | Toilet facility= There are 34 toilets in the  | Low level of water during dry |
|    |        |                  |       |                |        |            | No. of teachers=47                       | school and 11 need rehabilitations            | season can be attributed to   |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   |   | the low aquifer level.        |
|    |        |                  |       |                |        |            | 23 structures out of which 9 need        |   |                               |
|    |        |                  |       |                |        |            | rehabilitations                          |   |                               |
|    |        |                  |       |                |        |            | School Healthcare= There are 4 nurses in |   |                               |
|    |        |                  |       |                |        |            | the school                               |   |                               |
| 15 |        | FSC SOKOTO       | Mixed | Boarding / Day | Fenced | Semi Urban | No. of students=636                      | Toilet facility= There are 11 toilets (Pit    | Low level of water during dry |
|    |        |                  |       |                |        |            | No. of teachers=49                       | latrines) functional in the school and        | season can be attributed to   |
|    |        |                  |       |                |        |            | School buildings/Classrooms= There are   | about 15 need to be rehabilitated.            | the low aquifer level.        |
|    |        |                  |       |                |        |            | 23 structures out of which 9 need        | Water tanks= there are 4 water tanks in       |                               |
|    |        |                  |       |                |        |            | rehabilitations                          | the school                                    |                               |

|    |         |                |         |              |            |            | School Healthcare= 1 visiting doctor from  | Boreholes = There are 5 boreholes but 2      |                              |
|----|---------|----------------|---------|--------------|------------|------------|--|--|------------------------------|
|    |         |                |         |              |            |            | Specialist Hospital, Sokoto and 2 Nurses   | needs to be rehabilitated                    |                              |
|    |         |                |         |              |            |            |  |  |                              |
| 16 | Zamfara | FGGC GUSAU     | Girls   | Boarding     | Fenced     | Semi Urban | No. of students=1450                       | Toilet facility= There are 22 Water Closet   |                              |
|    |         |                |         | U U          |            |            | No. of teachers=76                         | and Pit latrines in the school. 8 of the     |                              |
|    |         |                |         |              |            |            | School buildings/Classrooms= There are     | toilets are not functional.                  |                              |
|    |         |                |         |              |            |            | 54 buildings in the schools and 12 need    | Water tanks= There are 4 water tanks         |                              |
|    |         |                |         |              |            |            | rehabilitations                            | and 2 need renovations                       |                              |
|    |         |                |         |              |            |            | School Healthcare= There is a sickbay      | Boreholes = There are 4 boreholes in the     |                              |
|    |         |                |         |              |            |            | with 2 nurses in the school                | schools and 1 need rehabilitations           |                              |
| 17 | 1       | FGC ANKA       | Mixed   | Boarding     | Fenced     | Rural      | No. of students=1875                       | Toilet facility= There are 26 Water Closet   |                              |
|    |         |                |         | g            |            |            | No of teachers=35                          | and Pit latrines functional in the school    |                              |
|    |         |                |         |              |            |            | School buildings/Classrooms= There are     | 813 of the toilets are not functional        |                              |
|    |         |                |         |              |            |            | 42 buildings among which 12 need           | Water tanks= 5 water tanks and 2 need        |                              |
|    |         |                |         |              |            |            | renovations                                | renovations                                  |                              |
|    |         |                |         |              |            |            | School Healthcare= There is a sickbay      | Boreholes = There are 4 boreholes in the     |                              |
|    |         |                |         |              |            |            | with 2 nurses in the school                | school                                       |                              |
| 18 | Kano    | EGC KANO       | Mixed   | Boarding     | Fenced     | Urban      | No. of students=2353                       | Toilet facility= The school has 80 toilets   |                              |
| 10 | Rano    |                | MIXCO   | Dourding     | 1 choca    | orban      | No. of teachers=168                        | (water closet)                               |                              |
|    |         |                |         |              |            |            | School buildings/Classrooms= The school    | Water tanks $= 1$ water tanks in the schools |                              |
|    |         |                |         |              |            |            | has about 31 buildings about and quite     | and all functional                           |                              |
|    |         |                |         |              |            |            | number need rebabilitations due to the old | Boreholes = There are $1$ horeholes in the   |                              |
|    |         |                |         |              |            |            | nature                                     | school                                       |                              |
|    |         |                |         |              |            |            | School Healthears There are 2 purses       | School.                                      |                              |
|    |         |                |         |              |            |            | with not onough drugs                      |  |                              |
| 10 | -       |                | Mixed   | Dearding     | Fanad      | Urban      | No. of studente=179                        | Toilet facility The asheel has tailete       |                              |
| 19 |         | FSTC, GANDUJE  | IVIIXed | воагону      | Fenced     | Ulban      | No. of students=170                        | (water algorit)                              |                              |
|    |         |                |         |              |            |            | No. of leachers-30                         | (Water topker 1 water topke in the schoole   |                              |
|    |         |                |         |              |            |            | School buildings/Classiconis- The school   | and all functional                           |                              |
|    |         |                |         |              |            |            | has 6 buildings and 5 need renabilitations | Dereholes - There is 1 herehole in the       |                              |
|    |         |                |         |              |            |            |  | Borenoies = There is T borenoie in the       |                              |
|    |         |                |         |              |            |            | School Healthcare= There is T CHEVV        | school (solar Powered)                       |                              |
|    | -       |                |         |              | + <u> </u> |            | and 1 nurse in an improvised area.         |  |                              |
| 20 |         | FGGC, MINJIBIR | Girls   | Boarding     | Fenced     | Semi-urban | No. of students=678                        | l'oilet facility= l'here are 14 toilets      | During dry season, aquiters  |
|    |         |                |         |              |            |            | No. of teachers=60                         | facilities but 5 are not functional          | are low leading to low water |
|    |         |                |         |              |            |            | School buildings/Classrooms= There are     | Water tanks= 4 water tanks in the schools    | supply.                      |
|    |         |                |         |              |            |            | 67 buildings in the school and 4 need      | and all functional                           |                              |
|    |         |                |         |              |            |            | rehabilitations                            | Boreholes = There are 10 boreholes and       |                              |
|    |         |                |         |              |            |            | School Healthcare= There is a sickbay      | 2 need rehabilitations                       |                              |
|    | 4       |                |         |              |            |            | with a visiting doctor and 4 CHEWs         |  |                              |
| 21 |         | FSTC HADEJA    | Mixed   | Boarding/Day | Fenced     | Semi Urban | Total students =421 - Girls =126, Boys     | Type of toilet = Water Closet and pit        |                              |
|    |         |                |         |              |            |            | =295                                       | latrines                                     |                              |
|    |         |                |         |              |            |            | Total teachers = 23 - Male = 21, Female    | toilets for boys =5 ( Pit latrines)          |                              |
|    |         |                |         |              |            |            | =2   | toilets for girls = 5 (water closet)         |                              |

|  |  | % Full time = 23<br>% Volunteer/NYSC etc =29                      | toilets for teachers =1<br>The toilets are not enough considering the |  |
|--|--|---|---|--|
|  |  | Total number of 16 classrooms and most<br>of them need renovation | number of students  |  |

| State    | Communities Visited   |
|----------|-----------------------|
| FCT      | Sabongeri Ward, Abaji |
|          | Bwari, FCT            |
|          | Kwali                 |
| Kaduna   | Malali                |
| Kano     | Tarauni               |
| Yobe     | Potiskum              |
|          | Gashua                |
| Katsina  | Daura                 |
|          | Bakori                |
|          | Dayi                  |
| Zaria    | Basawa                |
| Kebbi    | Gwandu                |
| Enugu    | Leija                 |
| 0        | Isiuzo                |
| Edo      | Ibilo                 |
|          | Ugbowo                |
| Kogi     | Atanda                |
| 8-       | Oknono                |
| Ovo      | Sabo                  |
|          | Ipana                 |
| Ogun     | Ineru                 |
| Lagos    | libowu                |
| Kwara    | Omu-Aran              |
| Bauchi   | Nasarawan Dawaki      |
| ligawa   | ligawar kasim         |
| Jigawa   | Maradawa              |
| Niger    | Tungan Shanu          |
| Niger    | Shiroro               |
|          | Kadpa                 |
|          | Kwarin Vawa           |
| Ronuo    | Aknogodo              |
| Denue    | Agrahu                |
|          | Agyaku                |
|          | Mhaachi               |
| Diatoau  | Hwollaga              |
| Flateau  | Longtong              |
| Dormo    | Duluplutu             |
| Adamayua | Anguwan Lala Sangara  |
| Toroho   | Kurkana Takanahanin   |
| Taraba   | Kurkaye, Takanabanin  |
|          | Tambule<br>Denisiu    |
| Combo    | Danjaju               |
| Gombe    | Posiliya<br>Dodini    |
| NY       |                       |
| Nasarawa | Urozo                 |
|          | Doma                  |
|          | Keana                 |
| Undo     | Ikare Akoko           |
| Imo      | Uwerri                |

ANNEX 11 List of Communities Visited

|             | Okigwe          |
|-------------|-----------------|
|             | Umuaka          |
| Rivers      | Abuloma         |
|             | Awalama         |
|             | Ahoada          |
|             | Osou-Ogu        |
| Abia        | Umuahia         |
|             | Ohafia          |
|             | Ohanso          |
| Ebonyi      | Ezzambgo        |
|             | Okposi          |
|             | Amuzu           |
| CrossRivers | Big Qua Town    |
|             | Ikom            |
|             | Abakpa          |
| Delta       | Ibusa           |
| Bayelsa     | Imiringi        |
|             | Odi             |
| Anambra     | Nkwelle Ezunaka |
|             | Awka            |
| AkwaIbom    | Kwam            |
|             | Ikot Ekpene     |
| Ekiti       | Efon Alaye      |
|             | Ikole Ekiti     |
| Osun        | Ilesa           |
|             | Ikirun          |

### ANNEX 12 Results of Air Quality Analysis

| NAME OF SCHOOL         | Sample | C02              | СО          | <b>SO</b> <sub>2</sub> | H <sub>2</sub> S          | PM2.5    | PM10     | ТУОС   | NOISE             |
|------------------------|--------|------------------|-------------|------------------------|---------------------------|----------|----------|--------|-------------------|
|                        | Code   | ppm              | ppm         | ppm<br>LWEST           | Ppm                       | ppm      | ppm      | ppm    | dB                |
| FGC IKOLE-EKITI        | A01    | 773              | 0           | 0                      | 0                         | 8        | 10       | 0.4    | 30.8              |
| FGGC EFON-ALAYE        | A0 2   | 421              | 0           | 0                      | 0                         | 12       | 16       | 0      | 49.3              |
| FSTC USI-EKITI         | AQ 3   | 491              | 0           | 0                      | 0                         | 13       | 16       | 0.067  | 44.7              |
| KINGS COLLEGE LAGOS    | AQ 4   | 572              | 0           | 0                      | 0                         | 13.4     | 89.8     | 1.9    | 45.0              |
| FGC IJANIKAN           | AQ 5   | 501              | 0           | 0                      | 0                         | 6.4      | 73.3     | 0.3    | 33.5              |
| QUEENS COLLEGE LAGOS   | AQ 6   | 498              | 0           | 0                      | 0                         | 9.5      | 61.4     | 1.7    | 43.6              |
| FSTC YABA              | AQ 7   | 550              | 0           | 0                      | 0                         | 12.5     | 69.9     | 1.8    | 49.7              |
| FGC ODOGBOLU           | AQ 8   | 763.54           | 1.0         | 0.04                   | 0                         | 24       | 30       | 0.060  | 39.4              |
| FGGC SHAGAMU           | AQ 9   | 762.00           | 0           | 0                      | 0                         | 15       | 18       | <00.1  | 36.2              |
| FSTC IJEBU MUSHIN      | AQ 10  | 773              | 0           | 0                      | 0                         | 20       | 27       | < 0.05 | 49.3              |
| FGC IDOANI             | AQ 11  | 407              | 0           | 0                      | 0                         | 7        | 30       | < 0.01 | 40.5              |
| FGGC AKURE             | AQ 12  | 610              | 0           | 0                      | 0                         | 10       | 44       | < 0.01 | 46.4              |
| FSTC IKARE-AKOKO       | AQ 13  | 411              | 0           | 0                      | 0                         | 6        | 25       | < 0.01 | 49.5              |
| FGC IKIRUN             | AQ 14  | 507              | 0           | 0                      | 0                         | 9        | 23       | <0.11  | 32.2              |
| FGGC IPETUMODU         | AQ 15  | 601              | 0           | 0                      | 0                         | 8        | 24       | < 0.01 | 38.8              |
| FSTC ILESA             | AQ 16  | 542              | 0           | 0                      | 0                         | 9        | 15       | < 0.01 | 41.2              |
| FGC OGBOMOSO           | AQ 17  | 313              | 0           | 0.02                   | 0                         | 17       | 23       | < 0.00 | 48.7              |
| FGGC OYO               | AQ 18  | 313              | 0           | 0                      | 0                         | 22       | 32       | < 0.00 | 38.5              |
| FSTC IGANGAN           | AQ 19  | 326              | 0           | 0.01                   | 0                         | 15       | 18       | < 0.00 | 35.9              |
|                        |        |                  | SOUTH-E     | AST ZONE               |                           |          |          |        |                   |
|                        | Sample | CO <sub>2</sub>  | CO          | S0 <sub>2</sub>        | H <sub>2</sub> S<br>Brown | PM2.5    | PM10     | TVOC   | NOISE             |
| ECC OKICWE             | A0 20  | 954              | 0           | 0                      | <b>Ppii</b>               | 10<br>10 | 12       | 0.0    | <u>ив</u><br>49.1 |
| FGGC OWERRI            | AQ 20  | 852              | 0           | 0                      | 0                         | 10       | 22       | 0.0    | 67.4              |
| FSTC OGUTA             | AQ 22  | 750              | 0           | 0                      | 0                         | 9        | 13       | 0.0    | 54.3              |
| FSTC, UMUAKA           | AQ 23  | 940              | 0           | 0                      | 0                         | 18       | 21       | 0.0    | 60.5              |
| FGGC UMUAHIA           | AQ 24  | 836              | 0           | 0                      | 0                         | 22       | 30       | 0.0    | 50.9              |
| FGC OHIAFIA            | AQ 25  | 833              | 0           | 0                      | 0                         | 12       | 18       | 0.0    | 68.4              |
| FSTC OHANSO            | AQ 26  | 780              | 0           | 0                      | 0                         | 21       | 27       | 0.0    | 48.9              |
| FGUNISE<br>ECCLONITSHA | AQ 27  | 820              | 0           | 0                      | 0                         | 11       | 15       | 0.0    | 61.2              |
| FSTC AWKA              | AQ 28  | 920              | 0           | 0                      | 0                         | 24       | 29       | 0.0    | 66.2              |
| FGC OKPOSI             | A0 30  | 950              | 0           | 0                      | 0                         | 16       | 19       | 0.7    | 58.8              |
| FGGC EZZAMGBO          | AQ 31  | 940              | 0           | 0                      | 0                         | 18       | 21       | 0.0    | 48.6              |
| FSTC AMUZU             | AQ 32  | 859              | 0           | 0                      | 0                         | 16       | 21       | 0.0    | 54.6              |
| FGC, ENUGU             | AQ 33  | 863              | 0           | 0                      | 0                         | 21       | 26       | 0.0    | 63.1              |
| FGGC, NKWELLE EZUNAKA  | AQ 34  | 840              | 0           | 0                      | 0                         | 10       | 21       | 0.0    | 58.2              |
| FGGC, LEJJA            | AQ 35  | 890              | SOUTH-SO    | UUTH ZONE              | 0                         | 15       | 20       | 0.0    | 50.2              |
|                        | Sample | C.0 <sub>2</sub> |             | S02                    | H <sub>2</sub> S          | PM2.5    | PM10     | TVOC   | NOISE             |
|                        | Code   | ppm              | ppm         | ppm                    | Ppm                       | ppm      | ppm      | ppm    | dB                |
| FGC IKOT-EKPENE        | AQ 36  | 755.0            | 0           | 0                      | 0                         | 11       | 14       | 0.0    | 57.7              |
| FGGC IKOT-OBIO-ITONG   | AQ 37  | 792.0            | 0           | 0                      | 0                         | 20       | 25       | 0.2    | 45.3              |
| FSTC UYO               | AQ 38  | 844              | 0           | 0                      | 0                         | 14       | 17       | 0.0    | 45.3              |
| FGC UDI                | AQ 39  | 655              | 0           | 0                      | 0                         | 7        | 8        | 0.09   | 36.1              |
| FSTC TUNGHO            | AQ 40  | 937              | 0           | 0                      | 0                         | 8        | 7        | 0.7    | 30.0              |
| FGC IKOM               | A0 42  | 824              | 0           | 0                      | 0                         | 10       | 12       | 0.0    | 49.0              |
| FGC CALABAR            | AQ 43  | 801              | 0           | 0                      | 0                         | 10       | 13       | 0.1    | 60.2              |
| FSC, OGOJA             | AQ 44  | 860              | 0           | 0                      | 0                         | 6        | 8        | 0.3    | 58.6              |
| FGC WARRI              | AQ 45  | 893              | 0           | 0                      | 0                         | 9        | 11       | 0.0    | 76.6              |
| FGGC IBUSA             | AQ 46  | 921              | 0           | 0                      | 0                         | 16       | 24       | 0.7    | 52.2              |
|                        | AQ 47  | 91/              | 0           | 0                      | 0                         | 11       | 15<br>28 | 0.0    | 45.2              |
| FSTC UROMI             | A0 49  | 911              | 0           | 0                      | 0                         | 19       | 24       | 0.0    | 54.8              |
| FGC PORT-HARCOURT      | AQ 50  | 580              | 0           | 0                      | 0                         | 10       | 12       | 0.1    | 42.3              |
| FGGC ABULOMA           | AQ 51  | 514              | 0           | 0                      | 0                         | 10       | 15       | 0.0    | 69.9              |
| FSTC AHOADA            | AQ 52  | 558              | 0           | 0                      | 0                         | 9        | 12       | 0.0    | 48.8              |
|                        | Commit | 60               | NORTH E     | AST ZONE               | U.C.                      | DM2 F    | DM10     | TUCC   | NOICE             |
|                        | Sample | CU <sub>2</sub>  | CO<br>nnm   | SU <sub>2</sub>        | H <sub>2</sub> S<br>Pnm   | PM2.5    | PM10     | TVUC   | NUISE<br>dB       |
| FGC GANYE              | A0.53  | 582              | <pre></pre> | 0                      | 0                         | 10.21    | 23.53    | 0.00   | 39.6              |
| FGGC YOLA              | AQ 54  | 458              | <0.01       | 0                      | 0                         | 7.32     | 21.31    | 0.00   | 43.8              |
| FSTC MICHIKA           | AQ 55  | 635              | <0.01       | 0                      | 0                         | 14.52    | 35.52    | 0.00   | 35.7              |
| FGGC BAUCHI            | AQ 56  | 753              | <0.01       | 0                      | 0                         | 7.13     | 15.9     | 0.00   | 30.0              |
| FGC AZARE              | AQ 57  | 831              | <0.01       | 0                      | 0                         | 4.26     | 18.7     | 0.00   | 38.5              |
| FSTC MISAU             | AQ 58  | 720              | <0.01       | 0                      | 0                         | 0.24     | 6.9      | 0.00   | 30.5              |
| FGC MAIDUKUKI          | AQ 59  | 300              | <0.01       | 0                      | 0                         | 0.48     | 6.U      | 0.00   | 38.7              |
| I TOOG MONOUNO         | AUUU   | 300              | 1 20.01     | 0                      | 1 0                       | 3.44     | 0.51     | 1 0.00 | 53.3              |

Maximum Permissible Limits – CO2=1000ppm , CO=10ppm=, SO2=0.06ppm, H2S=0.006ppm, TVOC-0.1ppm, Noise= 55dBA

| ECTC LACCA       | 10(1   | 421   | 0.02    | 0           | 0                     | 12.2               | 20.0  | 0.00   | 22 5  |
|------------------|--------|-------|---------|-------------|-----------------------|--------------------|-------|--------|-------|
| FSTC LASSA       | AQ 61  | 421   | 0.03    | 0           | 0                     | 13.2               | 20.0  | 0.00   | 33.5  |
| FGC BILIRI       | AQ 62  | 552   | 0.01    | 0           | 0                     | 14.0               | 10.0  | 0.00   | 33.0  |
| FGGC BAJOGA      | AQ 63  | 523   | < 0.01  | 0           | 0                     | 7.3                | 16.1  | 0.00   | 35.8  |
| FGC BUNI-YADI    |        |       |         | Not         | visited – insec       | urity              |       | _      |       |
| FGGC POTISKUM    | AQ 65  | 640   | 0       | 0           | 0                     | 16.62              | 34.4  | 0.00   | 37.9  |
| FSTC, GASHUA     | AQ 66  | 742   | 0       | 0           | 0                     | 13.52              | 23.5  | 0.00   | 28.2  |
| FSTC, JALINGO    | AQ 67  | 643   | 0       | 0           | 0                     | 12.15              | 34.13 | 0.00   | 35.5  |
| FGC. WUKARI      |        |       | •       | Not         | visited – insec       | urity              |       | •      |       |
| FGGC IALINGO     | AO 69  | 514   | 0       | 0           | 0                     | 14.13              | 29.22 | 0.00   | 45.4  |
|                  |        |       | NORTH   | CENTRAL     | -                     |                    |       | 1      | 1.0.1 |
|                  | Samule | COn   |         | S0a         | Has                   | PM2 5              | PM10  | TVOC   | NOISE |
|                  | Codo   | 002   |         | 50 <u>2</u> | Dom                   | 1 112.5            | nnm   | nnm    | dP    |
|                  | 40.70  | 600   | 20.01   |             | 0                     | 105                | 20.20 | 0.00   | 46 5  |
|                  | AQ 70  | 510   | <0.01   | 0           | 0                     | 10.3               | 20.38 | 0.00   | 40.3  |
| FGGC GBORU       | AQ 71  | 510   | <0.01   | 0           | 0                     | 7.30               | 15.12 | 0.00   | 54.5  |
| FGC 010BI        | AQ 72  | 701   | <0.01   | 0           | 0                     | 18.2               | 32.21 | 0.00   | 49.9  |
|                  | AQ 73  | /13   | <0.01   | 0           | 0                     | 15.81              | 35.24 | 0.00   | 54.0  |
| FGCUWOLAWO       | AQ 74  | 839   | <0.01   | 0           | 0                     | 4.10               | 12.90 | 0.00   | 58.2  |
| FGGC KABBA       | AQ 75  | 1102  | <0.01   | 0           | 0                     | 0.202              | 1.053 | 0.00   | 54.0  |
| FSTC OGUGU       | AQ 76  | 850   | < 0.01  | 0           | 0                     | 0.013              | 0.224 | 0.00   | 58.2  |
| FGC ILORIN       | AQ 77  | 834   | < 0.01  | 0           | 0                     | 43.22              | 64.58 | 0.00   | 54.4  |
| FGGC OMU-ARAN    | AQ 78  | 730   | < 0.01  | 0           | 0                     | 24.8               | 44.10 | 0.00   | 52.1  |
| FGC KWALI        | AQ 79  | 398   | 37.60   | 0           | 0                     | 3.23               | 7.74  | 0.00   | 49.2  |
| FGGC BWARI       | AQ 80  | 414   | 30.00   | 0           | 0                     | 2.21               | 6.90  | 0.00   | 49.5  |
| FGGC ABAJI       | AQ 82  | 402   | < 0.01  | 0           | 0                     | 4.31               | 11.51 | 0.00   | 47.9  |
| FGC RUBOCHI      | AQ 84  | 732   | < 0.01  | 0           | 0                     | 10.23              | 23.41 | 0.00   | 53.54 |
| FSTC OROZO       | AQ 85  | 849   | < 0.01  | 0           | 0                     | 15.61              | 28.13 | 0.00   | 46.3  |
| FGC KEFFI        | A0 86  | 724   | < 0.01  | 0           | 0                     | 1.83               | 7.27  | 0.00   | 42.75 |
| FGGC KEANA       | A0.87  | 705   | <0.01   | 0           | 0                     | 4.70               | 10.80 | 0.00   | 41.3  |
| FSTC DOMA        | A0.88  | 729   | <0.01   | 0           | 0                     | 2 77               | 6.27  | 0.00   | 55.3  |
| FGC MINNA        | 10 89  | 629   | <0.01   | 0           | 0                     | 165                | 47.6  | 0.00   | 60.8  |
| FCCC BIDA        | 1000   | 702   | <0.01   | 0           | 0                     | 14.3               | 46.3  | 0.00   | 53.1  |
|                  | AQ 90  | 702   | <0.01   | 0           | 0                     | 14.5               | 40.3  | 0.00   | 55.1  |
| FGUNEW-BUSSA     | AQ 91  | 761   | <0.01   | 0           | 0                     | 11.28              | 15.98 | 0.00   | 60.47 |
| FSTC SHIRURU     | AQ 92  | 530   | <0.01   | 0           | 0                     | 15.23              | 33.81 | 0.00   | 68.3  |
| FGA SULEJA       | AQ 93  | 570   | <0.01   | 0           | 0                     | 19.23              | 38.25 | 0.00   | 50.70 |
| FGC JOS          | AQ 94  | 420   | <0.01   | 0           | 0                     | 15.5               | 24.6  | 0.00   | 46.44 |
| FGGC LANTANG     | AQ 95  | 397   | <0.01   | 0           | 0                     | 10.8               | 35.1  | 0.00   | 54.3  |
|                  | 1      |       | NORT    | H WEST      |                       |                    |       |        |       |
|                  | Sample | C02   | CO      | S02         | H <sub>2</sub> S      | PM2.5              | PM10  | TVOC   | NOISE |
|                  | Code   | ppm   | ppm     | ppm         | Ppm                   | ppm                | ppm   | ppm    | dB    |
| FGC KADUNA       | AQ 96  | 878   | 0.72    | 0.02        | 0                     | 13.40              | 20.83 | 0.00   | 50.1  |
| FGGC ZARIA       | AQ 97  | 532   | <0.01   | 0           | 0                     | 13.5               | 28.32 | 0.00   | 50.8  |
| FSTC KAFANCHAN   |        |       |         | No          | t visited-insecu      | ırity              |       | _      |       |
| FGC KIYAWA       | AQ 99  | 582   | < 0.01  | 0           | 0                     | 18.1               | 45.21 | 0.00   | 44.8  |
| FGGC KAZAURE     | AQ 100 | 707   | 0.1     | 0           | 0                     | 11.4               | 22.51 | 0.00   | 50.4  |
| FSTC Hadejia     | AQ 101 | 680   | < 0.01  | 0           | 0                     | 24.5               | 42.13 | 0.00   | 46.1  |
| FGC DAURA        | AQ 102 | 458   | <0.01   | 0           | 0                     | 9.1                | 20.2  | 0.00   | 46.00 |
| FGGC BAKORI      | AQ 103 | 462   | <0.01   | 0           | 0                     | 13.2               | 31.2  | 0.00   | 55.60 |
| FSTC DAYI        | AQ 104 | 620   | < 0.01  | 0           | 0                     | 12.32              | 33.11 | 0.00   | 42.3  |
| FGC BIRNIN-YAURI | -      |       | •       | No          | t visited-insecu      | irity              | •     |        |       |
| FGGC GWANDU      | AO 106 | 421   | <0.01   | 0           | 0                     | 15.1               | 28.6  | 0.00   | 45.6  |
| FSTC ZUBU        |        |       | 0.02    | No          | t visited-insecu      | rity               |       | 1 0100 | 10.0  |
| FGC SOKOTO       | AO 108 | 572   | < 0.01  | 0           |                       | 25.4               | 47.2  | 0.00   | 55.1  |
| FGGC TAMBIIWAL   | AO 109 | 534   | <0.01   | 0           | 0                     | 15                 | 23.5  | 0.00   | 46.2  |
| FSC SOKOTO       | A0 110 | 489   | <0.01   | 0           | 0                     | 82                 | 17.1  | 0.00   | 44.6  |
| FCCC CUSAU       | A0 111 | 592   | <0.01   | 0           | 0                     | 17.4               | 201   | 0.00   | 40.12 |
|                  | AUIII  | 1 302 | L 20.01 | <br>        | U<br>trainited income | 1 1/. <del>4</del> | 30.1  | 0.00   | 17.13 |
|                  | 40.112 | F01   | -0.01   | NO          |                       |                    | 22 5  | 0.00   | 56.22 |
| FUL KANU         | AU 113 | 581   | <0.01   | 0           | 0                     | 10.5               | 32.5  | 0.00   | 50.22 |
| rsic, GANDUJE    | AU 114 | /38   | 0.1     | U           | 0                     | 13.3               | 19.90 | 0.00   | 59.21 |
|                  | AQ 115 | 531   | <0.01   | 0           | 0                     | 4.5                | 12.3  | 0.00   | 38.23 |
| FSTC HADEJA      | AQ 116 | 631   | <0.01   | 0           | 0                     | 7.9                | 23.2  | 0.00   | 59.21 |
|                  | FMEnv  | NS    | 10 ppm  | 0.1         | 0.008                 | NS                 | NS    | NS     | 90 dB |
|                  | Limits |       |         |             | mg/m3                 |                    |       |        |       |

# ANNEX 13 Results of Groundwater Quality Analysis

| SOUT | H WEST ZO | DNE                     | Ground                  | SOUT | 'H EAST ZON | Е                   | Ground                  | SOUT | H SOUTH ZONE |                        |
|------|-----------|-------------------------|-------------------------|------|-------------|---------------------|-------------------------|------|--------------|------------------------|
| S/N  | STATE     | SCHOOL                  | Water<br>Sample<br>Code | S/N  | STATE       | SCHOOL              | Water<br>Sample<br>Code | S/N  | STATE        | SCHOOL                 |
| 1    | Ekiti     | FGC IKOLE-EKITI (MIXED) | GW67                    | 1    | Imo         | FGC OKIGWE (MIXED   | GW17                    | 1    | AkwaIbom     | FGC IKOT-EKPENE (MIXED |
| 2    |           | FGGC EFON-ALAYE (GIRLS) | GW68                    | 2    |             | FGGC OWERRI (GIRLS) | GW18                    | 2    |              | FGGC IKOT-OBIO-ITONG   |
| 3    |           | FSTC USI-EKITI (MIXED)  | GW69                    | 3    |             | FSTC OGUTA (MIXED   | GW83                    |      |              | (GIRLS)                |
| 4    | Lagos     | KINGS COLLEGE LAGOS     | GW70                    | 4    |             | FSTC, UMUAKA        | GW84                    | 3    |              | FSTC UYO (GIRLS)       |
| 5    |           | FGC IJANIKAN            | GW71                    | 5    | Abia        | FGGC UMUAHIA        | GW2                     | 4    | Bayelsa      | FGC ODI (MIXED)        |
| 6    |           | QUEENS COLLEGE LAGOS    | GW72                    | 6    |             | FGC OHIAFIA         | GW85                    | 5    |              | FGGC IMIRINGI (GIRLS)  |
| 7    |           | FSTC YABA (MIXED)       | GW73                    | 7    |             | FSTC OHANSO         | GW1                     | 6    |              | FSTC TUNGHO (MIXED)    |
| 8    | Ogun      | FGC ODOGBOLU            | GW74                    | 8    | Anambra     | FGC NISE (MIXED)    | GW86                    | 7    | Cross Rivers | FGC IKOM (MIXED)       |
| 9    | - 0-      | FGGC SHAGAMU (GIRLS)    | GW30                    | 9    |             | FGGC ONITSHA(GIRLS) | GW5                     | 8    |              | FGC CALABAR (GIRLS)    |
| 10   |           | FSTC IIEBU MUSHIN       | GW75                    | 10   |             | FSTC AWKA (MIXED)   | GW87                    | 9    |              | FSC, OGOJA             |
|      |           | (MIXED)                 |                         | 11   | Ebonvi      | FGC OKPOSI (MIXED)  | GW88                    | 10   | Delta        | FGC WARRI              |
| 11   | Ondo      | FGC IDOANI (MIXED)      | GW76                    | 12   |             | FGGC EZZAMGBO       | GW14                    | 11   |              | FGGC IBUSA             |
| 12   |           | FGGC AKURE (GIRLS)      | GW77                    |      |             | (GIRLS)             |                         | 12   | Edo          | FGGC BENIN (GIRLS)     |
| 13   |           | FSTC IKARE-AKOKO        | GW78                    | 13   |             | FSTC AMUZU (BOYS)   | GW89                    | 13   |              | FGC IBILLO (MIXED)     |
|      |           | (MIXED)                 |                         | 14   | Enugu       | FGC, ENUGU          | GW16                    | 14   | Rivers       | FSTC UROMI (MIXED)     |
| 14   | Osun      | FGC IKIRUN (MIXED)      | GW31                    | 15   |             | FGGC, NKWELLE       | GW90                    | 15   |              | FGC PORT-HARCOURT      |
| 15   |           | FGGC IPETUMODU (GIRLS)  | GW79                    |      |             | EZUNAKA             |                         |      |              | (MIXED)                |
| 16   |           | FSTC ILESA (MIXED)      | GW80                    | 16   |             | FGGC, LEJJA         | GW91                    | 16   |              | FGGC ABULOMA (GIRLS)   |
| 17   | Оуо       | FGC OGBOMOSO (MIXED)    | GW81                    |      |             |                     |                         | 17   |              | FSTC AHOADA (MIXED)    |
| 18   |           | FGGC OYO (GIRLS)        | GW82                    |      |             |                     |                         |      |              |                        |
| 19   |           | FSTC IGANGAN (MIXED)    | GW32                    |      |             |                     |                         |      |              |                        |

| S/NSTATESCHOOLS/NSTATESCHOOLGW1AdamawaFGC GANYEGW431BenueFGC VANDEIKYAGW591KadunaFGC KADUNA2FGGC YOLAGW422FGGC GBOKOGW92FGGC ZARIA3FSTC MICHIKAGW443FGC OTOBI-3FSTC KAFANCHAN4BauchiFGGC BAUCHIGW64FSTC OTUKPO-4JigawaFGC KIYAWA5FGC AZAREGW76FGGC KABBAGW636FSTC MALLAM7PFGC MADDUCUDUGW147FGTC OCUCUGW64FSTC MALAM  | GW<br>GW21<br>GW104<br>-<br>GW105<br>GW19<br>GW20 |
|---|---|
| 1AdamawaFGC GANYEGW431BenueFGC VANDEIKYAGW591KadunaFGC KADUNA2FGGC YOLAGW422FGGC GBOKOGW92FGGC ZARIA3FSTC MICHIKAGW443FGC OTOBI-3FSTC KAFANCHAN4BauchiFGGC BAUCHIGW64FSTC OTUKPO-4JigawaFGC KIYAWA5KogiFGGC KABBAGW636FSTC MALLAMFSTC MALLAMMADORI BINIWA   | GW21<br>GW104<br>-<br>GW105<br>GW19<br>GW20       |
| 2FGGC YOLAGW422FGGC GBOKOGW92FGGC ZARIA3FSTC MICHIKAGW443FGC OTOBI-3FSTC KAFANCHAN4BauchiFGGC BAUCHIGW64FSTC OTUKPO-4JigawaFGC KIYAWA5FGC AZAREGW75KogiFGC CWOLAWOGW625FGGC KAZAURE6FSTC MISAUGW536FGGC CABBAGW636FSTC MALLAM7FGC MADDUCUDIGW140FSTC OCUCIUGW64FSTC MALLAM  | GW104<br>GW105<br>GW19<br>GW20                    |
| 3       FSTC MICHIKA       GW44         4       Bauchi       FGGC BAUCHI       GW6         5       FGC AZARE       GW7         6       FSTC MISAU       GW53         7       Page And Publicupit       GW14         7       Page And Publicupit       GW14             7       Page And Publicupit       GW14             3       S       FGC OTOBI       -         4       S       FSTC OTUKPO       -         4       Jigawa       FGC KIYAWA         5       Kogi       FGC WOLAWO       GW62         6       FGC KABBA       GW63       6 | - GW105<br>GW19<br>GW20                           |
| 4       Bauchi       FGGC BAUCHI       GW6       4       FSTC OTUKPO       -       4       Jigawa       FGC KIYAWA         5       FGC AZARE       GW7       5       Kogi       FGC UWOLAWO       GW62       5       FGC KAZAURE         6       FSTC MISAU       GW53       6       FGGC KABBA       GW63       6       FSTC OCUCU       6       FSTC MALLAM   | GW105<br>GW19<br>GW20                             |
| 5     FGC AZARE     GW7     5     Kogi     FGC UWOLAWO     GW62     5     FGGC KAZAURE       6     FSTC MISAU     GW53     6     FGGC KABBA     GW63     6     FSTC MALLAM       7     P     FGC MADUCUDU     GW14     7     FSTC OCUCU     GW64     6     FSTC MALLAM  | GW19<br>GW20                                      |
| 6     FSTC MISAU     GW53     6     FGGC KABBA     GW63     6     FSTC MALLAM       7     D     FSTC MALLAM     FSTC MALLAM     MADORI-BIRNIWA  | GW20  |
|   | <u>-</u> 0  |
| / BORNO   FGC MAIDUGURI   GW10    /   FSTC 0GUGU   GW64      MADURUMWA  | 1/  |
| 8 FGGC MONGUNO GW54 8 Kwara FGC ILORIN GW65 Hadejia   | CW22  |
| 9 FSTC LASSA GW55 9 FGGC OMU-ARAN GW65 7 Ratsina FGC DAURA  | GW25  |
| 10     Gombe     FGC BILIRI     GW41     10     FCT     FGC KWALI     GW39     8     FGC DAVI   | GW100   |
| 11 FGGC BAJOGA GW45 11 FGGC BWARI GW92 9 FSTC DATI  | GW107   |
| 12 Yobe FGC BUNI-YADI - 12 FGGC ABAJI GW94 10 Kebbi FGC BIRNIN-YADR   |   |
| 13     FGGC POTISKUM     GW36     13     FGC RUBOCHI     GW96     11     FGGC GWANDU  | GW24  |
| 14     FSTC, GASHUA     GW37     14     FSTC OROZO     GW97     12     FSTC ZORO  | -   |
| 15 Taraba FSTC, JALINGO GW57 15 Nasarawa FGC KEFFI GW98 13 SOROTO FGC SOROTO  | GW108   |
| 16     FGC, WUKARI     -     16     FGGC KEANA     GW99     14     FGGC TAMBOWAL  | GW35  |
| 17     FGGC, JALINGO     GW58     17     FSTC DOMA     GW26     15     FSC SOR010   | GW109   |
| 18     Niger     FGC MINNA     GW27     16     Zamiara     FGGC GOSAO   | GW38  |
| 19     FGGC BIDA     GW100     17     FGC ANKA  | -   |
| 20 FGC NEW-BUSSA GW28 IS KANO FGC KANO  | GW22  |
| 21 FSTC SHIRORO GW101 FSTC, GANDUJE   | GW110   |
| 22   FGA SULEJA   GW29   20   FGGC, MINJIBIR  | GW111   |
| 23   Plateau   FGC JOS   GW102   21   FSTC HADEJA   | GW112   |
| 24FGGC LANTANGGW103   | · · · ·   |

Ground Water Sample Code GW3 GW46

GW4 GW8 GW47 GW48 GW49 GW11 GW12 GW13 GW13 GW40 GW15 GW50 GW51 GW51 GW33

GW52 GW34

|                                      |        |                            |                             |                          |                          |                          |                          |                         |                          |                          |                           |                          |                          |                          |                          |                          |                          |                           | -               |                          |                          |                          |                          |
|--------------------------------------|--------|----------------------------|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|-----------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Parameters                           | Unit   | FMEnv<br>Max Perm<br>Limit | NESREA<br>Max Perm<br>Limit | GW1                      | GW2                      | GW3                      | GW4                      | GW5                     | GW6                      | GW7                      | GW8                       | GW9                      | GW10                     | GW11                     | G W 12                   | G W 13                   | GW14                     | GW15                      | GW16            | <b>GW</b> 17             | GW18                     | GW 19                    | GW 20                    |
| Electrical<br>Conductivity           | µS/cm  | 1000.00                    | NS                          | 45.70                    | 38.40                    | 420.32                   | 93.45                    | 81.20                   | 172.30                   | 129.54                   | 56.50                     | 673.00                   | 502.20                   | 574.00                   | 79.43                    | 88.50                    | 254.92                   | 404.00                    | 604.00          | 121.00                   | 219.30                   | 430.00                   | 281.50                   |
| Ph                                   |        | 6.0-9.0                    | 6.5-9.0                     | 7.93                     | 6.54                     | 4.67                     | 8.49                     | 5.90                    | 7.29                     | 7.65                     | 7.01                      | 6.98                     | 7.60                     | 7.50                     | 7.32                     | 7.51                     | 7.32                     | 5.72                      | 7.20            | 7.37                     | 7.12                     | 7.48                     | 7.13                     |
| Turbidity                            | NTU    | 10.00                      | 5.00                        | 0.00                     | 1.22                     | 0.00                     | 0.00                     | 0.00                    | 0.00                     | 1.00                     | 0.00                      | 1.00                     | 0.00                     | 2.00                     | 0.00                     | 0.00                     | 0.68                     | 0.00                      | 0.75            | 0.00                     | 0.00                     | 0.00                     | 0.00                     |
| Colour                               | Pt.co  | 10.00                      | 5.00                        | 3.10                     | 4.30                     | 5.00                     | 0.00                     | 0.00                    | 2.00                     | 3.20                     | 25.00                     | 20.00                    | 0.00                     | 0.00                     | 0.00                     | 0.00                     | 0.00                     | 4.00                      | 0.00            | 3.00                     | 0.00                     | 0.00                     | 0.00                     |
| Total Dissolved solid                | mg/l   | 2000.00                    | 500.00                      | 125.00                   | 26.60                    | 28.65                    | 52.40                    | 205.00                  | 102.20                   | 100.00                   | 26.00                     | 321.80                   | 132.43                   | 487.00                   | 111.44                   | 50.20                    | 31.40                    | 20.20                     | 32.10           | 45.33                    | 75.30                    | 238.00                   | 98.69                    |
| Magnesium<br>Hardness                | mg/l   | NS                         | NS                          | 68.90                    | 98.40                    | 114.50                   | 168.93                   | 109.76                  | 97.56                    | 88.54                    | 112.76                    | 49.32                    | 136.21                   | 48.00                    | 89.99                    | 170.74                   | 10.21                    | 121.95                    | 12.19           | 58.67                    | 66.91                    | 158.54                   | 69.11                    |
| Calcium<br>Hardness                  | mg/l   | NS                         | NS                          | 54.80                    | 65.30                    | 14.50                    | 47.82                    | 24.39                   | 73.17                    | 70.59                    | 24.39                     | 102.33                   | 48.54                    | 60.72                    | 47.32                    | 48.77                    | 38.22                    | 12.20                     | 44.80           | 23.35                    | 34.54                    | 207.32                   | 84.82                    |
| Total Alkalinity                     | mg/l   | NS                         | 150.00                      | 60.00                    | 40.00                    | 30.00                    | 40.00                    | 20.00                   | 60.00                    | 50.00                    | 40.00                     | 20.00                    | 50.00                    | 60.00                    | 50.00                    | 40.00                    | 20.00                    | 20.00                     | 12.00           | 30.00                    | 40.00                    | 20.00                    | 80.00                    |
| Ammonia                              | mg/l   | NS                         | 1.00                        | 0.21                     | 0.31                     | 0.23                     | 0.39                     | 0.37                    | 0.43                     | 0.32                     | 0.20                      | 0.67                     | 0.32                     | 0.22                     | 0.35                     | 0.46                     | 0.23                     | 0.22                      | 0.25            | 0.56                     | 0.51                     | 0.36                     | 0.43                     |
| Dissolved<br>Oxygen (DO)             | mg/l   | > 2.00                     | > 2.00                      | 1.40                     | 4.60                     | 8.00                     | 7.00                     | 7.80                    | 7.70                     | 7.54                     | 6.90                      | 4.88                     | 6.00                     | 7.50                     | 6.00                     | 8.00                     | 4.92                     | 8.20                      | 4.32            | 4.60                     | 5.64                     | 7.00                     | 7.41                     |
| Total Organic<br>carbon (TOC)        | mg/l   | NS                         | NS                          | 0.01                     | 0.01                     | 0.02                     | 0.28                     | 0.02                    | 0.01                     | 0.01                     | 0.04                      | 0.01                     | 0.02                     | 0.01                     | 0.02                     | 0.02                     | 0.01                     | 0.03                      | 0.02            | 0.01                     | 0.02                     | 0.02                     | 0.05                     |
| chemical oxygen<br>demand (COD)      | mg/l   | 40.00                      | 60-90                       | 27.89                    | 24.50                    | 12.82                    | 11.67                    | 19.01                   | 26.51                    | 23.69                    | 38.02                     | 26.10                    | 34.56                    | 12.40                    | 11.43                    | 11.88                    | 6.77                     | 11.88                     | 8.00            | 32.54                    | 36.58                    | 35.64                    | 36.53                    |
| Biological<br>oxygen demand<br>(BOD) | mg/l   | 30.00                      | 30-50                       | 14.37                    | 14.37                    | 9.91                     | 8.94                     | 12.39                   | 15.73                    | 14.70                    | 19.23                     | 12.91                    | 19.62                    | 3.10                     | 8.66                     | 9.97                     | 5.63                     | 9.97                      | 6.64            | 8.41                     | 15.23                    | 18.34                    | 19.47                    |
| Chloride                             | mg/l   | 600.00                     | 350.00                      | 16.77                    | 17.54                    | 12.50                    | 18.67                    | 17.50                   | 17.49                    | 18.55                    | 7.50                      | 71.50                    | 24.32                    | 4.96                     | 14.93                    | 17.49                    | 17.18                    | 12.50                     | 17.73           | 14.32                    | 29.44                    | 22.49                    | 38.72                    |
| Nitrate                              | mg/l   | 10.00                      | 10.00                       | 0.75                     | 3.54                     | 0.32                     | 0.28                     | 8.58                    | 0.02                     | 0.43                     | 0.02                      | 0.05                     | 15.97                    | 10.00                    | 0.05                     | 0.03                     | 0.02                     | 0.48                      | 0.02            | 9.21                     | 4.37                     | 14.08                    | 11.92                    |
| Phosphate                            | mg/l   | 5.00                       | 3.50                        | 1.65                     | 2.04                     | 2.49                     | 3.12                     | 2.82                    | 2.95                     | 2.43                     | 2.80                      | 3.50                     | 3.32                     | 0.76                     | 2.43                     | 2.84                     | 0.21                     | 2.89                      | 0.26            | 2.21                     | 3.15                     | 3.09                     | 4.00                     |
| Sulphate                             | mg/l   | 500.00                     | 500.00                      | 9.67                     | 3.49                     | 3.46                     | 10.65                    | 2.76                    | 5.00                     | 4.33                     | 2.29                      | 9.43                     | 2.78                     | 16.90                    | 2.33                     | 2.65                     | 1.32                     | 2.47                      | 1.29            | 1.56                     | 2.43                     | 2.82                     | 0.45                     |
| Calcium                              | mg/l   | 200.00                     | 180.00                      | 5.99                     | 16.51                    | 3.20                     | 15.48                    | 8.41                    | 25.23                    | 23.84                    | 8.41                      | 53.21                    | 73.15                    | 25.23                    | 14.32                    | 16.82                    | 29.39                    | 4.20                      | 32.32           | 43.55                    | 21.32                    | 71.49                    | 18.14                    |
| Magnesium                            | mg/l   | 200.00                     | 40.00                       | 22.80                    | 24.36                    | 21.73                    | 37.70                    | 26.67                   | 23.71                    | 23.12                    | 26.67                     | 38.19                    | 32.83                    | 25.93                    | 38.28                    | 41.49                    | 37.40                    | 25.80                     | 26.00           | 21.10                    | 17.67                    | 38.52                    | 17.71                    |
| Lead                                 | mg/l   | <1.0                       | 0.10                        | 0.03                     | 0.03                     | ND                       | 0.05                     | 0.05                    | 0.04                     | 0.07                     | 0.04                      | 0.02                     | 0.05                     | 0.01                     | 0.05                     | 0.08                     | 0.03                     | ND                        | 0.01            | 0.04                     | 0.00                     | 0.02                     | ND                       |
| Iron                                 | mg/I   | < 0.3                      | 0.50                        | 0.35                     | 2.37                     | 0.74                     | 0.87                     | 0.43                    | 4.27                     | 4.22                     | 0.65                      | 0.03                     | 0.06                     | 0.91                     | 0.65                     | 0.74                     | 0.64                     | 0.79                      | 0.74            | 0.21                     | 0.25                     | 0.30                     | 0.24                     |
| Chromium                             | mg/i   | 0.05                       | <1.00                       | 0.04                     | 0.05                     | 0.07                     | 0.05                     | 0.06                    | 0.06                     | 0.04                     | 0.07                      | 0.07                     | 0.02                     | 0.08                     | 0.06                     | 0.05                     | 0.04                     | 0.06                      | 0.05            | 0.03                     | 0.06                     | 0.06                     | 0.05                     |
| Zino                                 | mg/l   | 0.01                       | 0.01                        | 0.03                     | 0.05                     | 0.00                     | 0.04                     | 0.02                    | 0.04                     | 0.02                     | 0.03                      | 0.00                     | 0.03                     | 0.08                     | 0.08                     | 0.05                     | 0.00                     | 0.00                      | 0.04            | 0.01                     | 0.01                     | 0.04                     | 0.01                     |
| Zinc<br>Total Restarial              | iiig/i | <1.0                       | 0.20                        | 0.10<br>4.0 X            | 0.05<br>5.0 X            | 2.22 V                   | 0.03                     | 0.20                    | 0.07                     | 0.14                     | 5.24 V                    | 0.02                     | 2 12 2                   | 0.10                     | 0.08                     | 0.07<br>1.6 v            | 0.10                     | 1.26 V                    | 0.33            | 0.04                     | 0.17                     | 1.1.V                    | 1.43<br>5.1 V            |
| count (TBC)                          | cfu/ml | 10.00                      | 10.00                       | 4.0 X<br>10 <sup>1</sup> | 10 <sup>1</sup>          | 10 <sup>3</sup>          | 2.3 x<br>10 <sup>3</sup> | 10 <sup>3</sup>         | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>           | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 2.4A<br>10 <sup>1</sup>  | 4.4A<br>10 <sup>1</sup>  | 10 <sup>3</sup>          | 4.0 X<br>10 <sup>1</sup> | 1.20 ×<br>10 <sup>3</sup> | 10 <sup>1</sup> | 2.0 ×<br>10 <sup>2</sup> | 2.8 X<br>10 <sup>2</sup> | 1.1 X<br>10 <sup>3</sup> | 10 <sup>3</sup>          |
| rotal coliform<br>count (TCC)        | cfu/ml | 30.00                      | 30.00                       | 3 X 10º                  | 5.4 X<br>10 <sup>0</sup> | 4.1 X<br>10 <sup>2</sup> | 4.0 x<br>10 <sup>2</sup> | 6.6<br>X10 <sup>2</sup> | 8.0 X<br>10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 2.58 X<br>10 <sup>3</sup> | 3.8 X<br>10 <sup>2</sup> | 1.0 X<br>101             | 1.2 X<br>10 <sup>3</sup> | 1.2 X<br>10 <sup>3</sup> | 5.0 x<br>10 <sup>2</sup> | 4 X 10°                  | 6.2 X<br>10 <sup>2</sup>  | 2 X 10º         | 2.0 X<br>10 <sup>2</sup> | 1.9 X<br>10 <sup>2</sup> | 1.6 X<br>101             | 4.6 X<br>101             |
| Pseudomonas<br>Spp                   | cfu/ml | 0.00                       | 0.00                        | ND                       | ND                       | ND                       | ND                       | ND                      | 1.8 X<br>10 <sup>1</sup> | 3.8 X<br>10 <sup>1</sup> | ND                        | ND                       | 4.2 X<br>10 <sup>1</sup> | ND                       | ND                       | ND                       | 1.5 X<br>10 <sup>1</sup> | ND                        | ND              | ND                       | ND                       | 8.2 X<br>10 <sup>1</sup> | 5.3 X<br>10 <sup>1</sup> |
| Feacal coliform                      | cfu/ml | 0.00                       | 0.00                        | ND                       | ND                       | ND                       | 4.1 X<br>10 <sup>1</sup> | ND                      | ND                       | ND                       | ND                        | ND                       | 7.0 X<br>101             | 4.2 X<br>10 <sup>2</sup> | 5.3 X<br>10 <sup>2</sup> | 2.0 X<br>10 <sup>1</sup> | ND                       | ND                        | ND              | 3.4 X<br>10 <sup>3</sup> | 1.0 X<br>10 <sup>3</sup> | 8.2 X<br>101             | 5.6 X<br>101             |

| PARAMETER<br>S                          | STANDARD<br>REFENCE            | UNIT  | FMEnv<br>Max<br>Perm<br>Limit | NESREA<br>MAX<br>PERM<br>LIMIT | <b>GW</b><br>21 | G W<br>22  | G W<br>23  | G W<br>24  | G W<br>26  | G W<br>27  | GW<br>28   | G W 29 | G W 30     | GW31       | G W 32     | GW 33      | GW34       | G W 35 | G W 36 | GW 37  | G W 38 | G W 39 | G W<br>40  |
|---|--------------------------------|-------|-------------------------------|--------------------------------|-----------------|------------|------------|------------|------------|------------|------------|--------|------------|------------|------------|------------|------------|--------|--------|--------|--------|--------|------------|
| Electrical<br>Conductivity              | APHA 4500-HB                   | µS/cm | 1000.00                       | NS                             | 188.0<br>0      | 273.0<br>0 | 81.8<br>0  | 338.0<br>0 | 329.0<br>0 | 750.0<br>0 | 463.0<br>0 | 98.43  | 704.0<br>0 | 144.0<br>0 | 374.4<br>0 | 116.0<br>0 | 102.5<br>0 | 155.20 | 215.00 | 122.30 | 162.40 | 106.00 | 54.30      |
| pH                                      | APHA 4500-HB                   |       | 6.0-9.0                       | 6.5-9.0                        | 6.78            | 6.68       | 6.52       | 6.10       | 6.51       | 6.61       | 7.20       | 7.77   | 7.10       | 6.50       | 7.45       | 4.37       | 6.98       | 6.97   | 6.98   | 7.00   | 6.26   | 6.40   | 7.64       |
| Turbidity                               | APHA 2130B                     | NTU   | 10.00                         | 5.00                           | 0.21            | 0.00       | 0.00       | 0.00       | 0.00       | 4.00       | 3.00       | 0.00   | 3.90       | 0.75       | 1.00       | 0.00       | 0.00       | 0.00   | 0.67   | 0.00   | 4.20   | 0.00   | 0.00       |
| Colour                                  | APHA 204A                      | Pt.co | 10.00                         | 5.00                           | 0.00            | 0.00       | 0.00       | 1.50       | 3.50       | 15.00      | 12.20      | 5.50   | 3.80       | 4.20       | 4.00       | 4.00       | 4.30       | 4.50   | 3.00   | 4.00   | 2.00   | 2.50   | 24.00      |
| Total<br>Dissolved<br>solid             | APHA 2540B                     | mg/l  | 2000.00                       | 500.00                         | 112.8<br>0      | 145.3<br>0 | 47.0<br>0  | 169.0<br>0 | 22.80      | 439.0<br>0 | 67.10      | 60.43  | 483.0<br>0 | 74.00      | 385.5<br>0 | 62.10      | 88.43      | 98.44  | 76.50  | 68.80  | 109.20 | 53.00  | 26.40      |
| Magnesium<br>Hardness                   | APHA 2340-C                    | mg/l  | NS                            | NS                             | 74.30           | 85.37      | 109.<br>76 | 17.95      | 23.15      | 58.55      | 47.32      | 92.21  | 50.62      | 34.24      | 18.50      | 121.9<br>5 | 133.8<br>4 | 67.94  | 46.84  | 119.22 | 87.53  | 34.24  | 110.2<br>2 |
| Calcium<br>Hardness                     | APHA 2320-C                    | mg/l  | NS                            | NS                             | 69.32           | 73.17      | 48.7<br>8  | 46.80      | 49.20      | 117.0<br>7 | 65.69      | 34.49  | 41.00      | 199.8<br>4 | 43.80      | 24.39      | 43.29      | 58.32  | 45.32  | 25.49  | 61.15  | 51.36  | 24.19      |
| Total Alkalinity                        | APHA 2320-C                    | mg/l  | NS                            | 150.00                         | 50.00           | 60.00      | 190.<br>00 | 49.60      | 30.00      | 22.00      | 40.00      | 20.00  | 393.4<br>0 | 24.88      | 60.00      | 20.00      | 40.00      | 40.00  | 43.90  | 60.00  | 50.00  | 32.00  | 40.00      |
| Ammonia                                 | APHA-AWWA-<br>WPCF 205         | mg/l  | NS                            | 1.00                           | 0.43            | 0.60       | 0.35       | 86.50      | 0.28       | 0.88       | 0.36       | 0.65   | ><br>0.001 | 0.77       | 0.24       | 0.67       | 0.54       | 0.43   | 0.38   | 0.21   | 0.47   | 0.26   | 0.21       |
| Dissolved<br>Oxygen (DO)                | APHA 4500-O G                  | mg/l  | > 2.00                        | > 2.00                         | 7.32            | 7.30       | 6.80       | 6.90       | 6.50       | 5.63       | 5.14       | 6.32   | 4.10       | 2.80       | 4.21       | 6.60       | 5.76       | 6.54   | 5.28   | 6.44   | 6.70   | 2.40   | 6.80       |
| Total Organic<br>carbon (TOC)           | ASTM D 7573                    | mg/l  | NS                            | NS                             | 0.01            | 0.05       | 0.02       | 0.04       | 0.03       | 0.01       | 0.03       | 0.02   | 0.03       | 0.03       | 0.04       | 0.02       | 0.01       | 0.01   | 0.01   | 0.02   | 0.01   | 0.01   | 0.03       |
| chemical<br>oxygen<br>demand<br>(COD)   | APHA-AWWA-<br>WPCF 508         | mg/l  | 40.00                         | 60-90                          | 32.54           | 30.89      | 42.7<br>7  | 37.25      | 5.99       | 8.00       | 29.50      | 46.32  | 22.10      | 11.60      | 25.40      | 52.27      | 33.54      | 23.76  | 32.16  | 45.91  | 24.53  | 12.50  | 39.23      |
| Biological<br>oxygen<br>demand<br>(BOD) | APHA-AWWA-<br>WPCF 507         | mg/l  | 30.00                         | 30-50                          | 14.64           | 16.59      | 21.0<br>3  | 14.31      | 7.60       | 6.64       | 19.54      | 23.65  | 15.63      | 2.90       | 13.20      | 24.73      | 22.11      | 12.54  | 14.01  | 23.75  | 15.03  | 3.10   | 18.46      |
| Chloride                                | APHA 4500 -CI'<br>B            | mg/l  | 600.00                        | 350.00                         | 32.68           | 37.49      | 49.9<br>8  | 23.21      | 18.70      | 83.66      | 37.84      | 18.76  | 14.31      | 16.01      | 16.04      | 19.99      | 17.54      | 54.38  | 43.20  | 24.76  | 14.49  | 30.00  | 7.48       |
| Nitrate                                 | APHA 4500 NO <sub>3</sub><br>B | mg/l  | 10.00                         | 10.00                          | 14.54           | 16.38      | 10.4<br>8  | 0.01       | 0.42       | 0.03       | 15.77      | 9.88   | 0.97       | 0.81       | 0.02       | 10.58      | 9.54       | 0.03   | 0.65   | 6.55   | 0.02   | 7.00   |            |
| Phosphate                               | APHA-AWWA-<br>WPCF 425         | mg/l  | 5.00                          | 3.50                           | 3.88            | 4.03       | 3.20       | 0.54       | 0.29       | 4.50       | 4.07       | 2.67   | 8.41       | 3.15       | 3.99       | 2.87       | 2.15       | 3.42   | 2.15   | 2.59   | 2.21   | 0.41   | 2.65       |
| Sulphate                                | APHA-AWWA-<br>WPCF 427         | mg/l  | 500.00                        | 500.00                         | 1.87            | 3.11       | 3.35       | 3.26       | 3.54       | 2.65       | 2.54       | 2.84   | 89.10      | 2.67       | 3.54       | 2.94       | 2.32       | 5.43   | 4.86   | 4.00   | 6.23   | 19.50  | 2.44       |
| Calcium                                 | APHA 2340-C                    | mg/l  | 200.00                        | 180.00                         | 24.56           | 25.23      | 16.8<br>2  | 23.50      | 6.12       | 40.37      | 17.15      | 9.77   | 7.04       | 12.44      | 7.65       | 8.41       | 7.56       | 21.66  | 27.65  | 6.75   | 22.60  | 24.23  | 24.32      |
| Magnesium                               | APHA 2340-C                    | mg/l  | 200.00                        | 40.00                          | 15.31           | 20.74      | 16.6<br>7  | 64.90      | 24.30      | 48.01      | 18.59      | 26.83  | 49.80      | 25.40      | 24.30      | 29.63      | 24.65      | 37.69  | 23.13  | 32.50  | 21.54  | 32.06  | 28.56      |
| Lead                                    | APHA 3111 B                    | mg/l  | <1.0                          | 0.10                           | 0.07            | 0.00       | ND         | 0.04       | ND         | 0.07       | ND         | 0.02   | 0.03       | ND         | 0.02       | 0.01       | 0.03       | 0.02   | 0.03   | 0.04   | 0.04   | ND     | 0.03       |
| Iron                                    | APHA 3111 B                    | mg/l  | < 0.3                         | 0.50                           | 0.31            | 0.21       | 0.22       | 0.43       | 0.87       | 0.03       | 0.32       | 0.30   | 0.19       | ND         | 0.24       | 0.32       | 0.31       | 0.42   | 0.83   | 0.33   | 4.24   | 0.48   | 0.56       |

|                                 |                   |        |          |                      |                          |                          |  |                                |                           |                          |                          |                          |                          | 1                        |                           |                          |                          |                          |                           |                           |                          |                          |                          |                          |
|---------------------------------|-------------------|--------|----------|----------------------|--------------------------|--------------------------|--|--------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| PARAMETER<br>S                  | STANDAI<br>REFENC | RD U   | INIT     | FMEnv<br>Max<br>Perm | MAX<br>PERM              | A G1                     | W GW                                       | G W<br>23                      | G W<br>24                 | G W<br>26                | G W<br>27                | G W<br>28                | G W 29                   | GW 30                    | GW31                      | G W 32                   | GW 33                    | GW34                     | G W 35                    | G W 36                    | GW 37                    | G W 38                   | G W 3 9                  | G W<br>40                |
| Chromium                        | APHA 311          | 1B r   | ng/l     | Lim it<br>0.05       | LIMIT<br><1.00           | 0.0                      | 02 0.07                                    | 7 0.06                         | 0.03                      | 0.06                     | 0.06                     | 0.05                     | 0.04                     | 0.02                     | 0.04                      | 0.04                     | 0.06                     | 0.04                     | 0.04                      | 0.04                      | 0.05                     | 0.06                     | 0.04                     | 0.06                     |
| Cadmium                         | APHA 311          | 1B r   | ng/l     | 0.01                 | 0.01                     | 0.0                      | 0.00                                       | 0.00                           | 0.01                      | 0.00                     | 0.00                     | 0.02                     | 0.03                     | 0.06                     | 0.00                      | 0.01                     | 0.04                     | 0.03                     | 0.02                      | 0.03                      | 0.03                     | 0.05                     | 0.00                     | 0.03                     |
| Zinc                            | APHA 311          | 1B r   | ng/l     | <1.0                 | 0.20                     | 0.3                      | 36 1.61                                    | 0.13                           | 0.20                      | 0.02                     | 0.03                     | 1.06                     | 0.05                     | 0.13                     | 0.07                      | 0.21                     | 0.07                     | 0.04                     | 0.06                      | 0.05                      | 0.07                     | 0.08                     | 0.08                     | 0.10                     |
| Total Bacterial count (TBC)     | APHA 922          | 2-D cl | fu/ml    | 10.00                | 10.00                    | 3.7<br>10                | X 2.7 2                                    | x 5.34<br>X<br>10 <sup>3</sup> | 2.6 X<br>10 <sup>3</sup>  | 4.3 X<br>10 <sup>3</sup> | 2.1 X<br>10 <sup>3</sup> | 2.5 X<br>10 <sup>3</sup> | 3.2 X<br>10 <sup>3</sup> | 2.4 X<br>10 <sup>2</sup> | 0.00                      | 4.4 X<br>10 <sup>2</sup> | 4.6 X<br>10 <sup>2</sup> | 5.4 X<br>10 <sup>2</sup> | 3.4 X 10 <sup>3</sup>     | 5.4 X 10 <sup>3</sup>     | 1.4 X 10 <sup>3</sup>    | 5.8 X 10 <sup>3</sup>    | 2.3 X 10 <sup>3</sup>    | 5.5 x<br>10 <sup>3</sup> |
| Total coliform<br>count (TCC)   | APHA 922          | 2-D ct | fu/ml    | 30.00                | 30.00                    | 3.5<br>10                | X 1.5 2<br>10 <sup>3</sup> 10 <sup>3</sup> | X 3.24<br>X<br>10 <sup>3</sup> | 2.4 X<br>10 <sup>3</sup>  | 3.2 X<br>10 <sup>3</sup> | 3.6 X<br>10 <sup>2</sup> | 4.3 X<br>10 <sup>2</sup> | 3.5 X<br>10 <sup>2</sup> | 2.0 X<br>10 <sup>2</sup> | 1.8 X<br>10 <sup>3</sup>  | 3.0 X<br>10 <sup>2</sup> | 1.0 X<br>10 <sup>2</sup> | 2.6 X<br>10 <sup>2</sup> | 8.0 X 10 <sup>2</sup>     | 6.0 X 10 <sup>2</sup>     | 2.5 X 10 <sup>2</sup>    | 8.0 X 10 <sup>2</sup>    | 1.8 X 10 <sup>3</sup>    | 3.8 X<br>10 <sup>3</sup> |
| Pseudomonas<br>Spp              | APHA 922          | 2-D ct | fu/ml    | 0.00                 | 0.00                     | 6.0<br>10                | X 8.0 2<br>0 100                           | K ND                           | ND                        | ND                       | ND                       | ND                       | ND                       | ND                       | ND                        | 1.5 X<br>10 <sup>1</sup> | ND                       | ND                       | 1.7 X 10 <sup>1</sup>     | 2.7 X 10 <sup>1</sup>     | 4.3 X 10 <sup>1</sup>    | 1.7 X 10 <sup>1</sup>    | ND                       | ND                       |
| Feacal coliform                 | APHA 922          | 2-D cl | fu/ml    | 0.00                 | 0.00                     | 3.5<br>10                | X 1.5 X<br>103 103                         | X 3.24<br>X<br>10 <sup>3</sup> | ND                        | ND                       | 2.5 X<br>10 <sup>3</sup> | 4.0 X<br>10 <sup>3</sup> | 4.6 X<br>10 <sup>3</sup> | ND                       | ND                        | ND                       | ND                       | ND                       | ND                        | ND                        | ND                       | ND                       | ND                       | ND                       |
|                                 |                   |        |          |                      |                          |                          |  |                                |                           |                          |                          |                          |                          |                          |                           |                          |                          |                          |                           |                           |                          |                          |                          |                          |
|                                 |                   | FMEn   | v        | NESREA               |                          |                          |  |                                |                           |                          |                          |                          |                          |                          |                           |                          |                          |                          |                           |                           |                          | <b></b>                  |                          |                          |
| Deremeter                       | Unit              | Max    |          | Max                  | GW                       | GW                       | GW   | GW                             | GW                        | GW                       | GW                       |                          | Ψ                        | GW                       | GW                        | GW                       | GW                       | GW                       | GW                        | GW                        | GW                       | GW                       | GW                       |                          |
| Parameters                      | Unit              | Perm   |          | Perm                 | 41                       | 42                       | 43   | 44                             | 45                        | 46                       | 47                       |                          | 48                       | 49                       | 50                        | 51                       | 52                       | 53                       | 54                        | 55                        | 57                       | 58                       | 59                       |                          |
|                                 |                   | Limit  | 1        | Limit                |                          | 42                       | 43   |                                | 40                        | 40                       |                          |                          | 40                       | 43                       |                           | 51                       | 52                       |                          | 54                        |                           | 57                       | 50                       |                          |                          |
| Electrical                      | , μS/cm           | 1000.0 | 00       | NS                   | 172.30                   | 129.54                   | 118.44                                     | 93.45                          | 81.20                     | 400.12                   | 2 56.5                   | 50 56                    | 6.50                     | 404.00                   | 404.00                    | 116.00                   | 109.4                    | 129.5                    | 4 502.20                  | 404.00                    | 122.30                   | 219.30                   | 673.00                   |                          |
| DH                              | /                 | 6.0-9  | 0        | 6 5-9 0              | 7.29                     | 7.65                     | 7.50                                       | 8 4 9                          | 5.90                      | 4.70                     | 7.0                      | 1 7                      | 01                       | 7.30                     | 5.72                      | 4 57                     | 4 4 2                    | 7.65                     | 7.60                      | 7 72                      | 7 00                     | 7 12                     | 6.98                     |                          |
| Turbiditv                       | NTU               | 10.00  | )        | 5.00                 | 0.00                     | 1.00                     | 1.00                                       | 0.00                           | 0.00                      | 0.00                     | 0.0                      | 0 0                      | 0.00                     | 0.00                     | 0.00                      | 0.00                     | 0.00                     | 1.00                     | 0.00                      | 0.00                      | 0.00                     | 0.00                     | 1.00                     |                          |
| Colour                          | Pt.co             | 10.00  | )        | 5.00                 | 2.00                     | 3.20                     | 220  | 0.00                           | 0.00                      | 4.00                     | 25.0                     | 0 25                     | 5.00                     | 0.00                     | 4.00                      | 4.00                     | 3.00                     | 3.20                     | 0.00                      | 2.00                      | 4.00                     | 0.00                     | 20.00                    |                          |
| Total<br>Dissolved              | mg/l              | 2000.0 | 00       | 500.00               | 102.20                   | 100.00                   | 100.00                                     | 52.40                          | 205.00                    | 18.65                    | 26.0                     | 00 26                    | 6.00                     | 407.00                   | 20.20                     | 62.10                    | 91.44                    | 100.0                    | 0 132.43                  | 120.20                    | 68.80                    | 75.30                    | 321.80                   |                          |
| Magnesium                       | mg/l              | NS     |          | NS                   | 97.56                    | 88.54                    | 90.00                                      | 168.93                         | 109.76                    | 94.00                    | 112.                     | 76 11                    | 2.76                     | 46.00                    | 121.95                    | 121.95                   | 89.99                    | 88.54                    | 136.21                    | 121.95                    | 119.22                   | 66.91                    | 49.32                    |                          |
| Calcium                         |                   |        |          |                      |                          |                          |  |                                |                           |                          |                          |                          |                          |                          |                           |                          |                          |                          |                           |                           |                          |                          |                          |                          |
| Hardness                        | mg/l              | NS     |          | NS                   | 73.17                    | 70.59                    | 72.50                                      | 48.54                          | 24.39                     | 14.50                    | 24.3                     | 39 22                    | 4.39                     | 60.72                    | 12.20                     | 24.39                    | 47.32                    | 70.59                    | 48.54                     | 32.20                     | 60.00                    | 34.54                    | 102.33                   |                          |
| Alkalinity                      | mg/l              | NS     |          | 150.00               | 60.00                    | 50.00                    | 50.00                                      | 50.00                          | 20.00                     | 25.00                    | 40.0                     | 00 40                    | 0.00                     | 60.00                    | 20.00                     | 20.00                    | 25.00                    | 50.00                    | 50.00                     | 14.00                     | 0.21                     | 40.00                    | 20.00                    |                          |
| Ammonia                         | mg/l              | NS     |          | 1.00                 | 0.43                     | 0.32                     | 0.32                                       | 0.32                           | 0.37                      | 0.30                     | 0.2                      | 0 0                      | .20                      | 0.22                     | 0.22                      | 0.67                     | 0.35                     | 0.32                     | 0.32                      | 0.22                      | 6.44                     | 0.51                     | 0.67                     |                          |
| Dissolved<br>Oxygen<br>(DO)     | mg/l              | > 2.00 | b        | > 2.00               | 7.70                     | 7.54                     | 7.28                                       | 6.00                           | 7.80                      | 7.00                     | 6.9                      | 0 6                      | 6.90                     | 6.50                     | 8.20                      | 6.60                     | 6.00                     | 7.54                     | 6.00                      | 8.20                      | 0.02                     | 5.64                     | 4.88                     |                          |
| Total<br>Organic<br>carbon      | mg/l              | NS     |          | NS                   | 0.01                     | 0.01                     | 0.01                                       | 0.02                           | 0.02                      | 0.02                     | 0.0                      | 4 0                      | 0.04                     | 0.01                     | 0.03                      | 0.02                     | 0.02                     | 0.01                     | 0.02                      | 0.03                      | 45.91                    | 0.02                     | 0.01                     |                          |
| chemical<br>oxygen<br>demand    | mg/l              | 40.00  | )        | 60-90                | 26.51                    | 23.69                    | 13.29                                      | 11.67                          | 19.01                     | 12.20                    | 38.0                     | 02 38                    | 8.02                     | 8.40                     | 11.88                     | 52.27                    | 41.43                    | 23.69                    | 34.56                     | 31.88                     | 23.75                    | 36.58                    | 26.10                    |                          |
| Biological<br>oxygen            | ma/l              | 30.00  | ,        | 30-50                | 15.73                    | 14.70                    | 13.20                                      | 8.94                           | 12.91                     | 8.91                     | 19.2                     | 23 19                    | 9.23                     | 3.10                     | 9.97                      | 24.73                    | 28.66                    | 14.70                    | 19.62                     | 19.97                     | 24.76                    | 15.23                    | 12.91                    |                          |
| demand<br>(BOD)                 |                   | 000.0  |          | 250.00               | 17.10                    | 40.55                    | 10.00                                      | 40.07                          | 74.50                     | 44.50                    | 7.5                      | 0 7                      |                          | 4.00                     | 10.50                     | 40.00                    | 44.00                    | 40.50                    | 04.00                     | 40.50                     | 0.55                     | 00.44                    | 74.50                    |                          |
| Nitrata                         | mg/l              | 10.00  |          | 300.00               | 0.02                     | 10.55                    | 0.34                                       | 10.07                          | 11.50                     | 0.20                     | 1.5                      |                          | .50                      | 4.90                     | 12.50                     | 10.59                    | 14.93                    | 18.5                     | 5 07                      | 12.50                     | 0.00                     | 29.44                    | 0.05                     |                          |
| Phosnhate                       | ma/l              | 5.00   | <u> </u> | 3 50                 | 2.95                     | 2.43                     | 2.87                                       | 3 12                           | 2.82                      | 2.30                     | 2.8                      |                          | 80                       | 0.76                     | 2.89                      | 2.87                     | 2 43                     | 2 43                     | 3.32                      | 4 79                      | 4 00                     | 3 15                     | 3.50                     |                          |
| Sulphate                        | ma/l              | 500.0  | 0        | 500.00               | 5.00                     | 4.33                     | 9.21                                       | 10.65                          | 2.76                      | 3.46                     | 2.0                      | 9 2                      | .29                      | 16.90                    | 2.47                      | 2.94                     | 2.33                     | 4.33                     | 2.78                      | 2.47                      | 6.75                     | 2.43                     | 9.43                     |                          |
| Calcium                         | mg/l              | 200.0  | 0        | 180.00               | 25.23                    | 23.84                    | 16.78                                      | 15.48                          | 8.41                      | 2.20                     | 8.4                      | 1 8                      | 3.41                     | 25.23                    | 4.20                      | 8.41                     | 14.32                    | 23.84                    | 73.15                     | 34.20                     | 60.00                    | 21.32                    | 53.21                    |                          |
| Magnesium                       | mg/l              | 200.0  | 0        | 40.00                | 23.71                    | 23.12                    | 21.73                                      | 37.70                          | 26.67                     | 23.71                    | 23.1                     | 12 26                    | 6.67                     | 25.93                    | 20.80                     | 29.63                    | 38.28                    | 23.12                    | 32.83                     | 25.80                     | 32.50                    | 17.67                    | 38.19                    |                          |
| Lead                            | mg/l              | <1.0   |          | 0.10                 | 0.04                     | 0.07                     | 0.05                                       | 0.05                           | 0.05                      | 0.04                     | 0.0                      | 6 0                      | .04                      | 0.01                     | ND                        | 0.01                     | 0.05                     | 0.07                     | 0.05                      | ND                        | 0.04                     | 0.00                     | 0.02                     |                          |
| Iron                            | mg/l              | < 0.3  |          | 0.50                 | 4.27                     | 4.22                     | 4.74                                       | 0.87                           | 0.43                      | 4.27                     | 4.2                      | 2 0                      | .65                      | 0.91                     | 1.79                      | 0.32                     | 0.35                     | 4.22                     | 0.06                      | 0.19                      | 0.33                     | 0.25                     | 0.03                     |                          |
| Chromium                        | mg/l              | 0.05   |          | <1.00                | 0.06                     | 0.04                     | 0.07                                       | 0.05                           | 0.06                      | 0.06                     | 0.0                      | 4 0                      | .07                      | 0.08                     | 0.06                      | 0.06                     | 0.06                     | 0.04                     | 0.02                      | 0.06                      | 0.05                     | 0.06                     | 0.07                     |                          |
| Cadmium                         | mg/l              | 0.01   |          | 0.01                 | 0.04                     | 0.02                     | 0.00                                       | 0.04                           | 0.02                      | 0.03                     | 0.0                      | 2 0                      | 0.03                     | 0.08                     | 0.00                      | 0.04                     | 0.06                     | 0.02                     | 0.03                      | 0.00                      | 0.03                     | 0.01                     | 0.00                     |                          |
|                                 | mg/l              | <1.0   |          | 0.20                 | 0.07                     | U.14                     | 0.11                                       | 0.03                           | 0.28                      | 0.06                     | 0.1                      | 4 0                      | .10                      | 0.10                     | 0.11                      | 0.07                     | 0.08                     | 0.14                     | 0.10                      | 0.11                      | 0.07                     | 0.17                     | 0.02                     |                          |
| Bacterial<br>count (TBC         | ) cfu/ml          | 10.00  |          | 10.00                | 5.5 X<br>10 <sup>3</sup> | 3.5 X<br>10 <sup>3</sup> | 3.22 X<br>10 <sup>3</sup>                  | 2.3 x<br>10 <sup>3</sup>       | 5.72 X<br>10 <sup>3</sup> | 2.5 X<br>10 <sup>3</sup> | 3.5<br>10                | X 5.                     | 24 x<br>10 <sup>3</sup>  | 2.4X 10 <sup>1</sup>     | 1.38 X<br>10 <sup>3</sup> | 4.6 X<br>10 <sup>2</sup> | 4.4X<br>10 <sup>1</sup>  | 3.5 X<br>10 <sup>3</sup> | 3.12 X<br>10 <sup>3</sup> | 2.26 X<br>10 <sup>3</sup> | 1.4 X<br>10 <sup>3</sup> | 2.8 X<br>10 <sup>2</sup> | 3.1 X<br>10 <sup>3</sup> |                          |
| Total<br>coliform<br>count (TCC | ) cfu/ml          | 30.00  |          | 30.00                | 8.0 X<br>10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 4.1 X<br>10 <sup>2</sup>                   | 4.0 x<br>10 <sup>2</sup>       | 6.6<br>X10 <sup>2</sup>   | 6.0 X<br>10 <sup>2</sup> | 5.0<br>10                | X 2.5                    | 58 X<br>10 <sup>3</sup>  | 1.2 X<br>10 <sup>3</sup> | 5.8 X<br>10 <sup>2</sup>  | 1.0 X<br>10 <sup>2</sup> | 1.2 X<br>10 <sup>3</sup> | 5.0 X<br>10 <sup>2</sup> | 1.0 X<br>101              | 7.2 X<br>10 <sup>2</sup>  | 2.5 X<br>10 <sup>2</sup> | 1.9 X<br>10 <sup>2</sup> | 3.8 X<br>10 <sup>2</sup> |                          |
| Pseudomor<br>as Spp             | cfu/ml            | 0.00   |          | 0.00                 | 1.8 X<br>10 <sup>1</sup> | 3.8 X<br>10 <sup>1</sup> | ND   | ND                             | ND                        | 1.8 X<br>10 <sup>1</sup> | NE                       | 1 0                      | ND                       | ND                       | ND                        | ND                       | ND                       | 3.8 X<br>10 <sup>1</sup> | 4.2 X<br>10 <sup>1</sup>  | 3.8 X<br>10 <sup>1</sup>  | 4.3 X<br>10 <sup>1</sup> | ND                       | ND                       |                          |
| Feacal<br>coliform              | cfu/ml            | 0.00   |          | 0.00                 | ND                       | ND                       | ND   | 4.1 X<br>10 <sup>1</sup>       | ND                        | ND                       | NE                       | 1 0                      | ND                       | 4.2 X<br>10 <sup>2</sup> | ND                        | ND                       | 5.3 X<br>10 <sup>2</sup> | ND                       | 7.0 X<br>101              | 6.2 X<br>10 <sup>1</sup>  | ND                       | 1.0 X<br>10 <sup>3</sup> | ND                       |                          |

| Parameters                 | Unit  | FMEnv<br>Max Perm<br>Limit | NESREA<br>Max Perm<br>Limit | G W<br>62 | G W<br>63 | G W<br>64 | G W<br>65 | G W<br>66 | G W<br>67 | G W<br>68 | G W<br>69 | G W<br>70 | G W<br>71 | G W<br>72 | G W<br>73 | G W<br>74 | G W<br>75 | G W<br>76 | G W<br>77 | G W<br>78 | G W<br>79 | G W<br>80 |
|----------------------------|-------|----------------------------|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Electrical<br>Conductivity | µS/cm | 1000.00                    | NS                          | 38.40     | 420.32    | 704.00    | 381.20    | 172.30    | 129.54    | 56.50     | 673.00    | 502.20    | 574.00    | 79.43     | 88.50     | 704.00    | 502.00    | 104.00    | 91.00     | 119.15    | 430.00    | 281.50    |
| Ph                         |       | 6.0-9.0                    | 6.5-9.0                     | 6.54      | 4.67      | 7.10      | 6.90      | 7.29      | 7.65      | 7.01      | 6.98      | 4.60      | 7.50      | 7.32      | 7.51      | 7.10      | 7.72      | 5.20      | 5.37      | 5.12      | 7.48      | 7.13      |
| Turbidity                  | NTU   | 10.00                      | 5.00                        | 1.22      | 0.00      | 3.90      | 1.00      | 0.00      | 1.00      | 0.00      | 1.00      | 2.00      | 3.50      | 0.00      | 0.00      | 2.90      | 0.00      | 0.05      | 0.00      | 0.00      | 0.00      | 0.00      |
| Colour                     | Pt.co | 10.00                      | 5.00                        | 4.30      | 5.00      | 3.80      | 2.00      | 2.00      | 3.20      | 5.00      | 20.00     | 5.00      | 0.00      | 0.00      | 0.00      | 3.80      | 4.00      | 0.00      | 2.00      | 1.00      | 0.00      | 0.00      |

| Parameters                           | Unit          | FMEnv<br>Max Perm<br>Limit | NESRE/<br>Max Per<br>Limit | A GW<br>m 62       | G W<br>63                 | G W<br>64                | G W<br>65                | G W<br>66                | G W<br>67               | G W<br>68                | G W<br>69                | G W<br>70                 | G W<br>71                | G W<br>72                | G W<br>73                | G W<br>74                | G W<br>75                 | G W<br>76                | <b>GW</b><br>77          | G W<br>78                | G W<br>79                | G W<br>80                |
|--------------------------------------|---------------|----------------------------|----------------------------|--------------------|---------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Total Dissolved<br>solid             | mg/l          | 2000.00                    | 500.00                     | 26.60              | 28.65                     | 483.00                   | 85.00                    | 102.20                   | 100.00                  | 26.00                    | 121.80                   | 132.43                    | 3 487.00                 | ) 111.44                 | 50.20                    | 483.00                   | 19.20                     | 12.10                    | 15.33                    | 25.00                    | 238.00                   | 98.69                    |
| Magnesium<br>Hardness                | mg/l          | NS                         | NS                         | 98.40              | 114.50                    | 50.62                    | 39.76                    | 97.56                    | 88.54                   | 112.76                   | 49.32                    | 136.2                     | 1 48.00                  | 89.99                    | 170.74                   | 50.62                    | 11.95                     | 12.19                    | 15.67                    | 16.11                    | 158.54                   | 69.11                    |
| Calcium<br>Hardness                  | mg/l          | NS                         | NS                         | 65.30              | 14.50                     | 41.00                    | 44.39                    | 73.17                    | 70.59                   | 24.39                    | 62.33                    | 48.54                     | 60.72                    | 47.32                    | 48.77                    | 41.00                    | 42.20                     | 14.80                    | 23.35                    | 24.44                    | 207.32                   | 84.82                    |
| Total Alkalinity                     | mg/l          | NS                         | 150.00                     | 40.00              | 30.00                     | 93.40                    | 20.00                    | 60.00                    | 50.00                   | 40.00                    | 10.00                    | 50.00                     | 60.00                    | 50.00                    | 40.00                    | 393.40                   | 20.00                     | 30.00                    | 30.00                    | 20.00                    | 20.00                    | 80.00                    |
| Dissolved                            | mg/l          | NS<br>> 2.00               | 1.00                       | 0.31               | 0.23                      | 0.51                     | 7.80                     | 7.70                     | 7.54                    | 6.90                     | 0.17                     | 6.00                      | 7.50                     | 0.35                     | 8.00                     | 0.60                     | 6.20                      | 0.25                     | 0.36                     | 0.21                     | 7.00                     | 0.43                     |
| Oxygen (DO)<br>Total Organic         | ing/i         | > 2.00                     | > 2.00                     | 4.00               | 0.00                      | 4.10                     | 7.00                     | 1.10                     | 1.54                    | 0.90                     | 4.00                     | 0.00                      | 7.50                     | 0.00                     | 0.00                     | 4.10                     | 0.20                      | 4.12                     | 4.50                     | 5.02                     | 7.00                     | 7.41                     |
| carbon (TOC)                         | mg/l          | NS                         | NS                         | 0.01               | 0.02                      | 0.03                     | 0.02                     | 0.01                     | 0.01                    | 0.04                     | 0.01                     | 0.02                      | 0.01                     | 0.02                     | 0.02                     | 0.03                     | 0.03                      | 0.02                     | 0.01                     | 0.02                     | 0.02                     | 0.05                     |
| demand (COD)                         | mg/l          | 40.00                      | 60-90                      | 24.50              | 12.82                     | 22.10                    | 19.01                    | 26.51                    | 23.69                   | 38.02                    | 26.10                    | 34.56                     | 12.40                    | 11.43                    | 11.88                    | 22.10                    | 21.88                     | 16.00                    | 12.54                    | 16.58                    | 35.64                    | 36.53                    |
| Biological<br>oxygen demand<br>(BOD) | mg/l          | 30.00                      | 30-50                      | 14.37              | 9.91                      | 15.63                    | 12.39                    | 15.73                    | 14.70                   | 19.23                    | 12.91                    | 19.62                     | 3.10                     | 8.66                     | 9.97                     | 15.63                    | 9.97                      | 4.24                     | 5.41                     | 5.23                     | 18.34                    | 19.47                    |
| Chloride<br>Nitrate                  | mg/l<br>mg/l  | 600.00<br>10.00            | 350.00                     | 17.54              | 12.50                     | 14.31                    | 17.50                    | 0.02                     | 18.55                   | 7.50                     | 28.50                    | 24.32                     | 4.96                     | 14.93                    | 0.03                     | 0.97                     | 13.50                     | 0.02                     | 0.21                     | 19.34                    | 22.49                    | 38.72                    |
| Phosphate                            | mg/l          | 5.00                       | 3.50                       | 2.04               | 2.49                      | 8.41                     | 2.82                     | 2.95                     | 2.43                    | 2.80                     | 3.50                     | 3.32                      | 0.76                     | 2.43                     | 2.84                     | 8.41                     | 2.79                      | 0.16                     | 0.21                     | 0.15                     | 3.09                     | 4.00                     |
| Sulphate                             | mg/l          | 500.00                     | 500.00                     | 3.49               | 3.46                      | 89.10                    | 2.76                     | 5.00                     | 4.33                    | 2.29                     | 9.43                     | 2.78                      | 16.90                    | 2.33                     | 2.65                     | 89.10                    | 22.47                     | 0.29                     | 0.56                     | 9.43                     | 2.82                     | 0.45                     |
| Magnesium                            | mg/l          | 200.00                     | 27.71                      | 24.36              | 21.73                     | 49.80                    | 26.67                    | 23.71                    | 23.04                   | 26.67                    | 38.19                    | 32.83                     | 25.23                    | 38.28                    | 41.49                    | 49.80                    | 35.80                     | 26.00                    | 22.20                    | 13.67                    | 38.52                    | 17.71                    |
| Lead                                 | mg/l          | <1.0                       | ND                         | 0.03               | ND                        | 0.03                     | 0.05                     | 0.04                     | 0.07                    | 0.04                     | 0.02                     | 0.05                      | 0.01                     | 0.05                     | 0.08                     | 0.03                     | ND                        | 0.01                     | 0.02                     | 0.00                     | 0.02                     | ND                       |
| Iron                                 | mg/l          | < 0.3                      | 0.04                       | 2.37               | 0.74                      | 0.19                     | 0.43                     | 4.27                     | 4.22                    | 0.65                     | 0.03                     | 0.06                      | 0.91                     | 0.65                     | 0.74                     | 0.19                     | 0.49                      | 0.24                     | 0.22                     | 0.25                     | 0.30                     | 0.24                     |
| Cadmium                              | mg/l          | 0.03                       | 0.03                       | 0.05               | 0.00                      | 0.02                     | 0.00                     | 0.00                     | 0.04                    | 0.07                     | 0.00                     | 0.02                      | 0.08                     | 0.06                     | 0.05                     | 0.02                     | 0.04                      | 0.03                     | 0.02                     | 0.00                     | 0.00                     | 0.03                     |
| Zinc                                 | mg/l          | <1.0                       | 0.43                       | 0.05               | 0.11                      | 0.13                     | 0.28                     | 0.07                     | 0.14                    | 0.10                     | 0.02                     | 0.10                      | 0.10                     | 0.08                     | 0.07                     | 0.13                     | 0.09                      | 0.23                     | 0.04                     | 0.07                     | 0.10                     | 1.43                     |
| Total Bacterial                      | cfu/ml        | 10.00                      | 5.1 X 10                   | <sup>3</sup> 5.0 X | 3.22 X<br>10 <sup>3</sup> | 2.4 X<br>10 <sup>2</sup> | 5.72 X                   | 5.5 X                    | 3.5 X                   | 5.24 x                   | 1.1 X                    | 3.12 X<br>10 <sup>3</sup> | 2.4X                     | 4.4X<br>10 <sup>1</sup>  | 1.6 x                    | 2.4 X<br>10 <sup>2</sup> | 1.26 X<br>10 <sup>3</sup> | C 2.0 X                  | 2.6 X<br>10 <sup>2</sup> | 1.8 X<br>10 <sup>2</sup> | 1.1 X                    | 5.1 X<br>10 <sup>3</sup> |
| Total coliform                       | cfu/ml        | 30.00                      | 4 6 X 10                   | 1 5.4 X            | 4.1 X                     | 2.0 X                    | 6.6                      | 8.0 X                    | 5.0 X                   | 2.58 X                   | 1.8 X                    | 1.0 X                     | 1.2 X                    | 1.2 X                    | 5.0 x                    | 2.0 X                    | 2.2 X                     | 1.2 X                    | 2.0 X                    | 1.9 X                    | 1.6 X                    | 4.6 X                    |
| count (TCC)                          | Ciu/iii       | 50.00                      | 4.0 X 10                   | 100                | 10 <sup>2</sup>           | 10 <sup>2</sup>          | X10 <sup>2</sup>         | 10 <sup>2</sup>          | 10 <sup>2</sup>         | 10 <sup>3</sup>          | 10 <sup>2</sup>          | 101                       | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>2</sup>          | 10 <sup>2</sup>          | 10 <sup>2</sup>           | 100                      | 10 <sup>2</sup>          | 10 <sup>2</sup>          | 101<br>8.2 X             | 101<br>53X               |
| Spp                                  | cfu/ml        | 0.00                       | 4.3 X 10                   | <sup>1</sup> ND    | ND                        | ND                       | ND                       | 10 <sup>1</sup>          | 10 <sup>1</sup>         | ND                       | ND                       | 10 <sup>1</sup>           | ND                       | ND                       | ND                       | ND                       | ND                        | ND                       | ND                       | ND                       | 10 <sup>1</sup>          | 10 <sup>1</sup>          |
| Feacal coliform                      | cfu/ml        | 0.00                       | 5.6 X 10                   | 1 ND               | ND                        | ND                       | ND                       | ND                       | ND                      | ND                       | ND                       | 7.0 X<br>101              | 4.2 X<br>10 <sup>2</sup> | 5.3 X<br>10 <sup>2</sup> | 2.0 X<br>10 <sup>1</sup> | ND                       | ND                        | ND                       | 3.4 X<br>10 <sup>3</sup> | ND                       | 8.2 X<br>101             | 5.6 X<br>101             |
|                                      |               |                            | EMEau                      | NEODEA             | I                         |                          |                          |                          |                         |                          |                          |                           |                          |                          |                          |                          |                           |                          |                          |                          |                          |                          |
|                                      |               |                            | Max                        | Max                | GW                        | GW                       | GW                       | GW                       | GW                      | GW                       | GW                       | GW                        | GW                       | GW                       | GW                       | GW                       | GW                        | GW                       | GW                       | GW                       | GW                       | GW                       |
| Paramet                              | ers           | Unit                       | Perm<br>Limit              | Perm               | 81                        | 82                       | 83                       | 84                       | 85                      | 86                       | 87                       | 88                        | 89                       | 90                       | 91                       | 92                       | 94                        | 96                       | 97                       | 98                       | 99                       | 100                      |
| Electric                             | al            |                            | 4000.00                    | NO                 | 004 50                    | 400.54                   | 404.00                   | 400.45                   | 04.00                   | 00.40                    | 00.50                    | 50.50                     | 404.00                   | 404.00                   | 040.00                   | 400.50                   | 500.00                    | 004.00                   | 400.00                   | 0.50                     | 070.00                   | 404 50                   |
| Conducti                             | ivity         | µS/cm                      | 1000.00                    | NS                 | 281.50                    | 129.54                   | 121.00                   | 193.45                   | 81.20                   | 80.10                    | 66.50                    | 56.50                     | 404.00                   | 404.00                   | 216.00                   | 102.50                   | 502.20                    | 604.00                   | 122.30                   | 3.50                     | 673.00                   | 481.50                   |
| pH                                   |               |                            | 6.0-9.0                    | 6.5-9.0            | 7.13                      | 7.65                     | 7.37                     | 3.49                     | 5.90                    | 5.70                     | 6.01                     | 7.01                      | 7.30                     | 5.72                     | 4.37                     | 5.00                     | 7.60                      | 7.20                     | 7.00                     | 22.80                    | 6.98                     | 7.13                     |
| Turbidi                              | ty            | NTU                        | 10.00                      | 5.00               | 0.00                      | 1.00                     | 0.00                     | 1.00                     | 0.00                    | 0.00                     | 0.00                     | 0.00                      | 2.00                     | 0.00                     | 0.00                     | 34.24                    | 0.00                      | 0.75                     | 0.00                     | 23.15                    | 1.00                     | 0.00                     |
| Total Dissolv                        | I<br>ed solid | PLCO<br>mg/l               | 2000.00                    | 500.00             | 0.00                      | 3.20                     | 3.00                     | 12.00                    | 205.00                  | 68.55                    | 23.00                    | 25.00                     | 407.00                   | 20.20                    | 3.00<br>22.10            | 32.00                    | 132 /3                    | 32.10                    | 68.80                    | 49.20                    | 20.00                    | 208.60                   |
| Magnesi                              | ium           | mg/l                       | 2000.00                    | NS                 | 60.11                     | 88.54                    | 58.67                    | 68.03                    | 100.76                  | 114.00                   | 02.76                    | 112.76                    | 46.00                    | 121.05                   | 21.05                    | 0.26                     | 136.21                    | 12.10                    | 110.00                   | 0.28                     | 50.32                    | 60.11                    |
| Hardne:                              | SS            | mg/l                       | NS                         | NS                 | 84.82                     | 70.59                    | 23.35                    | 28.54                    | 24.30                   | 20.50                    | 34.30                    | 24.30                     | 60.72                    | 12 1.90                  | 14 30                    | 2.40                     | 190.21                    | 12.19                    | 60.00                    | 6.50                     | 52.32                    | 114.92                   |
| Total Alka                           | linity        | mg/l                       | NS                         | 150.00             | 80.00                     | 50.00                    | 30.00                    | 40.00                    | 24.39                   | 23.00                    | 30.00                    | 40.00                     | 60.00                    | 20.00                    | 20.00                    | 0.01                     | 50.00                     | 12.00                    | 0.21                     | 0.03                     | 30.00                    | 30.00                    |
| Ammon                                | nia           | mg/l                       | NS                         | 1.00               | 0.43                      | 0.32                     | 0.56                     | 0.42                     | 0.37                    | 0.20                     | 0.21                     | 0.20                      | 0.22                     | 0.22                     | 0.67                     | 12.50                    | 0.32                      | 0.25                     | 6.44                     | 5.99                     | 0.67                     | 0.43                     |
| Dissolved C                          | Dxygen        | mg/l                       | > 2.00                     | > 2.00             | 7.41                      | 7.54                     | 4.60                     | 4.00                     | 7.80                    | 6.00                     | 6.30                     | 6.90                      | 6.50                     | 8.20                     | 7.60                     | 3.10                     | 6.00                      | 4.32                     | 0.02                     | 7.60                     | 4.68                     | 5.41                     |
| Total Organic                        | carbon        | ma/l                       | NS                         | NS                 | 0.05                      | 0.01                     | 0.01                     | 0.02                     | 0.02                    | 0.02                     | 0.04                     | 0.04                      | 0.01                     | 0.03                     | 0.02                     | 30.00                    | 0.02                      | 0.02                     | 45.91                    | 18 70                    | 0.01                     | 0.05                     |
| (TOC)                                | )<br>xvaen    |                            |                            |                    | 0.00                      | 0.01                     | 0.01                     | 0.02                     | 0.02                    | 0.02                     | 0.01                     |                           | 0.01                     | 0.00                     | 0.02                     |                          |                           | 0.02                     | 10.01                    |                          |                          | 0.00                     |
| demand (C                            | COD)          | mg/l                       | 40.00                      | 60-90              | 36.53                     | 23.69                    | 32.54                    | 41.67                    | 19.01                   | 11.20                    | 18.02                    | 38.02                     | 8.40                     | 11.88                    | 12.27                    | 7.00                     | 34.56                     | 8.00                     | 23.75                    | 0.42                     | 26.10                    | 36.53                    |
| demand (E                            | BOD)          | mg/l                       | 30.00                      | 30-50              | 19.47                     | 14.70                    | 8.41                     | 18.94                    | 12.91                   | 11.21                    | 12.23                    | 19.23                     | 3.10                     | 9.97                     | 14.73                    | 0.41                     | 19.62                     | 6.64                     | 24.76                    | 0.29                     | 12.91                    | 19.47                    |
| Chlorid                              | le            | mg/l                       | 600.00                     | 350.00             | 38.72                     | 18.55                    | 14.32                    | 8.67                     | 12.50                   | 11.50                    | 11.50                    | 7.50                      | 4.96                     | 12.50                    | 17.19                    | 19.50                    | 24.32                     | 12.13                    | 6.55                     | 3.54                     | 71.50                    | 88.72                    |
| Nitrate                              | e             | mg/l                       | 10.00                      | 10.00              | 11.92                     | 0.43                     | 9.21                     | 5.28                     | 0.05                    | 0.20                     | 0.02                     | 0.02                      | 10.00                    | 0.48                     | 10.58                    | 24.23                    | 15.22                     | 10.02                    | 2.59                     | 6.12                     | 10.05                    | 7.92                     |
| Phospha                              | ate<br>to     | mg/l                       | 5.00                       | 3.50               | 4.00                      | 2.43                     | 2.21                     | 2.12                     | 2.82                    | 2.30                     | 2.60                     | 2.80                      | 0.76                     | 2.89                     | 2.37                     | 2.50                     | 3.32                      | 3.20                     | 4.00                     | 3.50                     | 13.50                    | 4.00                     |
| Calciur                              | m             | ma/l                       | 200.00                     | 180.00             | 18.14                     | 23.84                    | 43.55                    | 15.48                    | 8.41                    | 4.20                     | 4.41                     | 4.41                      | 25.23                    | 4.20                     | 6.41                     | 34.24                    | 73.15                     | 32.32                    | 60.00                    | 23.15                    | 13.21                    | 38.14                    |
| Magnesi                              | ium           | mg/l                       | 200.00                     | 40.00              | 17.71                     | 23.12                    | 21.10                    | 37.70                    | 26.67                   | 18.61                    | 12.12                    | 16.67                     | 25.93                    | 20.80                    | 19.63                    | 21.54                    | 32.83                     | 33.13                    | 32.50                    | 24.30                    | 18.19                    | 27.71                    |
| Lead                                 |               | mg/l                       | <1.0                       | 0.10               | ND                        | 0.07                     | 0.04                     | 0.05                     | 0.05                    | 0.04                     | 0.06                     | 0.04                      | 0.01                     | ND                       | 0.01                     | 0.04                     | 0.05                      | 0.03                     | 0.04                     | ND                       | 0.02                     | ND                       |
| Iron                                 |               | mg/l                       | < 0.3                      | 0.50               | 4.27                      | 2.24                     | 0.21                     | 0.27                     | 0.43                    | 3.27                     | 3.22                     | 2.65                      | 0.91                     | 1.79                     | 0.32                     | 4.24                     | 0.06                      | 0.83                     | 0.33                     | 0.87                     | 0.03                     | 0.04                     |
| Chromiu                              | um            | mg/l                       | 0.05                       | <1.00              | 0.06                      | 0.05                     | 0.03                     | 0.03                     | 0.06                    | 0.06                     | 0.05                     | 0.07                      | 0.08                     | 0.06                     | 0.06                     | 0.06                     | 0.02                      | 0.04                     | 0.05                     | 0.06                     | 0.07                     | 0.05                     |
| Zinc                                 | 111           | mg/l                       | <1.01                      | 0.01               | 0.04                      | 0.03                     | 0.01                     | 0.03                     | 0.02                    | 0.03                     | 0.02                     | 0.03                      | 0.08                     | 0.00                     | 0.04                     | 0.05                     | 0.03                      | 0.03                     | 0.03                     | 0.00                     | 0.00                     | 0.01                     |
| Total Bacteria                       | al count      | -6.1                       | 40.00                      | 40.00              | 5.5 X                     | 4.1 X                    | 2.6 X                    | 2.5 x                    | 5.72 X                  | 3.5 X                    | 4.5 X                    | 3.24 x                    | 0.10                     | 1.38 X                   | 2.6 X                    | 5.8 X                    | 3.12 X                    | 2.4 X                    | 1.4 X                    | 4.3 X                    | 3.1 X                    | 5.1 X                    |
| (TBC)                                | )             | ctu/ml                     | 10.00                      | 10.00              | 10 <sup>3</sup>           | 10 <sup>3</sup>          | 10 <sup>2</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>         | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>           | 2.4X 101                 | 10 <sup>3</sup>          | 10 <sup>2</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>           | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>          | 10 <sup>3</sup>          |
| Total coliforn<br>(TCC)              | n count<br>)  | cfu/ml                     | 30.00                      | 30.00              | 8.0 X<br>10 <sup>2</sup>  | 3.6 X<br>101             | 2.0 X<br>10 <sup>2</sup> | 3.0 x<br>10 <sup>2</sup> | 6.6<br>X10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 1.58 X<br>10 <sup>3</sup> | 1.2 X<br>10 <sup>3</sup> | 5.8 X<br>10 <sup>2</sup> | 1.0 X<br>10 <sup>2</sup> | 8.0 X<br>10 <sup>2</sup> | 1.0 X<br>101              | 3.0 X<br>10 <sup>2</sup> | 2.5 X<br>10 <sup>2</sup> | 3.2 X<br>10 <sup>3</sup> | 3.8 X<br>10 <sup>2</sup> | 4.6 X<br>101             |
| Pseudomon                            | as Spp        | cfu/ml                     | 0.00                       | 0.00               | 1.8 X<br>10 <sup>1</sup>  | 4.3 X<br>10 <sup>1</sup> | ND                       | ND                       | ND                      | ND                       | ND                       | ND                        | ND                       | ND                       | ND                       | ND                       | 4.2 X<br>10 <sup>1</sup>  | 2.7 X<br>10 <sup>1</sup> | 4.3 X<br>10 <sup>1</sup> | ND                       | ND                       | 4.3 X<br>10 <sup>1</sup> |
| Feacal col                           | liform        | cfu/ml                     | 0.00                       | 0.00               | ND                        | 4.6 X<br>101             | 3.4 X<br>10 <sup>3</sup> | 3.1 X<br>10 <sup>1</sup> | ND                      | ND                       | ND                       | ND                        | 4.2 X<br>10 <sup>2</sup> | ND                       | ND                       | ND                       | 7.0 X<br>101              | ND                       | ND                       | ND                       | ND                       | 5.6 X<br>101             |

| _                              |        | FMEnv<br>Max  | NESREA<br>Max | GW                       | GW                       | GW                        | GW                       | GW                        | GW                       | GW                       | GW                        | GW                       | GW                        | GW                       | GW                       |
|--------------------------------|--------|---------------|---------------|--------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|--------------------------|
| Parameters                     | Unit   | Perm<br>Limit | Perm<br>Limit | 101                      | 102                      | 103                       | 104                      | 105                       | 106                      | 107                      | 108                       | 109                      | 110                       | 111                      | 112                      |
| Electrical Conductivity        | µS/cm  | 1000.00       | NS            | 172.30                   | 129.54                   | 118.44                    | 93.45                    | 81.20                     | 400.12                   | 56.50                    | 56.50                     | 404.00                   | 404.00                    | 116.00                   | 109.4<br>0               |
| Ph                             |        | 6.0-9.0       | 6.5-9.0       | 7.29                     | 7.65                     | 7.50                      | 8.25                     | 5.90                      | 4.70                     | 7.01                     | 7.01                      | 7.30                     | 5.72                      | 5.37                     | 6.32                     |
| Turbidity                      | NTU    | 10.00         | 5.00          | 0.00                     | 1.00                     | 1.00                      | 0.00                     | 1.00                      | 0.00                     | 0.00                     | 0.00                      | 2.00                     | 0.00                      | 0.00                     | 0.00                     |
| Colour                         | Pt.co  | 10.00         | 5.00          | 2.00                     | 3.20                     | 220                       | 0.00                     | 0.00                      | 4.00                     | 25.00                    | 25.00                     | 0.00                     | 4.00                      | 4.00                     | 3.00                     |
| Total Dissolved solid          | mg/l   | 2000.00       | 500.00        | 102.20                   | 100.00                   | 100.00                    | 52.40                    | 205.00                    | 18.65                    | 26.00                    | 26.00                     | 407.00                   | 20.20                     | 62.10                    | 91.44                    |
| Magnesium Hardness             | mg/l   | NS            | NS            | 97.56                    | 88.54                    | 90.00                     | 168.93                   | 109.76                    | 94.00                    | 112.76                   | 112.76                    | 46.00                    | 121.95                    | 121.95                   | 89.99                    |
| Calcium Hardness               | mg/l   | NS            | NS            | 73.17                    | 70.59                    | 72.50                     | 48.54                    | 24.39                     | 14.50                    | 24.39                    | 24.39                     | 60.72                    | 12.20                     | 24.39                    | 47.32                    |
| Total Alkalinity               | mg/l   | NS            | 150.00        | 60.00                    | 50.00                    | 50.00                     | 50.00                    | 20.00                     | 25.00                    | 40.00                    | 40.00                     | 60.00                    | 20.00                     | 20.00                    | 25.00                    |
| Ammonia                        | mg/l   | NS            | 1.00          | 0.43                     | 0.32                     | 0.32                      | 0.32                     | 0.37                      | 0.30                     | 0.20                     | 0.20                      | 0.22                     | 0.22                      | 0.67                     | 0.35                     |
| Dissolved Oxygen (DO)          | mg/l   | > 2.00        | > 2.00        | 7.70                     | 7.54                     | 7.28                      | 6.00                     | 7.80                      | 7.00                     | 6.90                     | 6.90                      | 6.50                     | 8.20                      | 6.60                     | 6.00                     |
| Total Organic carbon (TOC)     | mg/l   | NS            | NS            | 0.01                     | 0.01                     | 0.01                      | 0.02                     | 0.02                      | 0.02                     | 0.04                     | 0.04                      | 0.01                     | 0.03                      | 0.02                     | 0.02                     |
| chemical oxygen demand (COD)   | mg/l   | 40.00         | 60-90         | 26.51                    | 23.69                    | 13.29                     | 11.67                    | 19.01                     | 12.20                    | 38.02                    | 38.02                     | 8.40                     | 11.88                     | 52.27                    | 41.43                    |
| Biological oxygen demand (BOD) | mg/l   | 30.00         | 30-50         | 15.73                    | 14.70                    | 13.20                     | 8.94                     | 12.91                     | 8.91                     | 19.23                    | 19.23                     | 3.10                     | 9.97                      | 24.73                    | 28.66                    |
| Chloride                       | mg/l   | 600.00        | 350.00        | 17.49                    | 18.55                    | 16.32                     | 18.67                    | 71.50                     | 11.50                    | 7.50                     | 7.50                      | 4.96                     | 12.50                     | 19.99                    | 14.93                    |
| Nitrate                        | mg/l   | 10.00         | 10.00         | 0.02                     | 0.43                     | 0.34                      | 0.28                     | 0.05                      | 0.20                     | 0.02                     | 0.02                      | 10.00                    | 0.48                      | 10.58                    | 10.05                    |
| Phosphate                      | mg/l   | 5.00          | 3.50          | 2.95                     | 2.43                     | 2.87                      | 3.12                     | 2.82                      | 2.30                     | 2.80                     | 2.80                      | 0.76                     | 2.89                      | 2.87                     | 2.43                     |
| Sulphate                       | mg/l   | 500.00        | 500.00        | 5.00                     | 4.33                     | 9.21                      | 10.65                    | 2.76                      | 3.46                     | 2.29                     | 2.29                      | 16.90                    | 2.47                      | 2.94                     | 2.33                     |
| Calcium                        | mg/l   | 200.00        | 180.00        | 25.23                    | 23.84                    | 16.78                     | 15.48                    | 8.41                      | 2.20                     | 8.41                     | 8.41                      | 25.23                    | 4.20                      | 8.41                     | 14.32                    |
| Magnesium                      | mg/l   | 200.00        | 40.00         | 23.71                    | 23.12                    | 21.73                     | 37.70                    | 26.67                     | 23.71                    | 23.12                    | 26.67                     | 25.93                    | 20.80                     | 29.63                    | 38.28                    |
| Lead                           | mg/l   | <1.0          | 0.10          | 0.04                     | 0.07                     | 0.05                      | 0.05                     | 0.05                      | 0.04                     | 0.07                     | 0.04                      | 0.01                     | ND                        | 0.01                     | 0.05                     |
| Iron                           | mg/l   | < 0.3         | 0.50          | 4.27                     | 4.22                     | 4.74                      | 0.87                     | 0.43                      | 4.27                     | 4.22                     | 0.65                      | 0.91                     | 1.79                      | 0.32                     | 0.35                     |
| Chromium                       | mg/l   | 0.05          | <1.00         | 0.06                     | 0.04                     | 0.07                      | 0.05                     | 0.06                      | 0.06                     | 0.04                     | 0.07                      | 0.08                     | 0.06                      | 0.06                     | 0.06                     |
| Cadmium                        | mg/l   | 0.01          | 0.01          | 0.04                     | 0.02                     | 0.00                      | 0.04                     | 0.02                      | 0.03                     | 0.02                     | 0.03                      | 0.08                     | 0.00                      | 0.04                     | 0.06                     |
| Zinc                           | mg/l   | <1.0          | 0.20          | 0.07                     | 0.14                     | 0.11                      | 0.03                     | 0.28                      | 0.06                     | 0.14                     | 0.10                      | 0.10                     | 0.11                      | 0.07                     | 0.08                     |
| Total Bacterial count (TBC)    | cfu/ml | 10.00         | 10.00         | 5.5 X<br>10 <sup>3</sup> | 3.5 X<br>10 <sup>3</sup> | 3.22 X<br>10 <sup>3</sup> | 2.3 x<br>10 <sup>3</sup> | 5.72 X<br>10 <sup>3</sup> | 2.5 X<br>10 <sup>3</sup> | 3.5 X<br>10 <sup>3</sup> | 5.24 x<br>10 <sup>3</sup> | 2.4X 10 <sup>1</sup>     | 1.38 X<br>10 <sup>3</sup> | 4.6 X<br>10 <sup>2</sup> | 4.4X<br>10 <sup>1</sup>  |
| Total coliform count (TCC)     | cfu/ml | 30.00         | 30.00         | 8.0 X<br>10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 4.1 X<br>10 <sup>2</sup>  | 4.0 x<br>10 <sup>2</sup> | 6.6<br>X10 <sup>2</sup>   | 6.0 X<br>10 <sup>2</sup> | 5.0 X<br>10 <sup>2</sup> | 2.58 X<br>10 <sup>3</sup> | 1.2 X<br>10 <sup>3</sup> | 5.8 X<br>10 <sup>2</sup>  | 1.0 X<br>10 <sup>2</sup> | 1.2 X<br>10 <sup>3</sup> |
| Pseudomonas Spp                | cfu/ml | 0.00          | 0.00          | 1.8 X<br>101             | 3.8 X<br>10 <sup>1</sup> | ND                        | ND                       | ND                        | 1.8 X<br>10 <sup>1</sup> | ND                       | ND                        | ND                       | ND                        | ND                       | ND                       |
| Feacal coliform                | cfu/ml | 0.00          | 0.00          | ND                       | ND                       | ND                        | 4.1 X<br>10 <sup>1</sup> | ND                        | ND                       | ND                       | ND                        | 4.2 X<br>10 <sup>2</sup> | ND                        | ND                       | 5.3 X<br>10 <sup>2</sup> |

| N        | PARAMETERS                           | STANDARD<br>REFENCE        | TEST METHODS                          | UNIT   | FMEnv<br>MAXIMUM<br>PERMISSIBLE<br>LIMIT | SW1 (FSTC<br>AWKA,<br>ANAMBRA<br>STATE) | SW2 (FGC<br>ODI,<br>BAYELSA<br>STATE) | SW3<br>(FGC<br>OKIGWE,<br>IMO<br>STATE) | SW4<br>(FGGC<br>IKIRUN,<br>OSUN<br>STATE) | SW5<br>(FGGC<br>BIDA,<br>NIGER<br>STATE) | SW6(FGC<br>MINNA,<br>NIGER<br>STATE) | SW7 (FGC<br>NEW<br>BUSSA,<br>NIGER<br>STATE) | SW8 (FGC,<br>SULEJA,<br>NIGER<br>STATE) | SW9<br>(FGGC<br>ONITSHA,<br>ANAMBRA<br>STATE) | SW10 (FSTC<br>TUNGBO,<br>BAYELSA) |
|----------|--------------------------------------|----------------------------|---------------------------------------|--------|--|---|---------------------------------------|---|---|--|--------------------------------------|--|---|---|-----------------------------------|
| 1        | General                              |                            |                                       |        | CLEAR                                    | CLEAR                                   | CLEAR                                 | CLEAR                                   | CLEAR                                     | TURBID                                   | TURBID                               | TURBID                                       | CLEAR                                   | CLEAR   | CLEAR                             |
| 2        | Temperature                          |                            |                                       | °C     | <40                                      |   |                                       | 24.200                                  | 25.000                                    | 25.500                                   | 29.000                               | 22.800                                       | 24.800                                  | 23.000  | 23.800                            |
| 3        | Electrical<br>Conductivity           | APHA 4500-<br>HB           | Electrometric                         | µS/cm  | 1,000.000                                | 376.000                                 | 90.200                                | 160.700                                 | 105.300                                   | 140.200                                  | 101.900                              | 170.000                                      | 150.700                                 | 175.000                                       | 166.000                           |
| 4        | Ph                                   | APHA 4500-<br>HB           | Colorimetric                          |        | 6.0-9.0                                  | 4.370                                   | 6.540                                 | 6.400                                   | 6.800                                     | 6.500                                    | 6.310                                | 6.910  | 6.400                                   | 7.230   | 7.670                             |
| 5        | Turbidity                            | APHA<br>2130B              | Nephelometric                         | NTU    | 10.000                                   | 0.000                                   | 22.000                                | 26.000                                  | 25.000                                    | 32.000                                   | 28.800                               | 16.000                                       | 26.900                                  | 34.100  | 31.500                            |
| 6        | Colour                               | APHA 204A                  | Colorimetric                          | Pt.co  | 10.000                                   | 2.000                                   | 240.000                               | 125.000                                 | 230.000                                   | 280.050                                  | 190.660                              | 140.000                                      | 165.000                                 | 145.000                                       | 159.000                           |
| 8        | Suspended<br>Solids                  | APHA<br>2540B              | Gravimetric                           | mg/l   | 30.000                                   | 4.700                                   | 11.300                                | 3.660                                   | 6.800                                     | 7.550                                    | 5.400                                | 6.050  | 4.220                                   | 5.300   | 4.750                             |
| 9        | Total Dissolved<br>solid             | APHA<br>2540B              | Gravimetric                           | mg/l   | 2,000.000                                | 102.200                                 | 37.200                                | 22.740                                  | 38.000                                    | 36.300                                   | 63.400                               | 28.700                                       | 28.050                                  | 31.500  | 29.060                            |
| 10       | Total Hardness                       | APHA 2340-<br>C            | Gravimetric                           | mg/l   | NS                                       | 207.320                                 | 182.930                               | 170.880                                 | 202.000                                   | 129.000                                  | 148.000                              | 134.270                                      | 122.780                                 | 201.000                                       | 154.400                           |
| 11       | Magnesium<br>Hardness                | APHA 2340-<br>C            | Edta Titrimetric                      | mg/l   | NS                                       | 134.150                                 | 170.730                               | 156.100                                 | 133.000                                   | 82.930                                   | 97.560                               | 132.050                                      | 140.000                                 | 147.000                                       | 128.000                           |
| 12       | Calcium<br>Hardness                  | APHA 2320-<br>C            | Edta Titrimetric                      | mg/l   | NS                                       | 73.170                                  | 12.200                                | 11.020                                  | 14.000                                    | 46.000                                   | 51.000                               | 22.090                                       | 34.700                                  | 26.300  | 29.600                            |
| 13       | Total Alkalinity                     | APHA 2320-<br>C            | Titrimetric                           | mg/l   | NS                                       | 20.000                                  | 50.000                                | 66.000                                  | 52.000                                    | 22.000                                   | 22.900                               | 31.000                                       | 25.620                                  | 32.900  | 29.100                            |
| 14       | Total Acidity                        | APHA 230-<br>B             | Titrimetric                           |        |  | 4.000                                   | 6.400                                 | 7.300                                   | 6.850                                     | 6.200                                    | 6.500                                | 7.150  | 7.050                                   | 6.600   | 6.100                             |
| 16       | Ammonia                              | APHA-<br>AWWA-<br>WPCF 205 | Uv-<br>Spectrophotometric             | mg/l   | NS                                       | 0.280                                   | 0.580                                 | 0.630                                   | 0.700                                     | 0.550                                    | 0.600                                | 0.680  | 0.620                                   | 0.550   | 0.600                             |
| 15       | Salinity                             | APHA 2520<br>B             | Uv-<br>Spectrophotometric             | mg/l   | NS                                       | 54.310                                  | 10.860                                | 9.060                                   | 11.560                                    | 48.670                                   | 33.000                               | 24.050                                       | 33.300                                  | 29.060  | 41.100                            |
| 17       | Total Nitrogen                       | APHA 4500-<br>NC           | Persulphate<br>Digestion              | mg/l   | NS                                       | 10.650                                  | 0.660                                 | 0.750                                   | 0.980                                     | 0.990                                    | 0.670                                | 0.720  | 0.810                                   | 0.640   | 0.790                             |
|          |                                      |                            | Organics                              |        |  |   |                                       |   |   |  |                                      |  |   |   |                                   |
| 18       | Dissolved<br>Oxygen (DO)             | APHA 4500-<br>O G          | Membrane<br>Electrode                 | mg/l   | > 2.00                                   | 7.100                                   | 6.500                                 | 5.200                                   | 7.250                                     | 5.270                                    | 6.640                                | 5.220  | 7.040                                   | 6.720   | 6.410                             |
| 19       | Total Organic<br>carbon (TOC)        | ASTM D<br>7573             | Titrimetric                           | mg/l   | NS                                       | 0.024                                   | 0.024                                 | 0.018                                   | 0.012                                     | 0.028                                    | 0.030                                | 0.029  | 0.090                                   | 0.050   | 0.018                             |
| 20       | chemical<br>oxygen<br>demand (COD)   | APHA-<br>AWWA-<br>WPCF 508 | Titrimetric                           | mg/l   | 40.000                                   | 33.260                                  | 47.520                                | 69.000                                  | 16.000                                    | 18.000                                   | 32.330                               | 35.880                                       | 25.050                                  | 27.600  | 24.900                            |
| 21       | Biological<br>oxygen<br>demand (BOD) | APHA-<br>AWWA-<br>WPCF 507 | Titrimetric                           | mg/l   | 30.000                                   | 17.460                                  | 22.860                                | 7.250                                   | 5.270                                     | 15.880                                   | 12.010                               | 20.220                                       | 16.900                                  | 14.300  | 16.700                            |
|          |                                      | APHA-                      |                                       | ANIONS |  |   |                                       |   |   |  |                                      |  |   |   |                                   |
| 22       | Carbonate                            | AWWA-<br>WPCF 403          | Titrimetric                           | mg/l   | NS                                       | 0.000                                   | 0.016                                 | 0.010                                   | 0.015                                     | 0.010                                    | 0.050                                | 0.030  | 0.010                                   | 0.020   | 0.015                             |
| 23       | Bicarbonate                          | APHA-<br>AWWA-<br>WPCF 403 | Titrimetric                           | mg/l   | NS                                       | 19.990                                  | 49.980                                | 34.500                                  | 35.090                                    | 40.800                                   | 28.550                               | 25.000                                       | 32.000                                  | 35.610  | 26.700                            |
| 24       | Chloride                             | APHA 4500<br>-CI' B        | Argentometry<br>Titrimetric           | mg/l   | 600.000                                  | 49.980                                  | 10.000                                | 26.940                                  | 18.000                                    | 34.880                                   | 41.000                               | 35.000                                       | 27.990                                  | 23.400  | 25.600                            |
| 25       | Nitrate                              | APHA 4500<br>NO₃ B         | Uv-<br>Spectrophotometric             | mg/l   | 10.000                                   | 10.330                                  | 0.019                                 | 0.003                                   | 0.004                                     | 0.002                                    | 0.017                                | 0.001  | 0.003                                   | 0.001   | 0.002                             |
| 26       | Phosphate                            | APHA-<br>AWWA-<br>WPCF 425 | Uv-<br>Spectrophotometric             | mg/l   | 5.000                                    | 2.840                                   | 3.110                                 | 1.630                                   | 3.300                                     | 1.970                                    | 2.060                                | 2.470  | 1.920                                   | 2.380   | 1.860                             |
| 27       | Sulphate                             | APHA-<br>AWWA-<br>WPCF 427 | Uv-<br>Spectrophotometric             | mg/l   | 500.000                                  | 3.760                                   | 2.530                                 | 3.600                                   | 2.880                                     | 2.760                                    | 2.450                                | 3.090  | 3.000                                   | 2.740   | 2.990                             |
| 0-       | 0.1.1                                | АРНА                       | Metals                                |        |  | 05.555                                  |                                       | 10                                      | 1.5.5.5                                   |  | 10                                   |  | 10.555                                  | 05  | 00.015                            |
| 28       | Calcium                              | 2340-C<br>APHA             | Titrimetric                           | mg/l   | 200.000                                  | 25.230                                  | 4.210                                 | 40.000                                  | 15.980                                    | 17.660                                   | 16.050                               | 20.880                                       | 19.000                                  | 25.770  | 23.010                            |
| 29       | wagnesium                            | 2340-C<br>APHA 3111        | Atomic Absorption                     | mg/l   | 200.000                                  | 32.600                                  | 41.490                                | 0.890                                   | 28.000                                    | 25.000                                   | 23./10                               | 32.000                                       | 39.000                                  | 28.000  | 39.000                            |
| 30       | Lead                                 | B<br>APHA 3111             | Spctrophotometry<br>Atomic Absorption | ma/    | < 0.2                                    | 0.159                                   | 4.250                                 | 0.440                                   | 0.190                                     | 0.710                                    | 0.770                                | 0.310  | 0.990                                   | 0.000   | 0.090                             |
| 31       | Chromium                             | B<br>APHA 3111             | Spctrophotometry<br>Atomic Absorption | mg/l   | < U.3<br>0.050                           | 0.492                                   | 4.250                                 | 0.020                                   | 0.180                                     | 0.230                                    | 0.290                                | 0.070  | 0.190                                   | 0.050   | 0.270                             |
| 32       | Niel                                 | B<br>APHA 3111             | Spctrophotometry<br>Atomic Absorption | 111g/l | 0.000                                    | 0.002                                   | 0.071                                 | 0.030                                   | 0.000                                     | 0.000                                    | 0.000                                | 0.070  | 0.000                                   | 0.000   | 0.000                             |
| 33<br>34 | Cadmium                              | B<br>APHA 3111             | Spctrophotometry<br>Atomic Absorption | mg/l   | 0.005                                    | 0.000                                   | 0.032                                 | 0.030                                   | 0.024<br>ND                               | 0.031<br>ND                              | 0.026                                | 0.018  | 0.020                                   | 0.230   | 0.187                             |

ANNEX 14 Results of Surface Water Analysis

| N  | PARAMETERS                     | STANDARD<br>REFENCE | TEST METHODS                          | UNIT   | FMEnv<br>MAXIMUM<br>PERMISSIBLE<br>LIMIT | SW1 (FSTC<br>AWKA,<br>ANAMBRA<br>STATE) | SW2 (FGC<br>ODI,<br>BAYELSA<br>STATE) | SW3<br>(FGC<br>OKIGWE,<br>IMO<br>STATE) | SW4<br>(FGGC<br>IKIRUN,<br>OSUN<br>STATE) | SW5<br>(FGGC<br>BIDA,<br>NIGER<br>STATE) | SW6(FGC<br>MINNA,<br>NIGER<br>STATE) | SW7 (FGC<br>NEW<br>BUSSA,<br>NIGER<br>STATE) | SW8 (FGC,<br>SULEJA,<br>NIGER<br>STATE) | SW9<br>(FGGC<br>ONITSHA,<br>ANAMBRA<br>STATE) | SW10 (FSTC<br>TUNGBO,<br>BAYELSA) |
|----|--------------------------------|---------------------|---------------------------------------|--------|--|---|---------------------------------------|---|---|--|--------------------------------------|--|---|---|-----------------------------------|
|    |                                | В                   | Spctrophotometry                      |        |  |   |                                       |   |   |  |                                      |  |   |   |                                   |
| 35 | Zinc                           | APHA 3111<br>B      | Atomic Absorption<br>Spctrophotometry | mg/l   | <1.0                                     | 0.101                                   | 0.142                                 | 1.160                                   | 0.300                                     | 0.360                                    | 0.170                                | 0.110  | 0.190                                   | 0.149   | 0.280                             |
|    |                                |                     | Microbial<br>Parameters               |        |  |   |                                       |   |   |  |                                      |  |   |   |                                   |
| 36 | Total Bacterial<br>count (TBC) | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 10.000                                   | 2.3 X 10 <sup>3</sup>                   | 7.4 x 10 <sup>2</sup>                 | 1.22 X 10 <sup>3</sup>                  | 4 .4 X 10 <sup>1</sup>                    | 2 .7 X<br>10 <sup>1</sup>                | 1.26 X 10 <sup>1</sup>               | 3.0 × 10 <sup>2</sup>                        | 4 .1 X 10 <sup>1</sup>                  | 2.0 × 10 <sup>2</sup>                         | 3 .1 X 10 <sup>1</sup>            |
| 37 | Total fungi<br>count (TFC)     | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 0.000                                    | ND                                      | 2.0 X 10 <sup>0</sup>                 | ND                                      | 2 .1 X 10 <sup>1</sup>                    | ND                                       | 1.75 X 10 <sup>1</sup>               | 2 .1 X 10 <sup>2</sup>                       | ND                                      | 1 .1 X 10 <sup>2</sup>                        | ND                                |
| 38 | Total coliform<br>count (TCC)  | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 30.000                                   | 1.48 X 10 <sup>3</sup>                  | 6.8 X 10 <sup>2</sup>                 | 1.25 X 10 <sup>1</sup>                  | 1.08 X 10 <sup>3</sup>                    | 1.3 X 10 <sup>3</sup>                    | 1.091X 10 <sup>3</sup>               | 1.35 X 10 <sup>1</sup>                       | 1.2 X 10 <sup>3</sup>                   | 1.85 X 101                                    | 1.2 X 10 <sup>3</sup>             |
| 39 | Pseudomonas<br>Spp             | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 0.000                                    | ND                                      | ND                                    | ND                                      | ND  | ND                                       | ND                                   | ND   | ND                                      | ND  | ND                                |
| 40 | Bacillus Spp                   | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 0.000                                    | ND                                      | 6.2 X 10 <sup>2</sup>                 | ND                                      | 5.2 X 10 <sup>3</sup>                     | 5.3 X 10 <sup>2</sup>                    | 4.8 X 10 <sup>3</sup>                | ND   | ND                                      | ND  | ND                                |
| 41 | Feacal coliform                | APHA 9222-<br>D     | Serial Dilution &<br>Pour Plate       | cfu/ml | 0.000                                    | ND                                      | ND                                    | 3.5× 10 <sup>2</sup>                    | ND  | ND                                       | ND                                   | ND   | 2.3× 10 <sup>2</sup>                    | ND  | 2.9× 10 <sup>2</sup>              |

SW1: FSTC Akwa, Anambra – Omambala River, SW2: FGC Odi, Bayelsa – Odi River, SW3: FGC Okigwe, Imo State – Obaho River, SW4: FGC Ikirun, Osun State – River Eko Ende, SW5: FGC Bida, Niger State - Bida River, SW6: FGC Minna, Niger State – River Chanchaga, SW7: FGC New Bussa, Niger State – River Niger, SW8: FGA Suleja, Niger State – Iku River, SW9: FGGC Onitsha, Anambra – Ezu River, SW10: FSTC Tungbo, Bayelsa – Tungbo River

# ANNEX 15 Results for Soil Samples Analysis

| PARAMETERS                     | UNIT  | FMEnv<br>MAX<br>PERM | \$\$1                     | \$\$2                     | \$\$3                    | SS4          | \$\$5                     | \$\$6                    | \$\$7                    | \$\$8                    | \$\$9                     | \$\$10                    | \$\$11                    | \$\$12                    | \$\$13                | \$\$14                   | \$\$15                   | \$\$16                   | \$\$17                | \$\$18                    | SS19                     | \$\$20                   |
|--------------------------------|-------|----------------------|---------------------------|---------------------------|--------------------------|--------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------------------|--------------------------|--------------------------|--------------------------|-----------------------|---------------------------|--------------------------|--------------------------|
| Electrical<br>Conductivity     | μS/cm | NS                   | 22.90                     | 34.30                     | 35.30                    | 45.90        | 25.10                     | 98.90                    | 48.70                    | 81.20                    | 76.99                     | 88.91                     | 87.50                     | 81.90                     | 78.80                 | 92.90                    | 84.00                    | 55.10                    | 97.00                 | 75.10                     | 98.00                    | 100.0<br>0               |
| Ph                             |       | 5.5-8.5              | 6.70                      | 6.45                      | 6.10                     | 6.81         | 6.21                      | 6.54                     | 6.34                     | 6.90                     | 7.45                      | 7.30                      | 7.66                      | 7.54                      | 7.31                  | 7.64                     | 6.57                     | 7.65                     | 7.52                  | 6.81                      | 6.90                     | 7.33                     |
| Total Alkalinity               | mg/Kg | NS                   | 25.00                     | 20.00                     | 44.00                    | 40.00        | 41.00                     | 50.00                    | 38.00                    | 42.80                    | 30.00                     | 60.20                     | 50.00                     | 35.00                     | 37.11                 | 30.00                    | 170.0<br>0               | 67.00                    | 35.50                 | 40.00                     | 63.00                    | 55.30                    |
| Ammonia                        | mg/Kg | NS                   | 0.34                      | 0.37                      | 0.46                     | 0.35         | 0.44                      | 0.30                     | 0.31                     | 0.23                     | 0.34                      | 0.67                      | 0.17                      | 0.33                      | 0.81                  | 0.29                     | 0.39                     | 0.34                     | 1.73                  | 0.56                      | 0.31                     | 1.05                     |
| Bulk density                   |       | NS                   | 1.36                      | 1.31                      | 1.33                     | 1.65         | 1.37                      | 1.55                     | 1.43                     | 1.90                     | 1.78                      | 1.03                      | 1.29                      | 1.25                      | 1.91                  | 1.32                     | 1.56                     | 2.03                     | 0.49                  | 1.32                      | 1.92                     | 0.75                     |
| Total Organic<br>carbon        | %     | 50.00                | 0.52                      | 0.62                      | 0.48                     | 0.33         | 0.37                      | 0.60                     | 1.07                     | 1.15                     | 0.65                      | 1.55                      | 1.03                      | 0.88                      | 1.88                  | 1.06                     | 1.02                     | 0.85                     | 2.57                  | 0.58                      | 1.11                     | 1.61                     |
| Total Organic<br>Matter        | %     | NS                   | 1.80                      | 1.06                      | 1.22                     | 0.57         | 1.14                      | 1.04                     | 1.13                     | 0.68                     | 0.52                      | 3.70                      | 1.78                      | 1.41                      | 3.01                  | 1.82                     | 1.03                     | 1.05                     | 1.99                  | 1.00                      | 1.35                     | 3.70                     |
| Total Organic<br>Nitrogen      | mg/Kg |                      | 0.02                      | 0.03                      | 0.04                     | 0.02         | 0.02                      | 0.03                     | 0.02                     | 0.01                     | 0.01                      | 5.13                      | 0.05                      | 0.07                      | 0.19                  | 0.05                     | 0.02                     | 0.02                     | 0.13                  | 0.03                      | 0.07                     | 0.08                     |
| Chloride                       | mg/Kg |                      | 16.10                     | 10.00                     | 14.05                    | 29.99        | 11.90                     | 39.99                    | 30.71                    | 34.10                    | 36.60                     | 48.70                     | 12.50                     | 13.78                     | 55.60                 | 10.00                    | 16.36                    | 15.88                    | 27.05                 | 17.49                     | 18.31                    | 31.10                    |
| Nitrate                        | mg/Kg |                      | 7.44                      | 8.98                      | 9.23                     | 10.12        | 10.04                     | 9.18                     | 9.71                     | 11.00                    | 3.22                      | 18.70                     | 5.63                      | 12.10                     | 19.50                 | 10.88                    | 8.32                     | 9.64                     | 7.71                  | 10.13                     | 7.53                     | 8.40                     |
| Phosphate                      | mg/Kg |                      | 3.70                      | 2.91                      | 4.22                     | 3.71         | 3.60                      | 3.19                     | 4.03                     | 3.88                     | 2.10                      | 5.83                      | 3.35                      | 7.60                      | 8.11                  | 4.19                     | 2.78                     | 3.69                     | 7.56                  | 2.90                      | 4.20                     | 5.29                     |
| Sulphate                       | mg/Kg |                      | 4.70                      | 5.61                      | 5.00                     | 3.47         | 4.12                      | 7.12                     | 4.62                     | 6.43                     | 15.80                     | 3.50                      | 7.29                      | 5.08                      | 4.09                  | 4.18                     | 18.06                    | 6.65                     | 7.39                  | 4.24                      | 6.60                     | 6.93                     |
| Nitrogen                       | mg/Kg | NS                   | 8.50                      | 9.39                      | 8.88                     | 10.50        | 10.19                     | 9.54                     | 9.60                     | 10.20                    | 8.43                      | 15.70                     | 5.85                      | 8.76                      | 13.70                 | 11.26                    | 9.00                     | 8.33                     | 19.36                 | 10.71                     | 9.07                     | 19.64                    |
| Phosphorus                     | mg/Kg | NS                   | 1.60                      | 0.95                      | 1.86                     | 1.21         | 1.17                      | 1.04                     | 0.99                     | 1.72                     | 1.73                      | 1.55                      | 1.09                      | 1.31                      | 1.90                  | 1.37                     | 1.67                     | 1.11                     | 2.60                  | 0.95                      | 3.76                     | 2.09                     |
| Potassium                      | mg/Kg | NS                   | 6.61                      | 0.94                      | 5.30                     | 7.01         | 1.07                      | 0.93                     | 4.68                     | 6.11                     | 25.10                     | 0.94                      | 8.40                      | 5.03                      | 1.51                  | 0.48                     | 6.85                     | 1.03                     | 2.13                  | 4.88                      | 2.45                     | 1.87                     |
| Iron                           | mg/Kg | 0.30                 | 0.35                      | 0.31                      | 0.29                     | 0.24         | 0.28                      | 0.27                     | 0.58                     | 0.27                     | 0.11                      | 0.16                      | 0.31                      | 0.29                      | 0.18                  | 0.33                     | 0.35                     | 0.28                     | 0.37                  | 0.42                      | 0.35                     | 0.28                     |
| Chromium                       | mg/Kg | NS                   | 1.67                      | 2.32                      | 1.65                     | 1.97         | 1.65                      | 0.55                     | 2.22                     | 1.09                     | 2.43                      | 3.50                      | 3.68                      | 3.52                      | 2.75                  | 5.18                     | 1.65                     | 2.97                     | 3.07                  | 1.08                      | 2.51                     | 2.87                     |
| Cadmium                        | mg/Kg | NS                   | 0.13                      | 0.02                      | 0.17                     | 0.18         | 0.03                      | 0.01                     | 0.01                     | 0.02                     | 0.01                      | 0.00                      | 0.01                      | 0.01                      | 0.02                  | 0.05                     | 0.02                     | 0.08                     | 0.02                  | 0.01                      | 0.04                     | 0.01                     |
| Aluminium                      | mg/Kg | NS                   | 1.47                      | 0.74                      | 1.86                     | 1.08         | 1.54                      | 0.94                     | 1.01                     | 1.66                     | 0.87                      | 1.10                      | 1.03                      | 1.01                      | 1.44                  | 1.60                     | 1.40                     | 1.05                     | 1.91                  | 0.68                      | 1.49                     | 2.31                     |
| Nickel                         | mg/Kg | NS                   | 0.31                      | 0.11                      | 0.41                     | 0.12         | 0.27                      | 0.23                     | 0.77                     | 0.51                     | 0.08                      | 0.71                      | 0.52                      | 0.46                      | 0.87                  | 0.24                     | 0.69                     | 0.36                     | 0.91                  | 0.14                      | 0.67                     | 0.73                     |
| Lead                           | mg/Kg |                      | 1.93                      | 1.08                      | 0.81                     | 0.77         | 1.43                      | 0.92                     | 1.32                     | 1.82                     | 0.01                      | 0.77                      | 1.45                      | 1.02                      | 1.11                  | 1.48                     | 1.01                     | 0.66                     | 0.51                  | 1.19                      | 1.22                     | 1.60                     |
| Total Bacterial<br>count (TBC) | cfu/g | NS                   | 1.3 X<br>10 <sup>0</sup>  | TNTC                      | 1.6 X<br>10⁵             | TNTC         | TNTC                      | TNTC                     | 2.6 X<br>10 <sup>4</sup> | 1.5 X<br>10⁵             | 1.6 X<br>10 <sup>0</sup>  | 5.04<br>X 10⁴             | 5.04<br>X 10 <sup>4</sup> | 1.3 X<br>10 <sup>2</sup>  | 1.3 X 10 <sup>2</sup> | TNTC                     | 1.95 X<br>10⁵            | 1.3 X<br>10 <sup>1</sup> | 1.3 X 10 <sup>1</sup> | 5.78 X<br>104             | TNTC                     | TNTC                     |
| Total coliform<br>count (TCC)  | cfu/g | NS                   | 2.04<br>X 10 <sup>4</sup> | 3.04 X<br>10 <sup>4</sup> | 1.7 X<br>10 <sup>4</sup> | TNTC         | 4.14<br>X 10 <sup>4</sup> | 1.78 X<br>104            | TNTC                     | 2.4 X<br>10 <sup>4</sup> | 1.32<br>X 10 <sup>4</sup> | 4.62<br>X 10 <sup>4</sup> | 4.62<br>X 10 <sup>4</sup> | 1.78 X<br>10 <sup>4</sup> | 1.78 X<br>104         | TNTC                     | 4.1 X<br>10 <sup>4</sup> | 4.2 X<br>10 <sup>1</sup> | 4.2 X 10 <sup>1</sup> | 4.22 X<br>10 <sup>4</sup> | 1.8 X<br>104             | 1.8 X<br>104             |
| Bacillus Spp                   | cfu/g | NS                   | 3.4 X<br>10 <sup>3</sup>  | 9.4 X<br>10 <sup>3</sup>  | 1.0 X<br>10 <sup>3</sup> | 1.0 X<br>104 | 6.1 X<br>10 <sup>3</sup>  | 7.2 X<br>10 <sup>3</sup> | 1.0 X<br>101             | 1.0 X<br>10 <sup>4</sup> | 3.0 X<br>10 <sup>4</sup>  | 9.4 X<br>10 <sup>3</sup>  | 9.4 X<br>10 <sup>3</sup>  | 1.0 X<br>101              | 1.0 X<br>101          | 8.4 X<br>10 <sup>3</sup> | 1.0 X<br>10 <sup>4</sup> | 2 X<br>10 <sup>3</sup>   | 2 X 10 <sup>3</sup>   | 5.8 X<br>10 <sup>3</sup>  | 2.5 X<br>10 <sup>3</sup> | 2.5 X<br>10 <sup>3</sup> |
| Pseudomonas<br>Spp             | cfu/g | NS                   | ND                        | ND                        | ND                       | ND           | ND                        | ND                       | ND                       | ND                       | ND                        | ND                        | ND                        | 3.5 X<br>10 <sup>2</sup>  | 3.5 X 10 <sup>2</sup> | 1.4 X<br>10 <sup>2</sup> | ND                       | ND                       | ND                    | ND                        | 2.8 X<br>10 <sup>2</sup> | 2.8 X<br>10 <sup>2</sup> |

|                                |       | FMEnv<br>MAXIMUM |        |                           |               |                          |                          |       |       |                          |                          |                          |       |                           |                          |                           |                     |                       |
|--------------------------------|-------|------------------|--------|---------------------------|---------------|--------------------------|--------------------------|-------|-------|--------------------------|--------------------------|--------------------------|-------|---------------------------|--------------------------|---------------------------|---------------------|-----------------------|
|                                |       | PERMISSIB        |        |                           |               |                          |                          |       |       |                          |                          |                          |       |                           |                          |                           |                     |                       |
| PARAMETERS                     | UNIT  | LE LIMITS        | SS21   | SS22                      | SS23          | SS24                     | SS25                     | SS26  | SS27  | SS28                     | SS29                     | SS30                     | SS31  | SS32                      | SS33                     | SS34                      | SS35                | SS38                  |
| Electrical<br>Conductivity     | µS/cm |                  | 284.00 | 98.90                     | 338.00        | 91.00                    | 78.20                    | 98.60 | 93.40 | 80.90                    | 290.00                   | 60.75                    | 79.00 | 87.50                     | 72.10                    | 87.00                     | 52.31               | 263.00                |
| Ph                             |       | 5.5-8.5          | 8.27   | 6.54                      | 6.10          | 7.20                     | 7.55                     | 6.70  | 7.24  | 6.80                     | 6.20                     | 6.75                     | 7.54  | 6.97                      | 6.70                     | 7.68                      | 6.80                | 6.20                  |
| Total Alkalinity               | mg/Kg | NS               | 140.00 | 30.00                     | 50.00         | 48.80                    | 36.10                    | 60.00 | 19.07 | 23.80                    | 49.00                    | 50.44                    | 35.00 | 70.00                     | 18.00                    | 31.70                     | 36.00               | 110.00                |
| Ammonia                        | mg/Kg | NS               | 0.26   | 0.28                      | 86.50         | 0.18                     | 0.29                     | 0.48  | 0.49  | 1.03                     | 1.44                     | 1.20                     | 0.33  | 0.57                      | 1.63                     | 1.88                      | 1.77                | 0.31                  |
| Bulk density                   |       | NS               | 2.38   | 1.72                      | 1.62          | 1.89                     | 1.87                     | 1.00  | 0.73  | 0.66                     | 1.56                     | 1.34                     | 1.25  | 1.33                      | 1.05                     | 0.82                      | 1.57                | 1.33                  |
| Total Organic<br>carbon        | %     | 50.00            | 0.67   | 0.06                      | 0.63          | 1.27                     | 0.92                     | 1.43  | 2.31  | 1.67                     | 1.45                     | 3.10                     | 2.48  | 1.36                      | 1.17                     | 2.02                      | 2.10                | 0.66                  |
| Total Organic<br>Matter        | %     | NS               | 1.16   | 0.11                      | 1.45          | 2.79                     | 1.74                     | 2.30  | 2.73  | 1.83                     | 2.55                     | 2.01                     | 2.55  | 2.34                      | 4.90                     | 2.49                      | 1.91                | 1.26                  |
| Total Organic<br>Nitrogen      | mg/Kg |                  | 0.03   | 0.05                      | 0.04          | 0.01                     | 0.07                     | 0.05  | 0.09  | 0.06                     | 0.09                     | 0.07                     | 0.05  | 0.07                      | 0.11                     | 0.04                      | 0.09                | 0.02                  |
| Chloride                       | mg/Kg |                  | 22.49  | 12.50                     | 16.40         | 30.05                    | 18.70                    | 42.54 | 39.01 | 22.50                    | 23.63                    | 50.00                    | 33.21 | 39.99                     | 51.05                    | 49.20                     | 53.85               | 34.76                 |
| Nitrate                        | mg/Kg |                  | 10.88  | 10.48                     | 9.01          | 7.60                     | 9.50                     | 2.24  | 11.66 | 20.91                    | 10.90                    | 9.76                     | 23.40 | 17.28                     | 8.25                     | 16.20                     | 20.50               | 11.00                 |
| Phosphate                      | mg/Kg |                  | 4.13   | 1.07                      | 1.91          | 1.77                     | 1.49                     | 7.22  | 7.23  | 4.88                     | 2.60                     | 8.12                     | 6.30  | 4.06                      | 5.30                     | 6.90                      | 4.99                | 3.03                  |
| Sulphate                       | mg/Kg |                  | 3.49   | 17.06                     | 5.32          | 2.24                     | 5.43                     | 7.97  | 8.91  | 7.06                     | 1.75                     | 2.40                     | 2.31  | 5.47                      | 2.52                     | 5.88                      | 5.68                | 5.18                  |
| Nitrogen                       | mg/Kg | NS               | 11.18  | 10.85                     | 10.56         | 14.32                    | 16,1                     | 20.05 | 16.01 | 21.11                    | 15.18                    | 12.22                    | 14.10 | 18.05                     | 19.10                    | 20.03                     | 13.55               | 10.16                 |
| Phosphorus                     | mg/Kg | NS               | 4.13   | 1.07                      | 1.22          | 1.11                     | 1.71                     | 1.97  | 1.76  | 1.29                     | 2.10                     | 2.99                     | 2.40  | 1.33                      | 2.02                     | 2.04                      | 1.76                | 3.41                  |
| Potassium                      | mg/Kg | NS               | 7.30   | 2.03                      | 0.71          | 0.81                     | 0.76                     | 0.68  | 1.38  | 2.06                     | 4.00                     | 3.44                     | 3.10  | 0.67                      | 0.80                     | 0.91                      | 1.04                | 2.13                  |
| Iron                           | mg/Kg | 0.30             | 0.30   | 0.31                      | 0.17          | 0.15                     | 0.21                     | 0.24  | 0.23  | 0.19                     | 0.32                     | 0.48                     | 0.25  | 0.31                      | 0.10                     | 0.19                      | 0.15                | 0.36                  |
| Chromium                       | mg/Kg | NS               | 2.34   | 3.52                      | 5.33          | 3.93                     | 1.69                     | 4.20  | 1.87  | 1.93                     | 0.04                     | 2.77                     | 1.15  | 3.66                      | 2.09                     | 2.11                      | 2.16                | 2.20                  |
| Cadmium                        | mg/Kg | NS               | 0.04   | 0.01                      | 0.01          | 0.01                     | 0.03                     | 0.00  | 0.05  | 0.03                     | 0.01                     | 0.03                     | 0.02  | 0.05                      | 0.03                     | 0.03                      | 0.02                | 0.01                  |
| Aluminium                      | mg/Kg | NS               | 1.21   | 1.40                      | 1.67          | 1.68                     | 1.04                     | 1.02  | 0.88  | 1.72                     | 0.58                     | 1.10                     | 1.44  | 0.88                      | 1.72                     | 1.80                      | 1.91                | 2.31                  |
| Nickel                         | mg/Kg | NS               | 0.17   | 0.33                      | 0.22          | 0.27                     | 0.36                     | 0.66  | 0.68  | 0.57                     | 0.74                     | 0.29                     | 0.87  | 0.68                      | 0.57                     | 1.37                      | 0.91                | ND                    |
| Lead                           | mg/Kg |                  | 0.99   | 1.26                      | 1.38          | 1.91                     | 0.67                     | 0.08  | 0.98  | 0.41                     | 0.70                     | 0.01                     | 1.11  | 0.98                      | 0.41                     | 1.50                      | 0.51                | 1.05                  |
| Total Bacterial<br>count (TBC) | cfu/g | NS               | TNTC   | 3.26 X<br>10 <sup>4</sup> | 1.65 X<br>10⁵ | 2.2 X<br>10 <sup>4</sup> | 1.9 X<br>10⁵             | TNTC  | TNTC  | 1.95 X<br>10⁵            | 4 X 10º                  | 4 X 10º                  | TNTC  | TNTC                      | TNTC                     | 5.78 X<br>10 <sup>4</sup> | 2 X 10 <sup>0</sup> | 5 X 10º               |
| Total coliform<br>count (TCC)  | cfu/g | NS               | TNTC   | 2.86 X<br>10 <sup>4</sup> | TNTC          | TNTC                     | 2.4 X<br>10 <sup>4</sup> | 0.00  | TNTC  | 4.1 X<br>10 <sup>4</sup> | 1.9 X<br>10 <sup>1</sup> | 1.5 X<br>10 <sup>1</sup> | TNTC  | 4.32 X<br>10 <sup>4</sup> | 1.9 X<br>10 <sup>2</sup> | 4.22 X<br>10 <sup>4</sup> | TNTC                | 1.8 X 10 <sup>1</sup> |

| Bacillus Spp       | cfu/g | NS | 1.14 X<br>10⁴            | 5.0 X<br>10 <sup>3</sup> | 6.4 X<br>10 <sup>3</sup> | 1.0 X<br>101 | 1.5 X<br>10 <sup>4</sup> | 3.2 X<br>10 <sup>4</sup> | 8.4 X<br>10 <sup>3</sup>  | 1.0 X<br>10 <sup>4</sup> | 1.18 X<br>101            | 1.4 X<br>10 <sup>4</sup> | 1.27 X<br>10 <sup>4</sup> | 7.6 X 10 <sup>3</sup>     | 2.08 X<br>10 <sup>1</sup> | 5.8 X<br>10 <sup>3</sup> | 1.28 X<br>10 <sup>1</sup> | 1.18 X<br>10 <sup>1</sup> |
|--------------------|-------|----|--------------------------|--------------------------|--------------------------|--------------|--------------------------|--------------------------|---------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------|--------------------------|---------------------------|---------------------------|
| Pseudomonas<br>Spp | cfu/g | NS | 2.1 X<br>10 <sup>2</sup> | ND                       | 1.8 X<br>10 <sup>2</sup> | ND           | ND                       | 2 X 10 <sup>2</sup>      | 1.25 X<br>10 <sup>1</sup> | ND                       | 2.0 X<br>10 <sup>1</sup> | 1.3 X<br>10 <sup>2</sup> | 2.1 X<br>10 <sup>2</sup>  | 1.25 X<br>10 <sup>2</sup> | 2.3 X<br>10 <sup>1</sup>  | ND                       | 1.4 X 10 <sup>1</sup>     | 2.0 X 10 <sup>2</sup>     |

| (SS1 (FGGC Umuahia, Abia State), SS2 (FGC Nise, Anambra State), SS3 (FGC Ikot Ekpene, Awka-Ibom State), SS4 (FGC Azare, Bauchi State), SS5 (FGGC Bauchi, Bauchi State), SS6 (FGGC Omiringi, Bayelsa State), SS7 (FGGC Gboko, Benue State), SS8 (FGGC Mon        |
|---|
| Ogoja, Cross River), SS11 (FGGC Udi, Delta State), SS12 (FSTC Amuzu, Ebonyi State), SS13 (FGGC Ezzamgbo, Abakaliki Ebonyi State), SS14 (FGGC Benin City, Edo State), SS15 (FGGC, Enugu State), SS16 (FGGC Owerri, Imo State), SS17 (FSTC Hadejia, Jigawa State) |
| State), SS20 (FSTC Ganduje, Kano State), SS21 (FGC Kano, Kano State), SS22 (FGC Daura, Kastina State), SS23 (FGGC Gwandu, Kebbi State), SS24 (FGC Lagos, Lagos State), SS25 (FGC Keffi, Nasarawa State), SS26 (FGC New Bussa, Niger State), SS27 (FSTC Kuta,    |
| Sagamu, Ogun State), SS30 (FGC Ikirun, Osun State), SS31 (FSTC Igangan, Oyo State), SS32 (FGC Ibusa, Rivers State), SS33 (FGC Sokoto, Sokoto State), SS34 (FGGC Tambuwal Sokoto State), SS37 (FGGC Gusau, Zamfara State), SS38 (FGGC Abaji, FCT).)              |

| Parameters                              | Unit  | FMEnv<br>MAX<br>PERM<br>LIMITS | SS39                 | SS40                  | SS41                  | SS42                  | SS43                     | SS44                  | SS45                  | SS46                     | SS47                     | SS48                     | SS49                    | SS50                     | <b>SS</b> 51            | SS52                  | <b>SS</b> 53 | <b>SS</b> 54             | SS55                  | SS56                  | SS57                 | S S 58                |
|---|-------|--------------------------------|----------------------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|-----------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|-------------------------|-----------------------|--------------|--------------------------|-----------------------|-----------------------|----------------------|-----------------------|
| Electrical Conductivity                 | µS/cm |                                | 120                  | 114                   | 93.2                  | 421                   | 252                      | 268                   | 158.3                 | 163.4                    | 420                      | 590                      | 591                     | 16.15                    | 18.66                   | 114                   | 85           | 19.67                    | 53.78                 | 73.3                  | 220.28               | 143.42                |
| Ph                                      |       | 5.5-8.5                        | 7.3                  | 7.21                  | 6.1                   | 7.23                  | 5.79                     | 6                     | 5.99                  | 5.02                     | 6.5                      | 7.3                      | 6.91                    | 7.47                     | 6.39                    | 6.96                  | 7.1          | 4.23                     | 6.71                  | 5.37                  | 4.67                 | 5.2                   |
| Total Alkalinity                        | mg/Kg | NS                             | 36.24                | 41.24                 | 39.82                 | 44.56                 | 49.42                    | 41.9                  | 28                    | 33.24                    | 40.04                    | 40.09                    | 46.16                   | 37.14                    | 29.69                   | 35.16                 | 42.42        | 41.49                    | 38.27                 | 40.16                 | 42.42                | 39.18                 |
| Ammonia                                 | mg/Kg | NS                             | 0.25                 | 0.02                  | 0.09                  | 1.71                  | 1.8                      | 0.68                  | 1.31                  | 1.67                     | 1.59                     | 0.48                     | 0.48                    | 1.78                     | 0.03                    | 1.56                  | 1.43         | 0.6                      | 0.2                   | 0.38                  | 0.62                 | 0.87                  |
| Bulk density                            |       | NS                             | 1.02                 | 1.6                   | 1.24                  | 1.13                  | 1.23                     | 1.22                  | 1.26                  | 1.36                     | 1.28                     | 1.35                     | 1.31                    | 1.26                     | 1.48                    | 1.06                  | 1.42         | 2                        | 1.8                   | 2                     | 2.72                 | 2.93                  |
| Total Organic carbon                    | %     |                                | 0.42                 | 0.65                  | 9                     | 5.55                  | 6.76                     | 0.78                  | 5.97                  | 3.55                     | 4.57                     | 8.15                     | 4.93                    | 9.02                     | 10.79                   | 0.624                 | 3.32         | 0.8                      | 7.94                  | 0.858                 | 0.96                 | 1.131                 |
| Total Organic Matter                    | %     | NS                             | 1.13                 | 1.06                  | 1.14                  | 1.32                  | 1.89                     | 1.75                  | 1.19                  | 1.84                     | 1.21                     | 1.21                     | 1.58                    | 1.78                     | 1.15                    | 1.08                  | 1.2          | 1.92                     | 1.44                  | 1.48                  | 1.87                 | 1.41                  |
| Total Organic Nitrogen                  | mg/Kg |                                | 10.4                 | 11.6                  | 13.3                  | 6.84                  | 2.48                     | 1.92                  | 4.45                  | 6.24                     | 5.22                     | 6.24                     | 8.1                     | 10.2                     | 4.42                    | 3.52                  | 9.3          | 7.56                     | 11.34                 | 3.42                  | 12.42                | 9.3                   |
| Chloride                                | mg/Kg |                                | 2.2                  | 2.8                   | 11.3                  | 3.35                  | 2.41                     | 4.32                  | 2.19                  | 2.9                      | 0.17                     | 2.26                     | 0.99                    | 2.34                     | 3.1                     | 2.8                   | 2.4          | 5.7                      | 5.4                   | 5.82                  | 3.21                 | 4.32                  |
| Nitrate                                 | mg/Kg |                                | 0.13                 | 0.19                  | 1.06                  | 0.84                  | 1.15                     | 0.81                  | 0.25                  | 0.29                     | 4.5                      | 3.8                      | 4                       | 5.1                      | 0.04                    | 0.11                  | 0.03         | 0.05                     | 0.04                  | 30.25                 | 2.44                 | 3                     |
| Phosphate                               | mg/Kg |                                | 0.08                 | 0.07                  | 7.88                  | 0.03                  | 0.23                     | 0.05                  | 4.31                  | 4.43                     | 0.07                     | 0.09                     | 0.2                     | 0.23                     | 0.1                     | 0.05                  | 0.15         | 0.003                    | 0.001                 | 0.005                 | 0.15                 | 0.2                   |
| Sulphate                                | mg/Kg |                                | 5                    | 8                     | 7.14                  | 80.2                  | 200.1                    | 48.6                  | 4.776                 | 15.598                   | 2                        | 7                        | ND                      | 1                        | 9                       | 4                     | 4            | 2                        | 40.12                 | 40.12                 | 2.27                 | 1.51                  |
| Nitrogen                                | mg/Kg | NS                             | 10.4                 | 11.6                  | 13.3                  | 213.4                 | 151.64                   | 119.26                | 6.4                   | 9.2                      | 16.1                     | 13.53                    | 13.42                   | 15.55                    | 19.42                   | 22.42                 | 29.32        | 21.72                    | 26.48                 | 25.65                 | 24.21                | 21.23                 |
| Phosphorus                              | mg/Kg | NS                             | 0.02                 | 1.44                  | 0.13                  | 1.04                  | 1.44                     | 0.64                  | 1.32                  | 0.19                     | 0.04                     | 0.03                     | 0.05                    | 0.15                     | 0.12                    | 1.26                  | 0.01         | 1.42                     | 0.9                   | 0.05                  | 1.26                 | 1.75                  |
| Potassium                               | mg/Kg | NS                             | 2.2                  | 2.09                  | 6.25                  | 230.69                | 62.56                    | 359.72                | 0.17                  | 0.16                     | 1.85                     | 1.35                     | 1.3                     | 1.73                     | 2.2                     | 0.7                   | 2.3          | 54.68                    | 65.39                 | 58.34                 |                      |                       |
| Iron                                    | mg/Kg | 0.3                            | 133                  | 157.6                 | 114.26                | 359.3                 | 20.76                    | 18.03                 | 439.41                | 456.65                   | 333                      | 131                      | 80                      | 149.6                    | 141.13                  | 161.9                 | 149.6        | 558.3                    | 217.3                 | 516.16                | 7.93                 | 17.4                  |
| Chromium                                | mg/Kg | NS                             | ND                   | ND                    | ND                    | 0.46                  | 1.75                     | 1.56                  | 8.46                  | <0.001                   | 3.95                     | 6.92                     | 6.67                    | 1.24                     | 1.52                    | <0.0001               | <0.001       | <0.001                   | <0.001                | <0.0001               | 1.24                 | 3.26                  |
| Cadmium                                 | mg/Kg | NS                             | 0.02                 | 0.04                  | ND                    | 1.25                  | 6.07                     | 6.6                   | 0.535                 | 0.55                     | 0.06                     | 0.36                     | 0.64                    | 0.02                     | 0.021                   | 0.014                 | 0.002        | 0.8                      | <0.001                | 0.51                  | <0.001               | <0.001                |
| Aluminium                               | mg/Kg | NS                             | 1.36                 | 1.96                  | 0.09                  | 0.32                  | 2.05                     | 1.14                  | 1.43                  | 0.57                     | 1.89                     | 0.98                     | 1.15                    | 0.28                     | 1.41                    | 1.99                  | 0.74         | 0.49                     | 1.17                  | 0.92                  | 1.57                 | 1.16                  |
| Nickel                                  | mg/Kg | NS                             | 0.27                 | 0.3                   | 0.072                 | 0.57                  | 0.74                     | 0.063                 | 2.853                 | 0.01                     | 0.045                    | 0.082                    | 8.16                    | 0.017                    | 0.028                   | 0.013                 | 0.025        | <0.001                   | 0.22                  | <0.001                | 0.89                 | 0.37                  |
| Lead                                    | mg/Kg |                                | 0.3                  | 0.33                  | 0.041                 | 5.4                   | 2.47                     | 2.4                   | 1.36                  | 1.53                     | 0.084                    | 9.18                     | 12.82                   | ND                       | 0.31                    | 0.32                  | 0.46         | <0.001                   | 17.4                  | <0.001                | 0.68                 | 1.42                  |
| Total Heterotrophic<br>Bacteria (THB)   | cfu/g | NS                             | 1.10x10⁵             | 8.00x10 <sup>4</sup>  | 1.20x10 <sup>5</sup>  | 6.00x10 <sup>5</sup>  | 3.0 x<br>10⁴             | 1.09x 10 <sup>6</sup> | 1.96 x10 <sup>4</sup> | 2.31<br>x10 <sup>4</sup> | 1.8 x<br>10⁴             | 2.9 x<br>10⁵             | 8.4 x<br>10⁵            | 2.54 x<br>10⁵            | 2.16x<br>10⁵            | 6.9 x 10⁵             | 4.5 x<br>10⁵ | 6.6 x<br>10 <sup>5</sup> | 46 x 10⁵              | 30 x 10⁵              | 2.16x 10⁵            | 4.6 x 10 <sup>5</sup> |
| Total Heterotrophic<br>Fungi (THF)      | cfu/g | NS                             | 5.7 x10 <sup>2</sup> | ND                    | 2.9 x10 <sup>2</sup>  | ND                    | 4.4<br>x10 <sup>2</sup>  | 1.2 x10 <sup>2</sup>  | 1.46 x10 <sup>2</sup> | 1.49<br>x10 <sup>2</sup> | 4.8<br>x10 <sup>2</sup>  | 3.5<br>x10 <sup>2</sup>  | 2.6<br>x10 <sup>2</sup> | 1.5<br>x10 <sup>2</sup>  | 4.5<br>x10 <sup>2</sup> | 4.00x10 <sup>3</sup>  | 1.0 x<br>10⁴ | 4.8 x<br>10⁵             | 1.0 x 10⁴             | 9.0 x 10⁵             | 4.0x 10⁴             | 3.2x 10⁵              |
| Hydrocarbon Utilizing<br>Bacteria (HUB) | cfu/g | NS                             | 4.00x10 <sup>3</sup> | 1.82 x10 <sup>6</sup> | 1.08 x10 <sup>6</sup> | 1.14 x10 <sup>6</sup> | 1.35<br>x10 <sup>6</sup> | 2.55 x10 <sup>6</sup> | 0.85 x10 <sup>2</sup> | ND                       | 1.96<br>x10 <sup>4</sup> | 1.60<br>x10⁵             | ND                      | 2.08<br>x10 <sup>6</sup> | 1.95<br>x10⁴            | 2.24 x10⁵             | 1.55<br>x104 | 2.35<br>x10 <sup>6</sup> | 2.33 x10 <sup>2</sup> | 2.05 x10 <sup>4</sup> | ND                   | 1.58x10 <sup>6</sup>  |
| Hydrocarbon Utilizing<br>Fungi (HUF)    | cfu/g | NS                             | 9.00x10 <sup>3</sup> | ND                    | 1.37 x10 <sup>2</sup> | 5.3 x10 <sup>1</sup>  | 7.7<br>x10 <sup>1</sup>  | ND                    | 0.30 x10 <sup>2</sup> | 0.32<br>x10 <sup>2</sup> | ND                       | 0.92<br>x10 <sup>2</sup> | 1.5<br>x10²             | 3.0<br>x10 <sup>2</sup>  | 2.6<br>x10 <sup>1</sup> | 1.01 x10 <sup>2</sup> | ND           | 2.8<br>x10 <sup>2</sup>  | 3.2 x10 <sup>2</sup>  | 6.2 x10 <sup>1</sup>  | 4.2 x10 <sup>3</sup> | ND                    |

5539 (FGC Ikole-Ekiti, Ekiti State), 5540 (FGGC Efon-Alaye, Ekiti State), 5541 (FSTC Usi-Ekiti, Ekiti State), 5542 (Kings College, Lagos state); 5543 (Queens College, Lagos state); 5544 (FSTC Yaba, Lagos state); 5545 (FGC Odogbolu, Ogun state); 5546 (FSTC Ijebu Imushin, Ogun state); 5547 (FGC Idoani, Ondo state); 5548 (FGGC Akure, Ondo state); 5549 (FSTC Ikare-Akoko, Ondo state); 5550 (FGGC Ipetumodu, Osun state); 5551 (FSTC Ilesa, Osun state); FGC 5552 (Ogbomoso, Oyo state) 5553 (FGGC Oyo, Oyo state), 5555 (FSTC Oguta, Imo state), 5556 (FSTC, Umuaka, Imo state), 55 57 (FGC Ohiafia, Abia state) 55 8 (FSTC Ohanso, Abia State)

nguno, Borno State), SS9 (FGGC Calabar, Cross River State), SS10 (FSC te), SS18 (FGGC Kiyawa, Jigawa State), SS19 (FGGC Kaduna, Kaduna , Niger State), SS28 (FGC Minna, Niger State), SS29 (FGGC

| Parameters                              | Unit  | FMEnv<br>MAX<br>PERM<br>LIMITS | SS59                  | SS60                   | SS61                   | SS62                   | SS63                  | SS64                  | SS65                 | SS66                   | SS67                   | SS68                     | SS69                   | SS70                 | SS71                 | SS72                   | SS73                 | SS74      | SS75                 | SS76                  | SS77                  | SS78                 |
|---|-------|--------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|----------------------|------------------------|------------------------|--------------------------|------------------------|----------------------|----------------------|------------------------|----------------------|-----------|----------------------|-----------------------|-----------------------|----------------------|
| Electrical Conductivity                 | μS/cm |                                | 122                   | 120                    | 115                    | 124                    | 126                   | 120                   | 198                  | 182                    | 123                    | 295                      | 241                    | 90                   | 142                  | 156                    | 332                  | 701       | 591                  | 210                   | 192.6                 | 56.5                 |
| Ph                                      |       | 5.5-8.5                        | 7.24                  | 6.72                   | 7.51                   | 6.4                    | 6.1                   | 5.22                  | 6.78                 | 7.02                   | 4.98                   | 4.63                     | 7.96                   | 5.75                 | 5.77                 | 6.32                   | 5.3                  | 5.25      | 5.72                 | 7.3                   | 6.9                   | 7.8                  |
| Total Alkalinity                        | mg/Kg | NS                             | 34.25                 | 26.52                  | 33.53                  | 35.74                  | 26.48                 | 39.52                 | 28.63                | 38.19                  | 31.28                  | 38.25                    | 27.44                  | 29.35                | 31.13                | 38.01                  | 37.28                | 28.19     | 37.55                | 36.41                 | 32.25                 | 40.52                |
| Ammonia                                 | mg/Kg | NS                             | 0.23                  | 0.18                   | 1.07                   | 1.91                   | 1.87                  | 0.69                  | 1.15                 | 1.23                   | 1.01                   | 1.48                     | 1.84                   | 1.19                 | 0.2                  | 1.36                   | 1.08                 | 1.67      | 0.53                 | 0.35                  | 1.62                  | 1.96                 |
| Bulk density                            |       | NS                             | 0.21                  | 1.4                    | 0.7                    | 1.1                    | 1.4                   | 1.2                   | 1.5                  | 1.3                    | 0.22                   | 0.18                     | 1.4                    | 1.3                  | 1.223                | 1.146                  | 0.5                  | 0.52      | 0.41                 | 1.6                   | 1.101                 | 1.1                  |
| Total Organic carbon                    | %     |                                | 1.22                  | 1.27                   | 1.32                   | 1.24                   | 1.31                  | 0.63                  | 0.656                | 0.643                  | 0.2                    | 0.14                     | 1.23                   | 1.27                 | 0.24                 | 1.02                   | 2.36                 | 2.43      | 1.91                 | 1.68                  | 14.1                  | 10.42                |
| Total Organic Matter                    | %     | NS                             | 0.77                  | 1.84                   | 1.02                   | 2.13                   | 0.37                  | 2.57                  | 2.96                 | 2.04                   | 0.94                   | 1.87                     | 0.58                   | 0.93                 | 1.12                 | 1.74                   | 2.9                  | 2.36      | 1.74                 | 1.18                  | 2.59                  | 5.1                  |
| Total Organic Nitrogen                  | mg/Kg |                                | 0.1                   | 0.19                   | 0.14                   | 0.31                   | 0.1                   | 0.18                  | 0.023                | 0.16                   | 0.059                  | 0.295                    | 0.34                   | 0.17                 | 0.35                 | 0.28                   | 0.02                 | 0.072     | 0.189                | 0.14                  | 7.81                  | 0.05                 |
| Chloride                                | mg/Kg |                                | 2.7                   | 3.7                    | 3.2                    | 51.77                  | 24.84                 | 32.55                 | 2.6                  | 3.5                    | 43.19                  | 46.74                    | 34.76                  | 18.74                | 20                   | 17.49                  | 16.33                | 500       | 350                  | 0.025                 | 3.3                   | 100                  |
| Nitrate                                 | mg/Kg |                                | 0.08                  | 0.12                   | 0.17                   | 8.54                   | 14.1                  | 9.23                  | 0.05                 | 0.16                   | 0.048                  | 0.18                     | 0.16                   | 3.3                  | 44.6                 | 39.4                   | 0.25                 | 4.63      | 8.47                 | 0.131                 | 6.01                  | 76.6                 |
| Phosphate                               | mg/Kg |                                | 0.09                  | 0.06                   | 0.08                   | 0.02                   | 1.1                   | 0.09                  | 4.26                 | 2.37                   | 1.16                   | 4.52                     | 30.7                   | 40                   | 8.4                  | 9.26                   | 7.39                 | 5.43      | 4.74                 | 9.24                  | 0.93                  | 3.37                 |
| Sulphate                                | mg/Kg |                                | 3                     | 5                      | 76.5                   | 43.8                   | 41.9                  | 1.51                  | 2                    | 10.24                  | 82.5                   | 9.029                    | 45.1                   | 19.24                | 40                   | 47                     | 5.83                 | 17.5      | 18.6                 | 0.101                 | 49.7                  | 74                   |
| Nitrogen                                | mg/Kg | NS                             | 14.49                 | 22.49                  | 9.72                   | 25.6                   | 13                    | 18.48                 | 28.04                | 15.78                  | 12.84                  | 12.9                     | 20.03                  | 26.15                | 15.27                | 26.88                  | 10.08                | 6.55      | 18.62                | 15.39                 | 0.52                  | 0.65                 |
| Phosphorus                              | mg/Kg | NS                             | 6.31                  | 5.89                   | 8.36                   | 17.17                  | 11.56                 | 9.82                  | 17.26                | 10.3                   | 18.2                   | 13                       | 19.6                   | 5.1                  | 2.7                  | 12.94                  | 1.49                 | 17.85     | 12.36                | 0.34                  | 2.72                  | 12.24                |
| Potassium                               | mg/Kg | NS                             | 1.6                   | 2.4                    | 2.3                    | 1.4                    | 2.6                   | 2.2                   | 2.4                  | 0.274                  | 6.383                  | 10.075                   | 0.23                   | 11.31                | 7.24                 | 4.26                   | 15.21                | 0.12      | 68.5                 | 5.221                 | 0.525                 | 2.35                 |
| Iron                                    | mg/Kg | 0.3                            | 31.5                  | 53.1                   | 1511.9                 | 62.23                  | 59.63                 | 3423                  | 252                  | 625                    | 1069                   | 878                      | 676.98                 | 628                  | 256                  | 524                    | 166.63               | 74.5      | 80.4                 | 13.536                | 41                    | 3                    |
| Chromium                                | mg/Kg | NS                             | 2.45                  | 1.36                   | 3.27                   | < 0.001                | <0.001                | <0.001                | 1.45                 | 3.57                   | 5.087                  | 2.237                    | <0.001                 | < 0.001              | < 0.001              | <0.001                 | 0.03                 | 1.9       | 1.77                 | 0.06                  | 0.525                 | <0.001               |
| Cadmium                                 | mg/Kg | NS                             | 0.02                  | 0.04                   | 0.01                   | 0.17                   | 0.13                  | 1.72                  | 1.1                  | < 0.001                | 5.7                    | 7.9                      | <0.001                 | < 0.001              | 0.79                 | 0.96                   | < 0.001              | 1.8       | 1.4                  | 0.049                 | <0.01                 | 4                    |
| Aluminium                               | mg/Kg | NS                             | 0.04                  | 0.08                   | 0.19                   | 0.1                    | 0.3                   | 0.4                   | 0.46                 | 0.48                   | 0.21                   | 0.13                     | 0.29                   | 0.17                 | 0.3                  | 0.02                   | 0.39                 | 0.46      | 0.19                 | 0.26                  | 0.21                  | 0.34                 |
| Nickel                                  | mg/Kg | NS                             | 0.33                  | 0.29                   | 3.1                    | 44.02                  | 34.06                 | <0.001                | <0.001               | < 0.001                | 15.1                   | 9.3                      | 4.53                   | < 0.001              | 8.4                  | 12.6                   | < 0.001              | 1.7       | 1.24                 | 0.079                 | <0.001                | < 0.01               |
| Lead                                    | mg/Kg |                                | 0.24                  | 0.31                   | 21.6                   | <0.01                  | 0.2                   | <0.001                | 0.257                | 0.21                   | 10.2                   | 9.9                      | <0.001                 | < 0.001              | < 0.001              | < 0.001                | < 0.001              | 1.2       | 1.51                 | 0.031                 | 0.003                 | <0.001               |
| Total Heterotrophic<br>Bacteria (THB)   | cfu/g | NS                             | 1.40 x10 <sup>7</sup> | 2.38 x10 <sup>7</sup>  | 1.72 x10 <sup>7</sup>  | 1.17x10 <sup>4</sup>   | 3.81x10 <sup>4</sup>  | 1.96x10 <sup>4</sup>  | ND                   | 0.88 X 10 <sup>4</sup> | $0.62 \text{ X } 10^4$ | $0.55  \mathrm{X}  10^4$ | 0.90 X 10 <sup>4</sup> | 1.78X 10 4           | 2.31x10 <sup>4</sup> | $1.29 \mathrm{x} 10^4$ | 4.05×105             | 1.60×105  | 2.15×106             | $2.34 \times 10^8$    | 1.89x10 <sup>4</sup>  | 1.79x10 <sup>4</sup> |
| Total Heterotrophic<br>Fungi (THF)      | cfu/g | NS                             | 7.0 x 10 <sup>4</sup> | 4.2 x 10 <sup>5</sup>  | ND                     | 0.69x10 <sup>3</sup>   | 0.26x10 <sup>3</sup>  | ND                    | ND                   | 0.25 X 10 <sup>2</sup> | 0.33 X 10 <sup>2</sup> | 0.50 X 10 <sup>2</sup>   | 0.68 X 10 <sup>2</sup> | 1.21 X104            | ND                   | ND                     | <1.00×101            | <1.00×101 | <1.00×101            | 2.40 x10 <sup>6</sup> | 2.30 x10 <sup>6</sup> | 7.9 x10 <sup>5</sup> |
| Hydrocarbon Utilizing<br>Bacteria (HUB) | cfu/g | NS                             | 0.78 x10 <sup>5</sup> | ND                     | 1.09x10 <sup>2</sup>   | 0.63 x10 <sup>5</sup>  | 0.25 x10 <sup>5</sup> | 0.38 x10 <sup>5</sup> | 0.91x10 <sup>2</sup> | $3.22 \times 10^4$     | $3.00 \times 10^4$     | $3.75  \mathrm{X}  10^4$ | $3.00 \times 10^4$     | 1.78x10 <sup>2</sup> | 0.92x10 <sup>2</sup> | ND                     | 0.12x10 <sup>2</sup> | ND        | 0.85x10 <sup>2</sup> | $4.04 \ge 10^3$       | ND                    | 0.08x10 <sup>2</sup> |
| Hydrocarbon Utilizing<br>Fungi (HUF     | cfu/g | NS                             | $0.42 \ge 10^3$       | 0.10 x 10 <sup>3</sup> | 0.36 x 10 <sup>3</sup> | 0.04 x 10 <sup>3</sup> | ND                    | ND                    | 0.09x10 <sup>2</sup> | 1.22 X 10 <sup>2</sup> | 0.98 X 10 <sup>2</sup> | 1.19 X 10 <sup>2</sup>   | 1.14 X 10 <sup>2</sup> | ND                   | ND                   | 0.58x10 <sup>2</sup>   | 3.00×104             | 1.00×104  | 2.00×104             | 8.00 x10 <sup>4</sup> | 0.30x10 <sup>2</sup>  | 0.32x10 <sup>2</sup> |

St 59 (FGGC Onitsha, Anambra State), SS 60 (FSTC Awka, Anambra State), SS 61 (FGC Okposi, Ebonyi State), SS 62 (FGC, Enugu, Enugu State) SS 63 (FGC Lejja, Enugu State) SS 64 (FGC Ikot-Ekpene, Akwa Ibom state) SS 65 (FGGC Ikot-Obio-Itong, Akwa Ibom state) SS 66 (FSTC Uyo, Akwa Ibom state) SS 67 (FGC Odi, Bayelsa State) SS 58 68 (FSTC Tungho, Bayelsa State) SS 69 (FGC Ikot-Biolo, Edo State) SS 72 (FSTC Uromi, Edo State) SS 73 (FGC Port-Harcourt, Rivers State) SS 74 (FGGC Abuloma, Rivers State) SS 75 (FSTC Ahoada, Rivers State), SS 76 (FGC Ganye, Adamawa State) SS 77 (FGGC Yola, Adamawa State) SS 78 (FSTC Michika, Adamawa State)

| Parameters                              | Unit  | FMEnv<br>MAX<br>PERM<br>LIMITS | SS79                  | SS80                  | SS81                  | S S 8 2               | S S 8 3               | SS84                   | SS85                   | S S 8 6                | S S 8 8                | S S 8 9                | SS90                  | SS91                  | S S 9 2               | SS93                  | SS94                   | SS95                   | S S 9 6                | SS97                      | S S 9 8                   |
|---|-------|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|---------------------------|---------------------------|
| Electrical Conductivity                 | μS/cm |                                | 148.95                | 184.6                 | 110                   | 142                   | 151                   | 167                    | 125                    | 169.6                  | 165.6                  | 176.22                 | 113                   | 33.3                  | 101                   | 109                   | 139                    | 110                    | 190                    | 46.6                      | 63.9                      |
| Ph                                      |       | 5.5-8.5                        | 6.7                   | 6.1                   | 6.4                   | 6.08                  | 7.33                  | 7.2                    | 6.4                    | 5.6                    | 6.24                   | 5.28                   | 5.4                   | 5.26                  | 5.01                  | 6.93                  | 7.3                    | 8.06                   | 7.3                    | 6.4                       | 6.27                      |
| Total Alkalinity                        | mg/Kg | NS                             | 27.01                 | 25.26                 | 33.53                 | 33.52                 | 27.12                 | 25.01                  | 40.24                  | 28.41                  | 39.54                  | 40.61                  | 38.06                 | 33.02                 | 38.32                 | 40.21                 | 34.45                  | 25.14                  | 35.16                  | 40.13                     | 36.25                     |
| Ammonia                                 | mg/Kg | NS                             | 0.83                  | 1.9                   | 1.77                  | 0.27                  | 1.36                  | 1.33                   | 1.96                   | 0.84                   | 1.03                   | 1.12                   | 0.89                  | 1.27                  | 0.54                  | 0.96                  | 0.39                   | 0.75                   | 1.05                   | 1.7                       | 1.23                      |
| Bulk density                            |       | NS                             | 1.1035                | 1.146                 | 1.27                  | 1.21                  | 1.13                  | 1.15                   | 1.24                   | 1.12                   | 1.01                   | 1.08                   | 1.15                  | 1.08                  | 0.24                  | 1.05                  | 1.13                   | 1.07                   | 1.23                   | 0.55                      | 1.46                      |
| Total Organic carbon                    | %     |                                | 25                    | 18.3                  | 13.5                  | 9.34                  | 6.35                  | 0.86                   | 0.78                   | 8.29                   | 11.23                  | 2.27                   | 1.37                  | 0.86                  | 14.31                 | 7.32                  | 5.24                   | 1.28                   | 1.98                   | 0.12                      | 0.35                      |
| Total Organic Matter                    | %     | NS                             | 0.63                  | 1.69                  | 0.61                  | 1.72                  | 1.16                  | 0.69                   | 1.68                   | 0.93                   | 2.34                   | 2.67                   | 1.51                  | 2.82                  | 2.62                  | 0.32                  | 0.56                   | 0.19                   | 2.16                   | 0.2                       | 2.45                      |
| Total Organic Nitrogen                  | mg/Kg |                                | 2.63                  | 0.37                  | 6.53                  | 3.62                  | 1.57                  | 0.16                   | 7.59                   | 4.26                   | 3.02                   | 5.4                    | 0.16                  | 1.11                  | 6.29                  | 4.47                  | 0.13                   | 6.93                   | 2.45                   | 6.17                      | 4.6                       |
| Chloride                                | mg/Kg |                                | 6.9                   | 35                    | 44.5                  | 30.45                 | 25.35                 | 29.35                  | 39.32                  | 40.7                   | 51.7                   | 19.993                 | 28.204                | 20.991                | 19.35                 | 48.2                  | 6.24                   | 3.2                    | 1.3                    | 10                        | 49.35                     |
| Nitrate                                 | mg/Kg |                                | 2.3                   | 40                    | 33.4                  | 0.02                  | 0.02                  | 0.007                  | 0.006                  | 2.352                  | 3.52                   | 0.99                   | 0.102                 | 1.08                  | 3.3                   | 7.5                   | 1.3                    | 0.17                   | 0.08                   | 0.73                      | 0.49                      |
| Phosphate                               | mg/Kg |                                | 2.42                  | 3.23                  | 2.52                  | 0.63                  | 2.12                  | 3.65                   | 3.57                   | 3.39                   | 1.35                   | 0.3                    | 0.5                   | 0.6                   | 0.84                  | 1.04                  | 1.05                   | 0.11                   | 0.09                   | 5                         | 10.7                      |
| Sulphate                                | 0.03  |                                | 30                    | 40.2                  | 45.12                 | 0.06                  | 0.12                  | 0.11                   | 24.2                   | 62.532                 | 7.26                   | 40.6                   | 50.2                  | 18.95                 | 4                     | 1                     | 2                      | 5                      | 3                      | 63.2                      | 93.9                      |
| Nitrogen                                | mg/Kg | NS                             | 0.42                  | 0.05                  | 0.15                  | 0.39                  | 0.06                  | 0.09                   | 0.34                   | 0.27                   | 0.07                   | 0.19                   | 0.12                  | 1.01                  | 0.2                   | 0.15                  | 0.07                   | 0,24                   | 0.29                   | 0.41                      | 0.33                      |
| Phosphorus                              | mg/Kg | NS                             | 2                     | 0.745                 | 0.45                  | 2.04                  | 0.25                  | 0.14                   | 0.19                   | 3.162                  | 1.952                  | 3.25                   | 1.39                  | 2.48                  | 1.95                  | 2.23                  | 3.62                   | 0.91                   | 2.12                   | 59.2                      | 112                       |
| Potassium                               | mg/Kg | NS                             | 0.03                  | 4.24                  | 3.2                   | 2.83                  | 1.25                  | 1.19                   | 0.98                   | 1.25                   | 3.3                    | 3.25                   | 4.114                 | 3.831                 | 1.39                  | 0.63                  | 3.19                   | 56.3                   | 67.2                   | 1.34                      | 2.47                      |
| Iron                                    | mg/Kg | 0.3                            | 32                    | 55.35                 | 67.4                  | 167.01                | 101.23                | 42.6                   | 20.8                   | 3.5011                 | 4.7981                 | 224.112                | 197.222               | 203.227               | 481                   | 149                   | 390                    | 87                     | 76                     | 0.03                      | 0.45                      |
| Chromium                                | mg/Kg | NS                             | 0.4                   | 0.4                   | 0.54                  | <0.001                | <0.001                | 0.006                  | 0.009                  | 1.033                  | 1.2211                 | 0.795                  | <0.01                 | <0.01                 | 0.03                  | 0.02                  | 0.18                   | <0.001                 | <0.001                 | 0.305                     | 0.043                     |
| Cadmium                                 | mg/Kg | NS                             | <0.01                 | <0.01                 | <0.01                 | <0.001                | <0.001                | 0.003                  | 0.01                   | <0.001                 | <0.001                 | <0.01                  | <0.01                 | <0.01                 | <0.001                | <0.001                | <0.001                 | 0.04                   | 0.23                   | 1.06                      | 0.78                      |
| Aluminium                               | mg/Kg | NS                             | 0.43                  | 0.47                  | 0.04                  | 0.38                  | 0.15                  | 0.14                   | 0.4                    | 0.17                   | 0.13                   | 0.15                   | 0.35                  | 0.04                  | 0.17                  | 0.28                  | 0.14                   | 0.18                   | 0.13                   | 0.03                      | 0.02                      |
| Nickel                                  | mg/Kg | NS                             | <0.001                | 0.725                 | 0.32                  | 0.12                  | 0.1                   | 0.008                  | 0.011                  | 1.5312                 | 0.0564                 | <0.01                  | <0.01                 | <0.01                 | <0.001                | <0.001                | <0.001                 | 0.23                   | 0.43                   | 0.02                      | 0.016                     |
| Lead                                    | mg/Kg |                                | 0.22                  | 0.24                  | 0.45                  | 0.24                  | 0.3                   | 0.019                  | 0.626                  | <0.001                 | <0.001                 | 0.097                  | <0.01                 | 0.102                 | <0.001                | <0.001                | <0.001                 | <0.001                 | <0.001                 | 0.003                     | 0.001                     |
| Total Heterotrophic<br>Bacteria (THB)   | cfu/g | NS                             |                       | 32 x10 <sup>4</sup>   | 25 x104               | ND                    | 18 x10 <sup>4</sup>   | 1.76 x 10 <sup>8</sup> | 1.09 x 10 <sup>8</sup> | 1.90 x 10 <sup>7</sup> | 0.41 x 10 <sup>7</sup> | 0.10 x 10 <sup>7</sup> | 24 x10 <sup>4</sup>   | 21 x104               | 1.88 x10 <sup>6</sup> | 1.84 x10 <sup>6</sup> | 2.86x10 <sup>6</sup>   | 23 x10 <sup>4</sup>    | 18 x104                | 32 x10 <sup>4</sup>       | 12 x10 <sup>4</sup>       |
| Total Heterotrophic<br>Fungi (THF)      | cfu/g | NS                             | 2.01 x10 <sup>4</sup> | 1.07 x10 <sup>6</sup> | 2.4 x10 <sup>6</sup>  | 2.0 x10 <sup>6</sup>  | 1.37 x10 <sup>6</sup> | 2.59 x10 <sup>4</sup>  | 1.65 x10 <sup>4</sup>  | 1.73 x 10 <sup>3</sup> | 0.27 x 10 <sup>3</sup> | 0.02 x 10 <sup>3</sup> | 2.30 x10 <sup>6</sup> | 1.28 x10 <sup>6</sup> | 5.9 x10⁵              | 4.7 x10 <sup>5</sup>  | 3.9 x10⁵               | 2.2 x10 <sup>5</sup>   | 8.2 x10 <sup>5</sup>   | 1.4 x10 <sup>5</sup>      | 1.20 x10 <sup>5</sup>     |
| Hydrocarbon Utilizing<br>Bacteria (HUB) | cfu/g | NS                             |                       | 3.6 x10 <sup>4</sup>  | ND                    | ND                    | 0.11 x10 <sup>4</sup> | 5 x 10 <sup>3</sup>    | 10 x 10 <sup>3</sup>   | 2.84 x 10⁵             | 0.96 x 10⁵             | 0.41 x 10⁵             | 2.17 x10 <sup>4</sup> | 1.55 x10 <sup>4</sup> | ND                    | ND                    | 1.34 x 10 <sup>2</sup> | 1.19 x 10 <sup>2</sup> | 1.32 x 10 <sup>2</sup> | 1.36 x<br>10 <sup>2</sup> | 1.18 x<br>10 <sup>2</sup> |
| Hydrocarbon Utilizing<br>Fungi (HUF)    | cfu/g | NS                             | ND                    | 7.0 × 10 <sup>4</sup> | 4.0 × 10 <sup>4</sup> | 6.0 × 10 <sup>4</sup> | 2.0 × 10 <sup>4</sup> | 1.00 x 10 <sup>3</sup> | ND                     | 2.53 x 10 <sup>1</sup> | 0.74 x 10 <sup>1</sup> | 0.21 x 10 <sup>1</sup> | 5.0 × 10 <sup>4</sup> | 3.0 × 10 <sup>4</sup> | ND                    | 6.0 × 10 <sup>4</sup> | 3.0 × 10 <sup>4</sup>  | 5.0 × 10 <sup>4</sup>  | ND                     | 2.0 × 10 <sup>4</sup>     | 2.00 x<br>10 <sup>3</sup> |

**SS 79** (FSTC Misau, Bauchi State) **SS 80** (FGC Maidururi, Borno State) **SS 81** (FSTC Lassa, Borno State) **SS 82** (FGC Biliri, Gombe State) **SS 83** (FGGC Bajoga, Gombe State) **SS 84** (FGGC Potiskum, Yobe State) **SS 85** (FSTC, Gashua, Yobe State) **SS 86** (FSTC, Jalingo, Taraba State) **SS 88** (FGGC, Jalingo, Taraba State) **SS 89** (FGC Biliri, Gombe State) **SS 89** (FGC Bajoga, Gombe State) **SS 84** (FGGC Potiskum, Yobe State) **SS 86** (FSTC, Gashua, Yobe State) **SS 86** (FSTC, Jalingo, Taraba State) **SS 88** (FGGC, Jalingo, Taraba State) **SS 98** (FGC Bajoga, Gombe State) **SS 99** (FGC Ilorin, Kwara State) **SS 96** (FGC Omu-Aran, Kwara State) **SS 97** (FGC Kwali, FCT) **SS 98** (FGGC Bwari, FCT)

| Parameters                 | Unit  | FMEnv<br>MAX<br>PERM<br>LIMITS | SS99  | SS100 | SS101 | SS102 | SS103 | SS104  | SS105  | SS106  | SS107  | SS108 | SS109 | SS110 | SS111 | SS113 | SS114 | SS115 | SS118 | SS119 |
|----------------------------|-------|--------------------------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Electrical<br>Conductivity | μS/cm |                                | 86.7  | 58.6  | 43.1  | 123.7 | 193   | 131.31 | 194.13 | 156.21 | 135.32 | 94    | 39.6  | 29.6  | 250   | 24.4  | 120   |       | 128   | 189   |
| Ph                         |       | 5.5-8.5                        | 6.3   | 5.97  | 7.05  | 6.84  | 6.18  | 6.63   | 7.2    | 6.34   | 5.94   | 6.3   | 5.3   | 4.5   | 7.5   | 5.6   | 4.4   | 5.1   | 6.6   | 6.07  |
| Total Alkalinity           | mg/Kg | NS                             | 30.42 | 27.19 | 32.15 | 38.34 | 25.24 | 36.42  | 35.66  | 30.21  | 40.55  | 39.42 | 27.32 | 26.01 | 32.07 | 27.15 | 29.32 | 27.11 | 36.01 | 29.42 |
| Ammonia                    | mg/Kg | NS                             | 1.61  | 0.26  | 183   | 0.54  | 0.71  | 0.48   | 1.21   | 0.58   | 1.73   | 1.6   | 1.5   | 1.86  | 1.15  | 1.33  | 0.84  | 0.17  | 0.012 | 0.23  |

| Bulk density                               |       | NS  | 0.56                  | 1.15                  | 1.35                  | 1.39                | 0.42                  | 0.74                  | 0.68                  | 0.16                  | 0.51                 | 1.02                  | 1.034                 | 1.06                  | 1.19                  | 1.06                  | 1.43                  | 1.39                  | 1.21                  | 0.2                   |
|--|-------|-----|-----------------------|-----------------------|-----------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Total Organic<br>carbon                    | %     |     | 2.46                  | 1.35                  | 2.51                  | 0.13                | 3.6                   | 4.26                  | 2.45                  | 3.35                  | 2.94                 | 1.35                  | 4.1                   | 2.71                  | 2.23                  | 1.296                 | 1.21                  | 1.695                 | 0.99                  | 0.08                  |
| Total Organic<br>Matter                    | %     | NS  | 0.2                   | 3.21                  | 2.05                  | 2.06                | 0.52                  | 2.94                  | 3.01                  | 0.95                  | 2.01                 | 0.42                  | 1.19                  | 1.49                  | 3.84                  | 2.52                  | 0.93                  | 1.63                  | 2,09                  | 1.14                  |
| Total Organic<br>Nitrogen                  | mg/Kg |     | 1.14                  | 5.35                  | 1.62                  | 1.35                | 5.31                  | 5.4                   | 1.97                  | 6.97                  | 0.83                 | 6.17                  | 4.6                   | 0.02                  | 0.21                  | 3.2                   | 1.25                  | 3.78                  | 0.08                  | 0.103                 |
| Chloride                                   | mg/Kg |     | 26.3                  | 22.62                 | 9.05                  | 10                  | 19.88                 | 21.27                 | 8.36                  | 12.56                 | 18.24                | 15.35                 | 23                    | 15                    | 22.31                 | 5.34                  | 7.46                  | 23.21                 | 10.24                 | 45.83                 |
| Nitrate                                    | mg/Kg |     | 0.38                  | 0.05                  | 0.13                  | 0.73                | 0.742                 | 0.925                 | 0.23                  | 0.92                  | 1.35                 | 2.12                  | 8.1                   | 3.4                   | 8.46                  | 3.57                  | 0.12                  | 0.09                  | 0.011                 | 0.066                 |
| Phosphate                                  | mg/Kg |     | 9.8                   | 15.6                  | 10.1                  | 5                   | 1.025                 | 1.095                 | 6.35                  | 1.94                  | 8.32                 | 2.35                  | 0.9                   | 0.7                   | 4.21                  | 3.65                  | 7.31                  | 15.21                 | 3.6                   | 2.9                   |
| Sulphate                                   | mg/Kg |     | 69.3                  | 76.5                  | 44.1                  | 63.2                | 30.94                 | 35.3                  | 28.31                 | 33.31                 | 19.12                | 26.21                 | 7.2                   | 5.2                   | 10.24                 | 4.68                  | 2                     | 0.24                  | 0.13                  | 7.521                 |
| Nitrogen                                   | mg/Kg | NS  | 1.5                   | 1.17                  | 0.41                  | 0.48                | 1.04                  | 0.41                  | 1.34                  | 1.19                  | 0.19                 | 1.21                  | 0.42                  | 1.11                  | 0.31                  | 0.35                  | 0.58                  | 0.69                  | 1.21                  | 1.52                  |
| Phosphorus                                 | mg/Kg | NS  | 208                   | 104.2                 | 46.8                  | 59.8                | 8.32                  | 15.23                 | 19.35                 | 11.23                 | 23.51                | 32.12                 | 31.21                 | 10.24                 | 9.68                  | 17.24                 | 22.13                 | 34.12                 | 0.61                  | 26.32                 |
| Potassium                                  | mg/Kg | NS  | 3.02                  | 1.41                  | 2.41                  | 1.77                | 3.295                 | 3.733                 | 0.27                  | 0.1                   | 0.2                  | 0.24                  | 1.15                  | 0.92                  | 0.23                  | 3.14                  | 2.95                  | 3.08                  | 3.19                  | 14.452                |
| Iron                                       | mg/Kg | 0.3 | 0.08                  | 0.02                  | 0.3                   | 0.03                | 62.01                 | 89.6                  | 20.61                 | 19.13                 | 13.58                | 11.21                 | 0.3                   | 0.25                  | 166.4                 | 208.13                | 17.59                 | 14.93                 | 35.6                  | 924                   |
| Chromium                                   | mg/Kg | NS  | 0.06                  | 0.01                  | 0.02                  | 0.305               | <0.01                 | <0.01                 | 0.11                  | 0.09                  | 0.05                 | 0.1                   |                       | 0.01                  | 2.01                  | 0.024                 | <0.001                | <0.001                | 0.094                 | 8.769                 |
| Cadmium                                    | mg/Kg | NS  | 1.03                  | 0.054                 | 0.801                 | 0.1                 | <0.001                | <0.001                | 0.12                  | 0.08                  | 0.21                 | 0.1                   | <0.01                 | <0.01                 | 1.08                  | 0.021                 | <0.001                | <0.001                | 0.006                 | 4.4                   |
| Aluminum                                   | mg/Kg | NS  | 0.26                  | 0.22                  | 0.21                  | 0.09                | 0.063                 | 0.061                 | 0.13                  | 0.71                  | 0.12                 | 0.35                  | 0.2                   | 0.03                  | 0.05                  | 0.46                  | 0.4                   | 0.12                  | 0.09                  | 0.24                  |
| Nickel                                     | mg/Kg | NS  | 0.024                 | 0.002                 | 0.006                 | 0.02                | <0.001                | 0.105                 | 0.121                 | <0.001                | 0.03                 | 0.21                  | 0.11                  | 0.01                  | 1.9                   | <0.001                | 0.01                  | <0.001                | 0.003                 | 7.6                   |
| Lead                                       | mg/Kg |     | 0.009                 | 0.007                 | 0.009                 | 0.003               | <0.001                | <0.010                | 0.021                 | 0.141                 | 0.241                | 0.194                 | 0.003                 | <0.01                 | 6.01                  | 0.22                  | <0.001                | <0.001                | 0.021                 | 11.1                  |
| Total<br>Heterotrophic<br>Bacteria (THB)   | cfu/g | NS  | 9.2 x10⁵              | 1.19 x10 <sup>6</sup> | 2.02 x10 <sup>6</sup> | 1.4x10 <sup>7</sup> | 2.8 x 10 <sup>6</sup> | 1.5x10 <sup>6</sup>   | 2.76 x10 <sup>6</sup> | 2.19 x10 <sup>6</sup> | ND                   | 2.01 x10 <sup>6</sup> | 1.44 x10 <sup>6</sup> | 1.93 x10 <sup>6</sup> | 5.2106                | 2.07 x10 <sup>6</sup> | 2.30 x10 <sup>6</sup> | 2.35 x10 <sup>6</sup> | 1.17 x10 <sup>6</sup> | 2.11 x10 <sup>6</sup> |
| Total<br>Heterotrophic<br>Fungi (THF)      | cfu/g | NS  | 4.2 x10 <sup>6</sup>  | 1.31 x10 <sup>6</sup> | 2.00 x10 <sup>6</sup> | 4.5x10 <sup>4</sup> | 1.0 x 10 <sup>4</sup> | 6.0x10 <sup>3</sup>   | 2.37 x10 <sup>6</sup> | 4.2 x10 <sup>6</sup>  | 6.8 x10 <sup>4</sup> | 2.07 x10⁵             | 8.2 x10⁵              | 2.2 x10 <sup>4</sup>  | 1.3 x10 <sup>3</sup>  | 5.7 x10⁵              | 2.59 x10 <sup>6</sup> | 2.28 x10 <sup>6</sup> | 1.7 x10⁵              | 2.81 x10 <sup>6</sup> |
| Hydrocarbon<br>Utilizing<br>Bacteria (HUB) | cfu/g | NS  | 5.0 × 10 <sup>4</sup> | ND                    | 2.0 × 10 <sup>4</sup> | 2.4x10 <sup>4</sup> | 4.7 x 10 <sup>4</sup> | 2.7 x 10 <sup>4</sup> | 1.0 × 10 <sup>5</sup> | ND                    | ND                   | 3.0 × 10 <sup>4</sup> | 7.0 × 10 <sup>4</sup> | 2.0 × 10 <sup>4</sup> | 4.0 × 10 <sup>4</sup> | 7.0 × 10 <sup>4</sup> | ND                    | 4.0 × 10 <sup>4</sup> | 2.7 × 10 <sup>4</sup> | ND                    |
| Hydrocarbon<br>Utilizing<br>Fungi (HUF     | cfu/g | NS  | 2.12X10 <sup>2</sup>  | 3.70X10 <sup>4</sup>  | 1.25X104              | 1.0x10 <sup>3</sup> | 2.0 x 10 <sup>3</sup> | 1.1 x 10 <sup>3</sup> | 1.10X10 <sup>2</sup>  | .50X10 <sup>2</sup>   | 4.52X10 <sup>3</sup> | 5.20X10 <sup>2</sup>  | ND                    | 0.79X10 <sup>2</sup>  | 6.00x10 <sup>2</sup>  | 2.22X10 <sup>2</sup>  | 0.07x10 <sup>2</sup>  | 0.79x10 <sup>2</sup>  | 0.960x10 <sup>2</sup> | 1.63X10 <sup>3</sup>  |

55 99 (FGBC Apo, FCT) 55 100 (FGBC Garki, FCT) 55 101 (FGC Rubochi, FCT) 55 102 (FSTC Orozo, FCT ) 55 103 (FGGC Keana, Nasarawa State) 55 104(FSTC Doma, Nasarawa State) 55 105 (FGGC, Bida Niger State) 55 106 (FSTC Shiroro, Niger State) 55 107 (FGA Suleja, Niger State) 55 108 (FGC Minna, Niger State) 55 104 (FGC Minna, Niger State) 55 105 (FGGC, Bida Niger State) 55 110 (FGGC Lantang, Plateau State) 55 111 (FGGC Zaria, Kaduna State) 55 113 (FGGC KAZAURE, Jigawa State) 55 114 (FGGC Bakori, Kastina State) 55 115 (FSTC Dayi, Kastina State) 55 118 (FGGC, Minjibir, Kano State) 55 119 (FSTC Hadeja, Kano



### **ANNEX 16 Laboratory Accreditation Certificate**

### ANNEX 17 Physical and Cultural Resources/ Chance Find Plan

Though the project schools do not have sacred, cultural sites, graves etc. this plan is provided in the event of any chance find during project activities.

The procedures is as follows:

- Stop all civil works activities immediately in the area of the chance find;
- Delineate the discovered site or area with caution tape;
- Secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a guard/security must protect such until the responsible local authorities and the equivalent take over;
- Notify the project committee who in turn will notify the village head of the discovery. Also, the committee to notify the SPIU/relevant Local Government Authority (within 24 hours or less);
- Responsible local authorities and the state/national authority for cultural preservation would be in charge of protecting and preserving the site before deciding on subsequent appropriate procedures. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage; those include the aesthetic, historic, scientific or research, social and economic values;
- Decisions on how to handle the finding shall be taken by the responsible authorities. This could include changes in the project design/site (such as when finding are irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;
- Implementation based on the authority's decision shall be documented
- It is the responsibility of the project committee to comply with this plan, During project implementation, while the SPIU E&S team and NPCU E&S team shall monitor compliance and provide the report in the project monthly report.

### ANNEX 18 EMERGENCY PLAN

This Plan provides the necessary guidance for how to plan and respond to a potential emergency under this project. For the purpose of this report, an emergency is an incident that occurs when all prevention measures put in place has failed completely or partially.

**Risk Definition**: the scope of intervention works is not envisaged to create situations that can lead to emergencies. However, emergency may occur as a result of the following:

- incidents/accidents to workers, school students/staff from project activities such as use of machineries and Vehicles, transportation of materials, demolition activity, civil works
- theft or vandalism of civil works equipment or materials
- clash between project workers and community members
- security incidents such as kidnapping, banditry, ethno-religious clashes

The following emergency plan shall be implemented:

#### **Emergency Planning**

- The project committee to provide emergency contact numbers to the workers, students, staff and communities to call in the event of an emergency. This can be the number of the Head of the committee and the police hotline in that zone (for cases of kidnapping/banditry, clashes). This number should be disseminated on site (on notice boards) and strategic locations as to be seen by all stakeholders
- Identify the resources needed for the evacuation including transportation, first-aid, food etc. and the committee should plan for contingency funds

#### **Response Plan**

- Workers/staff/student/community members to immediately alert the project committee or school management about any emergency
- In the event of an accident or health related incident, the project committee should ensure immediate transportation of the person to the nearest health centre for medical care. A link to the list of NIGERIA Health Facility Registry (HFR) is provided as follows:<u>https://hfr.health.gov.ng/facilities/hospitals-</u>search?state\_id=1&lga\_id=1&ward\_id=0&facility\_level\_id=0&ownership\_id=0&operatio nal\_status\_id=1&registration\_status\_id=0&license\_status\_id=0&geo\_codes=0&service\_ty\_pe=0&service\_category\_id=0&entries\_per\_page=20&page=589
- In the event of a security incident, the committee should raise an immediate alarm to the community leader/police/NPCU. Implement the security protocol based on the Security Management Plan.
- The committee should ensure adequate welfare and security are provided to the affected persons including shelter, food, health care etc.
- For GBV related incidents, this should be handled in line with the GBV protocol in section 6.8 which includes reporting the case to through the Guidance Counsellors for onward referral to the appropriate service provider. Survivors can also choose to access any other GBV response mechanism they are comfortable with such as the Sexual Assault and Referral Centers (SARC) centers.
- Corrective action should be implemented for the prevention of a repeat event

The committee should report the incident to the NPCU and Federal Ministry of Education within 24hrs and also the World Bank within 48hrs (through the NPCU). However, in reporting GBV incidents, confidential information about the survivors should be excluded such as names, explicit details of the incident etc.