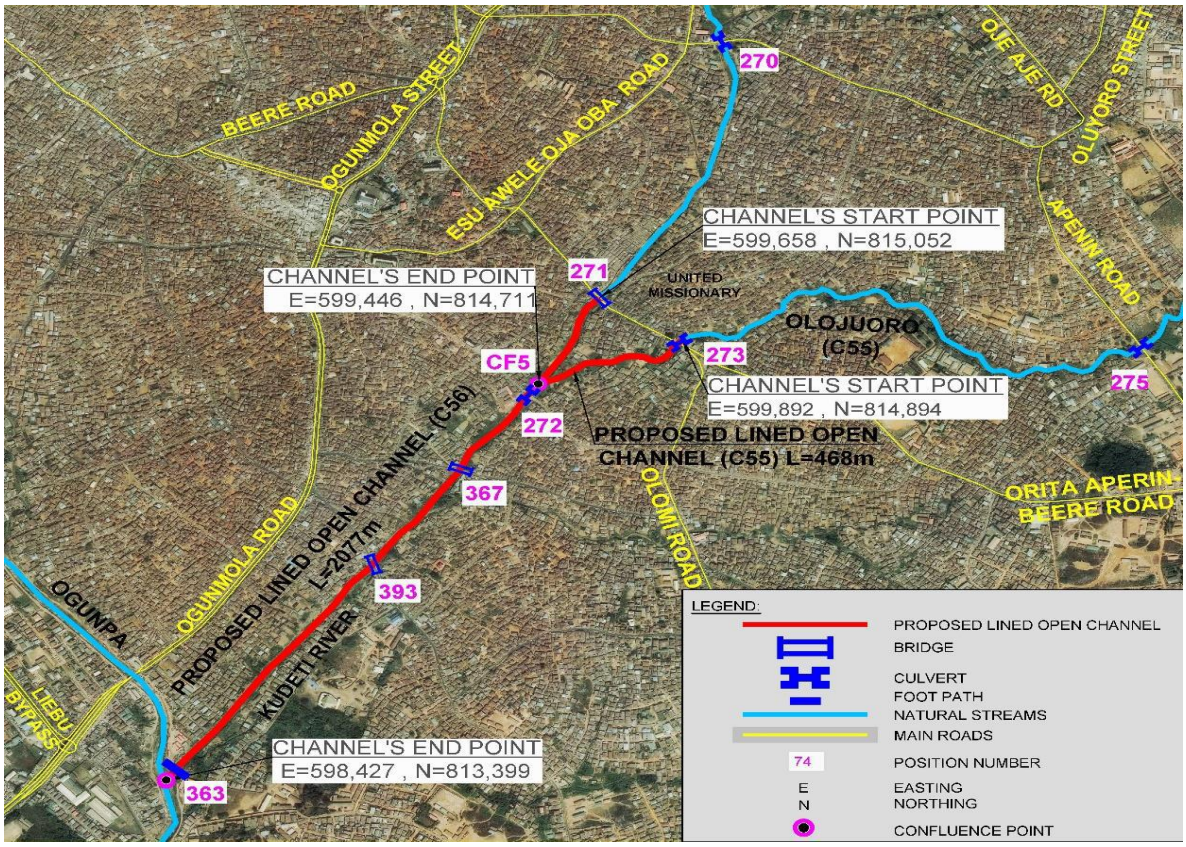
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

OF THE

PROPOSED CHANNELIZATION OF KUDETI RIVER AND ASSOCIATED STRUCTURES



DRAFT FINAL REPORT

AUGUST, 2020

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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired immunodeficiency syndrome
ALARP	As Low As Reasonably Practicable
BOD	Biochemical Oxygen Demand
BTS	Base Transceiver Station
CESMP	Contractors Environmental and Social Implementation Plans
CSR	Corporate Social Responsibility
DLP	Defect Liability Period
DMRB	Design Manual for Roads and Bridges
EAP	Environmental Action Plan
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
ESHS	Environmental Social Health and Safety
ESMP	Environmental and Social Management Plan
FEPA	Federal Environmental Protection Agency
FMEnv	Federal Ministry of Environment
GBV/ SEA	Gender Based Violence/ Sexual Exploitation and Abuse
GCCT	GBV and VAC Compliance Team
IFC	International Finance Corporation
JHA	Job Hazard Analysis
NESREA	National Environmental Standards and Regulations Enforcement Agency
OHSCP	Occupational Health and Safety contingency Plan
Oyo State MEWR	State Ministry of Environment and Water Resources
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
ROW	Right of Way
SEP	Stakeholder Engagement Plan
STIs	Sexually Transmitted Infections
TDS	Total Dissolved Solids
THC	Total Heterotrophic count
TSS	Total Suspended Solids
UNEP	United Nations Environment Program
VAC	Violence Against Children
VOC	Volatile Organic Compounds
WHO	World Health Organization
WMP	Waste Management Plan

SYMBOLS/UNITS

AC	Alternating current
CFU/g	Colony Forming Unit/Gram
Hg	Mercury
Mg	Magnesium
Mg/L	Milligram/Litre
Mg/Kg	Milligram/Kilogram
PM_{10}	Particulate Matter
PO_4^{3-}	Phosphates ion
ppm	Part Per Million
ppt	Part Per Thousands

SO_2	Sulphur Dioxide
$\mu g/m^3$	Microgram/ Cubic Meter
µS/cm	Micro-Siemens/Centimeter

EXECUTIVE SUMMARY

ES 1: Background

The occurrence of flood in an urbanized area like Ibadan is very high and requires co-ordinated intervention. In view of this, The World Bank is supporting the Oyo State Government to implement the Ibadan Urban Flood Management project (IUFMP) that aims at developing a long-term flood risk management framework. An Environmental and Social Impact assessment (ESIA) is therefore mandatory for such project, as stipulated by the World Bank Safeguard Policies, Federal Ministry of Environment EIA Act No.86 of 1992 and the Oyo State Environmental and Social laws and policies.

The Project Development Objective (PDO) is to "improve the capacity of Oyo State to manage flood risk and to respond effectively and promptly to flooding in the city of Ibadan".

The project has been designed to keep a good balance between urgent post disaster needs (dredging, reconstruction of bridges, roads, etc.) and medium-to-long term needs (institutional support, upgrading existing and building new infrastructure to upgrade of services and mitigate future risks).

The projecthas three components. They are as follows:

COMPONENT 1: FLOOD RISK IDENTIFICATION, PLANNING, AND PREPAREDNESS (Us$22.0 Million):
COMPONENT 2: FLOOD RISK MITIGATION MEASURES- (US$138.0million):
COMPONENT 3: PROJECT IMPLEMENTATION SUPPORT (US$16million)

ES 2: Project Description and Activities

The proposed project activities include the channelization of Kudeti River by lining the side slopes for a length of **2.1km** length starting north east from Orita Aperin-Beere Road and near the United Missionary Church of Africa and ending south west at the confluence with Ogunpa Channel. Proposed activities include: drainage infrastructure; excavation/earthworks; concrete and steelwork; and structures (culverts/bridges).

ES 3: Legal and Administrative Framework

The project will be guided by applicable Federal and State policies and regulatory framework, and the World Bank environmental and social safeguard policies. The project will comply with the Oyo State environmental Policy backed by the National Policy on Environment which provides a framework for environmental protection and sustainable development in Nigeria. The Oyo State Ministry of Environment and Water Resources and the Federal Ministry of Environment (FMEnv) provide procedures for conducting Environmental Assessments for development projects in line with the Environmental Impact Assessment Act No. 86, 1992 (as amended by EIA Act CAP E12 LFN 2004). Refer to subsection 1.4 for details.

ES 4: Project Alternatives

The alternatives that could be considered may include:-

- Alternative locations;
- Alternative technologies; and
- Alternative design

Alternative locations were considered as flood incidents had occurred in various states and cities in Nigeria including Ibadan. However, flood control and River channelization is a site-specific project and in view of the adverse effects of flood incidents in Kudeti, (such as loss of lives and properties of the communities

residing along the river channel) and the need to prevent future occurrence. Therefore, the Kudeti River is the major point to tackle and address these issues hence, the best location of choice for this kind of project.

Alternative technologies & designs considered include; Arch bridge, Beam bridges, Cantilever bridge, Suspension bridge & Truss bridge. The **beam bridge** design was selected as the appropriate bridge design for the channel because this design fits into the category of stream order in which the Kudeti River belongs.

Refer to chapter 3 for details on Project alternatives.

ES 5: Environmental and Social Baseline Conditions in Kudeti

ES 5.1 Vegetation and Wildlife

The predominant vegetation observed are shrubs, grasslands, weeds and certain economic trees (such as plantain trees, banana etc) alongside other trees that serve as a source of shade. Common Fauna along the project corridor includes insects and molluscs, snails and termites, grasshoppers, butterflies, ants etc. Dragon flies and mayflies were found near surface water bodies.

A total of 25 of the 77 flora species inventoried had indigenous uses. For example, *Erythrina senegalensis* which reduces erosion and facilitates water infiltration, *Elaeis guineensis* (Oil palm) which has eight uses (e.g Food, Medicinal, Fruit &Nuts, broom, Fodder, fibres, Fence, Roof trusses) etc

ES 5.2 Socio-economics

Some predominant **economic** activities were observed in this area include broom making, cane making, cement block making, farming, sand mining etc. Sand is collected from the river and taken to a portion of land where it is left to dry and used by local block industries for production of blocks for building.

- In the proposed project area, the proportion of male and female who participated in the survey were almost uniform with male respondents accounting for 57.9% while female was 42.1%.
- According to the survey, majority (48.1%) of the respondents are between the ages 26 and 50 years while those between the ages of 51-75 years are 30.9%.
- In terms of monthly income generation, 21.03% earned less than N1,000, 28.76% earn between N10,001 and N30,000, 4.72% earn between N50,001 and N70,000 while those who earn between N70,001 and N100,000 were 0.86%. The unemployed accounted for 9.44%. This implies that the income rate is generally low in the neighbourhoods around Kudeti river as 1 out of every 5 persons earn less than N1,000 monthly,
- About 64.8% of the respondents admitted that they dispose wastes into the Kudeti River while 35.2% stated otherwise (they used other waste disposal methods e,g burning, organized collection etc). In terms of methods used to dispose human waste, pit latrine is the most widely used as indicated by 38.2% of the respondents and this was followed by 31.3% who defecate into river channel in their neighbourhoods.Therefore, 3 out of every 10 persons in neighbourhoods around the Kudeti river defecate into the river. About 55.0% of the respondents do not have access to toilets in their homes.

ES 5.3 Air Quality and Noise Levels

- Many of the gases measured (SO_2, NH_3 and H_2S) were below the detection limit of the equipment used for sampling (0.001ppm) while those detected (CO, NO_2 and VOC) were within local and international regulatory limits.
- SPM was below 100µg/m^3 in all cases and therefore well below regulatory limits for occupational exposure
- Noise levels ranged between 48.0dB – 77.3dB and 45.6dB – 66.3dB for dry and wet season respectively. Generally, noise levels recorded were lower than the 90dBA FMEnv.
- Overall, air quality and noise elevels in the project area conform to regulatory requirements for unpolluted air

ES 5.4 Water Quality

- Many of the surface water quality parameters tested indicated a waterbody that is no longer pristine
- For example, BOD and COD levels were not within NESREA limits, as a result of anthropogenic activities
- For groundwater, most of the parameters tested, especially heavy metals, oil and grease and salinity were within regulatory limits, indicating that the groundwater is not polluted.

ES 6: Environmental and Social Impacts, Mitigation Measures and Environmental Management and Monitoring Requirement

The associated and potential impacts of project activities during the various phases, the corresponding mitigation measures for adverse effecs and a comprehensive management planare presented in Tables ES1 below, for ease of comprehension.

Table ES 1: Environmental Management and Monitoring Plan throughout project lifecycle (Pre-construction, Consturuction, Operation & Maintenance, Decomissioning)

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
ENVIRONMENTAL IMPACTS											
Preconstruction (Site preparation)	Reduction in air quality (dust, exhaust fumes)	ensure that only vehicles with pre-mobilization certificates are used to reduce emissions from vehicle exhaust Trucks carrying sand, granite, cement etc should be covered during transportation to site.	Contractor	20,000	SPM, SO2, CO, NOX	Visual Observation, instrument measurement using standard, calibrated air quality monitoring equipment	Pre-mob certificates and statistics	Project/ Construction site	Ensure testing Once a week (night and day each time)	Safeguards Unit of PIU, , Oyo State MEWR, Supervising Engineer,	480,000
Construction & Operation phase	Air quality	Water shall be sprayed on construction sites to reduce dust levels especially during dry season ensure that all stationary internal combustion engines are properly maintained ensure that appropriate maintenance programs are in place for all equipment	Contractor	20,000	SPM, records of respiratory diseases	Visual Observation, instrument measurement using standard, calibrated air quality monitoring equipment	Records on compliance, SPM at selected sites within 500m band	Construction site	Weekly	Safeguards Unit of PIU Supervising Engineer, contractors	150,000
		Provision of PPEs for workers and Ensure that PPE (nose masks etc) are worn by site workers during excavation and other site activities. ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and Safety provisions specified).***	Contractor HSE personnel	90,000	SPM, records of respiratory diseases	air monitoring equipment	SPM, records of respiratory diseases and noise levels	Construction site	Monthly	Safeguards Unit of PIU Oyo State MEWR,	10,000
Preconstruction, Construction, Operation & Decommissioning	**Increase in noise levels**	Ensure night work is prohibited to prevent noise and vibrations from machines Ensure proper use of PPE (ear muffs) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and Safety provisions specified).***	Contractor	140,000 (PPE/Noise monitoring equipment)	Noise level should not exceed 90dB	Noise measurement equipment	Noise level should not exceed 90dB limit.	Construction site	Weekly	Supervising Engineer, PIU-Environmental safeguard, FMEnv. Oyo State MEWR	30,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		ensure that all vehicles and equipment conform to World Bank and FMEnv limits for noise(90dB) inform other stakeholders in advance of likely increase in noise level during construction	Contractor/ PIU-Environmental safeguard	30,000	Vehicle maintenance records	Noise measurement equipment	noise levels	Construction site	Monthly	Environmental specialist, FMEnv. Oyo State MEWR	20,000
		Ensure use of ear muffs, Low noise equipment and installation of Silencer on machinery to reduce noise generation - inform stakeholders in advance of likely increase in noise level during decommissioning	Same as above Compliance oise Quality Monitoring	150,000 90,000	Compliance Noise Quality Monitoring			Project site	Throughout project phase		10,000 10,000
Throughout project cycle	Increase in Waste generation	ensure that wastes are disposed off in accordance with state waste management policy Develop and enforce adequate waste management on site and detailed Waste Management Plan {WMP) Debris removed during excavation should be re-used for filling potholes and levelling of uneven surfaces around the project corridors notify Local and State management of the type and volume of wastes anticipated for the different phases of the project Implementation.	Oyo state Waste management authority, Contractor	30,000 500,000	Waste, odours, general aethestics etc	Visual observation of surroundings Ensure waste management plan is implemented	Proper sorting and waste management Clean environment	Project site	Monthly	Safeguards Unit of PIU FMEnv.Oyo State MEWR, Oyo state Waste management authority.	100,000
Construction& operation phase	Blockage of Natural Drainages	ensure that wastes are disposed off at all appropriate locations for waste disposal Preparation of proper waste management plans Encourage community participatory sanitation Awareness program on waste management practices	Community Development Association (CDA), contractor etc	100,000	Waste management	Visual observation of drainage channels to kno Ensure waste management plan is implemented	Waste management plan	Project site	Quarterly	Safeguards Unit of PIU, FMEnv.	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Provide waste skips near culverts/bridges to discourage dumping directly into rivers. Debris and spoils removed during excavation should be re-used and not abandoned along the project corridor.									
Preconstruction, construction & Decommissioning	Loss of flora and fauna	-Primary site clearing will be conducted by contractor i.e. clearing shall commence from developed (e.g. roads) to undeveloped areas to provide escape routes for wildlife. -Replanting of lost vegetation	Contractor	45,000	The number useful tree and plant species (NTFP) lost,	Quadrant count ratio to estimate the number of flora & fauna species	Site clearing Inspection records	Project site	Bi-monthly	Safeguards Unit of PIU FMEnv and LGI.	5,000
	Cumulative impact on Wetland and biological resources	educate construction workers on the nature of the biodiversity of the area and the need for conservation	contractor	35,000	Records of HSE meetings	Assessment of understanding of biodiversity &conservation		Construction site	Weekly	Safeguards Unit of PIU Oyo State MEWR, HSE	10,000
Pre-construction, construction & Decommissioning	**SOIL** Potential increase in erosion risk of contractors using non-registered quarries, illegal sand-mining or creating new quarries through illegal extractions	re-vegetate areas not needed for construction as soon as possible Ensure clear signage of impending hazard/flood prone- areas should be displayed at high risk areas. Validation of soil stability before deployment of equipment near high risk areas to prevent overturn and staff exposure to accident list of raw material suppliers should be crosschecked to ensure quarries are registered. Illegal sand mining should be prohibited	contractor HSE officer,	60,000	Records of re-vegetation exercise	Visual assessment of the project area showing caution/ safety signages. Ensure re-vegetation exercise	Visibility of road signs	Project area	Bi-monthly	Safeguards Unit of PIU, FMEnv. Oyo State MEWR and LGI.	10,000
Pre-construction, construction & Decommis	**Ground/ surface water contamination &** Degradation of soil from spills, leaks, oil/grease,	ensure maintenance of clean up equipment at site. Spill containment Regular assessment of soil quality by testing.	contractor	45,000	Soil	Soil quality testing	Soil monitoring records Audit/	Construction site	Weekly	Safeguards Unit of PIU Oyo State Ministry of Environment and Water	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
sioning	fuel in equipment yards -Cumulative impact on water quality						inspection reports			Resources	
Pre-construction, construction, operation & Decommissioning	**Sanitation** Increased pressure on sanitary facilities of temporary location due to rise in population.	Provide gender-sensitive temporary Sanitary Facilities along project site to prevent open defecation and pollution of water bodies Inspect facilities provided such as (mobile toilets, storex tank for flushing, tissue paper, disinfectant/hand sanitizer etc) Ensure facility provided align with the expected number of workers	Contractor, Health personnel	765,000	Water, soil	Water and soil quality assessment	Adequate Number of sanitary facilities and toilets	Project site	Weekly	Safeguards Unit of PIU, Oyo State Ministry of Environment and Water Resources	50,000
		SUB TOTAL COST ₦2,120,000.00								**₦985,000.00**	
HEALTH IMPACTS											
Pre-construction, construction & Decommissioning	Increase in morbidity (including STDs. HIV/AIDs and other STIs) & mortality	Health awareness on the mode of transmission of STDs (including HIV/AIDS) Workers, individuals along project corridor etc should have access to the nearest health services (Agbongbon Health Center) IUFMP shall assist state/local government health facility and this should be accessible to all. Contracting of HIV service provider to be available on-site; and provision of free testing kits for voluntary examination/test	PIU, Contractors HSE officer, medical personnel etc	500,000	Statistics of health awareness lectures Support provided Checking recruitment record	Monitor health records	Health assessment records	Project area	Before Recruitment/ and monitored Quarterly	Safeguards Unit of PIU Occupational Health teams Supervising Engineer and Oyo State Ministry of Health	50,000
		-As much as possible, psychological support shall be provided to persons living with the HIV virus, this should be conducted only with prior and informed consent of the individuals	Contractors HSE officer, medical personnel	200,000	Records of HIV support programs	Psychological assessment records	Psychological assessment records		Quarterly	Safeguards Unit of PIU Health teams, Oyo State Ministry of Health	30,000
		Immunization of workforce as appropriate	Same as above	50,000	Records & statistics of	Evaluate immunization records	Health records	Construction site	During mobilizatio	Same as above	10,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
					Immunization				n		
		Vector control to reduce incidence of malaria and other ailments (such as regular spraying/fumigation of camp and provision of insecticide treated nets) (ITN)	Same as above	90,000	Records &statistics of ITN distribution	Evaluate health records on malaria prevalence	Availability of mosquito nets Fumigation certificates	Project site	Quarterly	Same as above	30,000
		Introducing awareness campaign to enlighten all stakeholders on common communicable & air/water borne diseases, and the health implications of drug and alcohol abuse, unprotected sex, prostitution and the need to sustain cultural values.	Same as above	100,000	Statistics of health awareness lectures	Random alcohol testing, Air/water quality monitoring	Record of air/water monitoring	Project site	Quarterly	Same as above	30,000
		Alcohol and drug policy shall be implemented to encourage healthy lifestyle for workers	PIU-Social safeguards,, Contractors HSE officer, medical personnel	50,000	Records of violations	Random alcohol testing,	Alcohol test records	Project site	monthly	Same as above	50,000
		make use of provided clinic to take care of minor illnesses for all workers	Contractor, Occupational Health team	900,000	Ailments, medical complaints	Statistics of attendance morbidity& mortality	Health registers/records	Project site	Weekly	Safeguards Unit of PIU Oyo state Ministry of Health	100,000
		provide condoms for construction workers	Contractor, HSE officer	50,000	Health records	Assess health records	Condoms availability to workers	Project site	Monthly	Same as above.	15,000
	Occupational Health & Safety (OHS) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and***	ensure contractors carry out first aid training & HSE awareness program for workers at induction and on a continuous basis throughout the life of the project Contractor should ensure that the safety officer conducts a Job Hazard Analysis (JHA) prior to the commencement of work to identify the hazards associated with the job activities	Contractor, HSE officer	650,000	First aid awareness reports Statistics of social and health awareness program	Assessment of first aid & HSE knowledge	Number of first aid certificates issued and first aid kit records Job Hazard Analysis (JHA) report	Project site	At induction and quarterly	Safeguards Unit of PIU	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Safety provisions specified.	Provide and enforce appropriate use of PPEs (e.g. hard hats, eye goggles) Provision of first aid box	Contractor, HSE officer	400,000	Compliance	Routine unannounced inspection of PPE, and first aid box	Availability of PPE and first aid kit records	Project site	Weekly	Safeguards Unit of PIU	70,000
		ensure toolbox talks are held,prior to work activities • Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to: - Prohibition of drug and alcohol use by workers while on the job. -Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba languages). -Restriction of unauthorized access to all areas of high risk activities -Provision of specific personnel training on worksite OHS management -Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers -Any uncovered work pits should have appropriate signage and protection around them -Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before -Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians -lighting and/or reflective tapes and signages integrated in all worksites for safety at night •Appropriate security measures in	Contractor, HSE officer	Part of normal operation	Compliance	Use of PPE and safety compliance among personnel	Compliance	Project site	Weekly	Safeguards Unit of PIU	Part of normal operation

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		place to prevent harassment or kidnapping of workers Safety Statistics boards at laydown yards and entrances to the perimeter barricade; Safety instructions at the entrances; Project sign posts should be placed along the project area									
	Community Health and Safety	Support the activities of the State action committee on STDs/HIV/AIDS within the local communities Partner with local community health care providers to supply free mosquito nets to communities. Public Health Awareness/health walk in communities	Contractor	30,000	Health, HIV/AIDs, STDs etc	HIV/AIDs, STD tests	Records of Engagement of an NGO Health record	Project site	monthly	Safeguards Unit of PIU, Occupational Health team, NGO	50,000
	possibility of fire outbreak	Ensure availability of an Emergency response plan and trained fire rescued team Collaborate with state fire service and communicate toll-free emergency numbers to personnels. Availability of fire extinguisher, hydrant etc. Accessibility of muster point incase of emergency.	Contractor, HSE officer, Oyo State Fire Service	200,000	Emergency drills statistics	Emergency drills	Emergency response plan	Project site	Before recruitment & monitored Quarterly	PIU-Environmental & Social safeguards, Contractor HSE officer, Oyo State Fire Service	50,000
	SUB TOTAL		**₦3,220,000.00**							**₦535,000.00**	
	SOCIAL IMPACTS										
	Physical/Economic displacement: Impact on small businesses, Temporary disruption of access to livelihoods, Impacts on economic crops/trees, piggery, fishery	Prior information, consultations and effective grievance redress mechanism to address complaints/grievances from affected persons Vulnerable groups should not be marginalized but considered and carried along during consultations and throughout the project cycle Compensations for assets to be affected, and disturbance allowance	PIU-Environmental & Social safeguards specialist, contractor.	Included in RAP budget	Monitor GRM records RAP Implementation report	Ensure implementation of RAP	GRM records RAP Implementation report	Project area	Before Commencement of Civil Works	Supervising Engineer, PIU-Safeguards Unit of PIU and M&E Unit	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	etc Impacts on vulnerable people. -Potential Cumulative impact on land use	for temporary loss of access where applicable Resettlement assistance for livelihoods restoration, moving allowance to cover transport costs as well as provision to offset any transaction cost associated with the impacts of the sub project The full scope, description, mitigation measures and costs of these impacts have been exhaustively addressed in the standalone RAP document									
	GBV/SEA etc), ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Mitigation of social impacts (Labour Influx Management, Sexual Exploitation & Abuse risk reduction program, etc.)***	Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws preventing GBV. Implement workplace programme for GBV awareness and prevention through skilled GBV service providers for workers and neighbouring communities Provision of opportunities for workers to regularly return to their families; GBV/SEA & VAC victims/survivors should be taken to the nearest health facility (Agbongbon Primary Health centre) for immediate medical attention or referred to University College Hospital (UCH) for further medical and psychological care. Information and awareness raising campaigns for community members, specifically women and girls; Provision of information to host community/contractors about GBV	PIU-Social Safeguard specialist, Contractor	200,000	Complaint or incidents recorded on GBV/SEA	Ensure Compliance and Signing of the GBV CoC Ensure Defaulters are punished severely according to laws preventing Rape, sexual abuse etc	GRM records Rape/sexual exploitation, reports GBV Code of Conduct compliance -Percentage of children who report feeling usafe from GBV while travelling to and from school -Percentage of health care facilities following national and international guidelines on clinical care for GBV/SEA victims/ survivors	Project area	Before Recruitment/ And Monitored quarterly	Supervising Engineer and Safeguards Unit of PIU	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Code of Conduct (See Annex 5 for Code of Conduct in preventing GBV/VAC).									
	Child Labour/School Drop out	Ensuring that children and minors are not employed directly or indirectly on the project. Communication on hiring criteria, minimum age, and applicable laws. Ensure contractors comply with Labour Act Unplanned monitoring should be undertaken to ensure underage labour are not involved in processes such as off-loading of construction materials and other construction activities	PIU- Social Safeguards, contractor.	50,000	Recruitment records	Checking recruitment record Inspection of construction Sites	Labour Act	Construction site	Before every task, Before Recruitment and Monitored Bi-monthly	Supervising Engineer and Safeguards Unit of PIU	100,000
	Physical Cultural Resources (PCR)	-Consultations with the chief priests and communities. -Modify the project design to avoid PCRs -Stop construction activities in the area in case of chance finds until a solution is proffered; -Delineate the discovered site or area See details in Annex 9	contractor, Social Safeguard specialist-PIU	150,000	Graveyards etc	Visual assessment of project area	Archaeological records/ maps etc	Project area	Before the commencement of project, monitored biannually	Safeguards Unit of PIU, Oyo state council for Arts and Culture	30,000
	Other Social risks associated with Labour influx; Risk of social conflict	Consultations with and involvement of local communities in project planning and implementation; MOU should be adhered to throughout the project cycle Development of site specific labour influx management plan Prioritize and balance the hiring of locals for qualified skilled and unskilled work GRM would address conflicts that will arise. See annex 6 for GRM Awareness-raising among local community and workers.	PIU- Social Safeguards,	200,000	Complaints lodged, suggestion box, GRM process	Reporting of social conflict Eye-Witness Reports of incidents	GRM Records Rates of crimes reported		Monitored periodically	Safeguards Unit of PIU,	40,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Increased risk of illicit behaviour and crime (including prostitution, theft and substance abuse)	Provision of cultural sensitization training for workers regarding engagement with local community IUFMP shall ensure contractor enforces laws on drug abuse/trafficking; alcohol and drug policy for staff Police monitoring to prevent drugs trafficking, prostitution, theft/crimes etc Pay salaries into workers' bank accounts rather than in cash; IUFMP shall provide security systems Create supervised leisure areas in workers' camp; Introduce sanctions (e.g. dismissal) for workers involved in criminal activities;	contractor, Community Development Association (CDA), NDLEA etc PIU- Social Safeguards, contractor, Community Development Association (CDA), Police department, vigilante etc	150,000 1,200,000	Incident reports Presence of security personnel	Inspection of construction Sites/ camps Inspection of construction Sites/ camps	Enlightenment campaign/ health education statistics; Incident reports records of cases of abuse in the workforce, etc Availability of services in workers camp for recreation etc	Project area	Monitored Bimonthly	Supervising Engineer and CDA	250,000
	Adverse impacts on community dynamics by Labour Influx Local inflation of prices and crowding out of local consumers Increased pressure on accommodation and rents, Camp related land use, access roads,and lights,	IUFMP driven intensive enlightenment campaign and health education for the abatement of drugs abuse and alcohol in the communities and among workers throughout the life of the project Provide services in the workers' camp to reduce the need for workers to use local community facilities (internet, sports, events, and entertainment) etc or mix with them. Communications campaign to manage expectations and discourage spontaneous influx of job seekers; Local government to address this additional influx of the "followers" to ensure that no illegal and unsafe settlements develop. Mix local and non-locally procured goods to allow local project benefits while reducing risk of crowding out of and price hikes for local consumers.	PIU- Social Safeguards, contractor.	650,000 Part of contractor's responsibility	Recruitment records Camp facilities	Checking recruitment record Inspection of construction Sites Inspection of construction Sites	Availability of workers Accommodation, shop/stalls etc	Project area	Before Recruitment ad monitored quarterly Before Recruitment ad monitored quarterly	Supervising Engineer and Safeguards Unit of PIU, CDA	70,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Provide camp facilities with enough capacity to cater for workers, subcontractors, support staff etc Place workers camp away from environmentally sensitive areas to avoid impacts on the local wildlife; Routing of new access routes for workers' camp to avoid/minimize environmentally sensitive areas									
	Impacts on Public Utility (water, electricity, etc) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Allow for the removal and relocation of existing installations for electricity, telephone cables, water supply pipes, and other utilities including unauthorized signboards and obstructions within the RoW of the roads).***	Consult with the utility companies to demarcate the location and alignment of electrical cables, water mains and communication cables so that they can be avoided. Inform utilities prior to excavation within the 15meters of their alignment Prepare a detailed works planning and construction phasing schedule and coordinate service interruption with public utilities and services. Inform citizens in advance concerning programmed interruption Replace all broken pipes or facility disrupted as a result of the project	PIU- Social Safeguards, Oyo state water corporation, Ibadan Electricity Distribution company (IBEDC), Contractor	100,000 for dissemination of information Repair of damaged utilities is contractor's responsibility	Presence Broken pipes, cut wires/cables	Inspection of public utilities along the project corridor Monitor GRM reports (Complaints received from affected persons verbally, written or through the GRC)	Detailed works planning/ construction schedule document Absence of disruption in public utility (e.g absence of Broken pipes, cut wires/cables)	Project site	Bi-monthly	Contractor, Supervising Engineer and PIU- Social Safeguards, IUFMP	120,000
	Potential increase in road traffic volume	As much as possible, large and slow moving vehicles should be scheduled during off peak periods Raise stakeholder's awareness of Project activity and likely traffic issues Pre-mobilization of all vehicles	PIU- Social Safeguards, Oyo state Traffic Management	100,000	Night driving permit& statistics; Record of awareness sessions	Monitor Traffic Situation reports	Monitor Traffic Situation reports and Traffic Management Plan	Project area	Weekly Monthly	Contractor, Safeguards Unit of PIU, OYOTMA, Federal Road Safety Corps (FRSC)	350,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Potential increase in road traffic incidents ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Provide and maintain diversion roads for traffic control and pedestrians, including provision and erection of road signs).***	Develop a **traffic management plan** and ensure alternative routes are motorable and safe for motorists and pedestrians. Visible warning signs on roads Alternative routes should be provided for road users and these routes should be communicated prior to commencement of civil works Ensure alternative routes are motorable and safe for both motorists and pedestrians Speed breakers should be provided at sections traversing communities/residential ares/schools. Defensive driving course for IUFMP and contractor drivers	Authority (OYOTMA), FRSC, Contractor HSE officer	450,000 500,000 150,000	Road signage's, dissemination of information, Driving permit and statistics	Monitor Traffic Situation reports, Monitor Accident records, IVMS records etc	Journey management record; Number &adequacy of signs/ speed breakers Federal traffic regulation	Project area	Before commencement of civil works and monitored bi-monthly	Contractor, Safeguards Unit of PIU, OYOTMA, Federal Road Safety Corps (FRSC),	100,000 50,000
		Vehicle monitoring device /IUFMP journey management policy/ night driving and alcohol policy shall be enforced •Integrated Vehicle Monitoring systems (IVMS) can also be installed in project cars as check to ensure compliant monitoring in line with Journey Management Plan and Speed Limit		150,000	Journey management record; IVMS record, night driving permit and statistics		Journey management record; IVMS record,	Project Area	Weekly		50,000
		Sub total		**₦4,050,000.00**						**₦1,260,000.00**	
		GRAND TOTAL			**₦9,390,000.00**						**₦2,780,000.00**

ES 7: Environmental and Social Management Plan

The ESMP for the sub project consist of set of mitigation, monitoring, and institutional measures to be implemented during the project cycle. The table below presents a summary of the ESMP budget.

Table ES 2: ESMP Implementation Budget

Cost Item	Indicative Costing (₦)	Cost Estimate ($)	Sources of Funds
Cost of Mitigation	9,390,000.00	30,686.27	IUFMP Project fund
Capacity Building and Training	400,000.00	1,307.19	;;
Monitoring Programme	2,780,000.00	9,084.97	;;
Sub Total	12,570,000.00	41,078.43	
Contingency (5%)	628,500.00	2,053.92	
Total (1$ = ₦306)	13,198,500.00	43,132.35	**;;**

Environmental and Social Management Organization

The successful implementation of the ESMP will depend on the commitment and capacity of the State Project Implementation Unit (SPIU), E&S safeguard officers & consultants, relevant MDAs and other third parties (institutions) to implement the program effectively. The roles and responsibilities of those that will be involved in the implementation and monitoring of this ESMP are described in Table ES 3 below.

Table ES 1: Roles and Responsibility of Institutions

S/N	Category	Roles & Responsibilities
1.	Federal Ministry of Environment	• Approve disclosure of ESIA/ESMP in country • Environmental monitoring to ensure country standards is complied with
2.	Oyo State Ministry of Environment and Water Resources	• Environmental monitoring and compliance overseer at the State level • Site assessment and monitoring of ESMP implementation.
3.	PIU	• Ensuring approval of fund for Environmental and Social safeguards unit and M&E implementation and monitoring functions; • Ensure that the ESIA/ESMP is disclosed to the public • Responsible for coordination to ensure that parties to implementation carry out their responsibilities as and when due. • Ensure that World Bank and country standards are adhered to by contractor and workers through supervision and funding of mitigation measures/ESMP
4	Environmental & Social Safeguard Units	**Environmental Safeguards Officer** • Carry out supervision functions during construction to ensure that contractor and workers adhere to mitigation measures in the ESMP; • Collate environmental baseline data on relevant environmental characteristics for monitoring and auditing • Ensure that project activities are implemented in accordance with good practices and guidelines set out in the site specific ESMP; • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. • Promote environmental awareness. **Social Safeguards** • Coordinate and ensures the implementation of the social aspects of the ESMP • Identify and liaise with all stakeholders involved in social related issues in the project; • Conduct impact evaluation and beneficiary's assessment; and • Establish partnerships & liaise with organizations, Community Based Organizations (CBOs), Civil Society Organizations (CSOs).
5	Contractor	• Compliance to BOQ specification in procurement of material and construction • Implement mitigation measures in the ESMP during project implementation • Prepare and Implement Contractor-ESMP

S/N	Category	Roles & Responsibilities
		• Ensuring staff good behavior/ practices including the use of PPEs and zero gender violence; • Preparation of work plans for environmental and social management in line with the ESMP • Ensure any changes during construction process that may have a significant environmental and social impact are communicated to ESO in time and managed accordingly. • Maintain records of environmental incidents as well as corrective and preventive actions taken • Supervision of implementation of all the measures and preparation of required Monitoring report
6	Supervising Consultant	• Supervise the implementation of the ESMP by the Contractors; • Review the Contractors Environmental and Social Implementation Plans (CESMP) to ensure compliance with the ESMP • Review site-specific environmental enhancement/mitigation designs worked out by the Contractor. • Develop of good practice construction guidelines to assist the contractors in implementing ESMPs. • Prepare and submit regular environmental monitoring and implementation progress reports. • Continuous interaction with the Engineer/ESSU regarding the implementation of the environmental/social provisions in the ESMP; • Provides an independent oversight ensuring contractor adhere strictly to the engineering specifications and provide frequent reports on contractor/ Clients compliance • Supervision of contractor performance of implementation of the Construction and Work Camp Management Plan • Thorough supervision of the mitigation of the environmental and Social impacts such as labour influx and GBV • Reporting any incidents or non-compliance with the ESMP to the PIU
7	Affected Community and Public	• Review environmental and social performance report made available by SPIU. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the SPIU to disseminate information and receive feedback. • Identify issues that could derail the project and support project mitigation measures and awareness campaigns.
8	CDA	• Ensure community participation by mobilizing, sensitizing community members; • Promote environmental awareness
9	NGOs/CSOs	• Assisting in their respective ways to ensure effective response actions, conducting scientific researches alongside government groups to evolve and devise sustainable environmental strategies and techniques.
10	World Bank	• Overall supervision and provision of technical support and guidance. • Disclosure of ESIA/ESMP at World Bank external site • Oversight mission to monitor SPIU's implementation and performance of ESIA/ESMP

ES 8: Stakeholder Engagement

Consultation was carried out at different levels with relevant stakeholders and members of Kudeti community e,g MDAs, Traditional Rulers, Community Leaders/Members, Women Groups, Youths and NGOs/CBOs on January 26th, 2018 (See Chapter 8 for details).

Table ES 2: Major concerns and how they were addressed during consultations

Major Concerns	How They Were Addressed
Mr Gbadamosi (Kobomoje Community) expressed skepticism about the commitment of the Government to the project.	The Consultant affirmed the commitment and dedication of the government towards the project.
Mrs Silifat Lawal (Yegide community) on behalf of some residents expressed fear that the channelization would lead to demolition of houses that are close to the river channel and may eventually lead to displacement of some people from the community.	The Consultant assured them that there would be proper dissemination of information and appropriate compensation for physically/economically displaced persons as a RAP report was being prepared for this purpose. RAP implementation would be done prior to commencement of works.
(Mr Adebisi Ojo of Yejide) was of the opinion that the project will bring more people to the neighborhood and therefore cause accommodation problem.	He was assured that this problem would not arise and consultations with Landlord associations will be done to address this.

ES 9: Grievance Redress Mechanism (GRM)

A grievance mechanism is recognized as the formal legal mechanisms for resolving complaints and dissatisfactions. Grievance mechanisms are designed with the objective of solving disputes at the earliest possible time in the interest of all parties concerned. In each of the two key communities traversed by the Kudeti channelization (Yegide and Agbongbon) representatives of youths and women groupsare included in the GRC;

Levels for addressing complaints under the GRM process include;

- Receiving and registering a complaint by chairman / secretary of GRC.
- Screening and assessing the complaint.
- Formulating a response.
- Selecting a resolution approach.
- Implementing the approach.
- Providing feedback to GRM users.
- Tracking and evaluating the results.
- Preparing a timely report on the nature and resolution of grievances.

See details on GRM in Annex 6

ES 10: Recommendation/Conclusion

From the results and the predicted associated environmental and social (E&S) impacts of the project, the proposed Channelization of the Kudeti River should be carried out successfully with minimal environmental and social effects if all the identified mitigation measures proposed in the report are implemented and the E&S monitoring requirements are complied with.

The following recommendations have been proffered to further enhance the overall sustainability of the proposed project especially during the implementation phase (pre-construction, construction and operations) by the contractor, supervising consultant, PIU etc:

- Inform local communities in advance of road diversions & major activities likely to affect traffic. Also, schedule large and slow-moving vehicles for off peak period to prevent congestion
- Liaise with appropriate health focused NGOs to undertake health awareness and education initiatives on STDs especially HIV/AIDS, Voluntary Counselling & Testing (VCT) amongst workers and local communities.
- Ensure construction jobs are targeted to members of local communities andensure they are notified of employment and procurement opportunities in advance.
- Ensure usage of water to wet active areas for dust suppression and ensure appropriate intervention if dust levels are high.
- Ensure the restriction of all noise generating activities strictly to normal working hours (i.e. 9am – 5pm) and respond promptly to noise complaints.
- Ensure there is strict restriction of vegetation and trees clearing to the area of need only and protection of all vegetation not required to be removed against damage. Also ensure prompt re-vegetation of exposed soils with indigenous plant species once construction is completed.
- Ensure rehabilitation of disturbed areas once completed to restore the visual and landscape integrity of the area.

- Ensure the establishment of workers camp and provision of all amenities including sanitary facilities on site for workers to prevent pressure on community infrastructure and indiscriminate sanitary waste disposal.
- Ensure that construction waste is adequately and properly disposed by State Solid Waste agency in designated dumpsites
- Sensitize the public and provide them with emergency numbers to call in case emergencies
- Ensure compliance to all Environmental, Social, Health and Safety (ESHS) measures on site.

KOKO AGBEKALE IWADI NI SOKI

ES 1: ÌPÌLẸ

Isele ijamba omiyale ni ilu nla bi ibadan wopo gaani o si nilo pe ki a se eto ti o ni afowosowopo lati dekun iru isele bawonyi. Nitori idi eyi, Baanki agbaiye (World Bank nfun Ijoba Ipinle ti Oyo (Oyo State Government) ni atileyin lati se ifilole eto ti yio dojuko ijamba omiyale ni ilu Ibadan, ti a pe orukore ni Ibadan Urban Flood Management Project (IUFMP). Nitori idi eyi, o se dandan lati se ayewo adugbo ati awon enia ibe, ki a si wo awon ohun ti o le ti id awon akanse ise wonyi jade, nipa sise ohun ti awon Geesi npe ni Environmental and Social Impact Assessment (ESIA). Eleyi ba awon ofin banki agbaiye ati Ile Ise ti o wa ni idi Agbege ni Ijoba Apapo (Federal Ministry of Environment, FMEnv) mu. Pelu pelu, o bao fin ti Ipinle Oyo mu

Koko erongba ise ti a fi da IUFMP sile ni lati tubo fun Ipinle Oyo ni okun lati da oju ija ko isele omiyale, ati lati w ani imurasile lati tete dahun si oro omiyale ni igbakugba ti o ba sele. A se eto ise IUFMP li ona ti o se wipe yio duro daradara lati dahu si atunse awon ohun ti omiyale ti baje, nipa titun awon afara ti omi gbe lo ko, fife oju odo ki agbara ki o le ri aye san, ni apa kan, ati lati se ifulokun agbara Ipinle na lati doju ija ko ijamba omiyale.

ES 2: IFIHAN AKANSE ISE TI A GBERO

Akosile yi da lori erongba lati tun oju od Kudeti se, ti yio fi le gba agbara ojo, tabi ekun omi ju tele lo. Ise yi yio mojuto fife oju odo n ani gigun kilomita meji, o le ida kan ninu mewa (2.1km). Yio bere lati ariwa si iwo oorun (north-east) Opopona Orita Aperin lo si Beere, yio si kangun si Guusu si iwo oorun (South-west) ni apa ibiti odo Kudeti ati Ogunpa ti san pade. Ninu awon akanse ise ti a o mojuto ni idi ise yini fife ojudo, kikan afara si awon oju titi (bridges and culverts) ati ipese oju ona fun agbara lati san wo inu odo (drainage)

ES 3: AWON OFIN TI O RO MO ISE YI

Awon ofin kosemani ti ise yi yio fi si okan ni awon ofin Ijoba Ipinle Oyo, ti Orile-ede Nigeria, ati awon ofin ti Banki Agbaye. Ni Pataki julo, awon ofin ile ise Ijoba Ipinle Oyo ti o moju to Oro agbegbe ati ohun alumoni ile (Oyo State Ministry of Environment and Natural Resources)Ni Pataki, ofin Ijoba Apapo ti o kan ni ipa lati ri wipe a se iru ayewo bi eleyi fun awon ise bi eleyi ti a npero re (Environmental Impact Assessment Act No. 86, 1992 (as amended by EIA Act CAP E12 LFN 2004).

ES 4: AWON ABA MIRAN TI A LE DA WO FUN ISE YI

Ninu abewo yi, a wo awon aba miran ti a le lo fun ise yi. Ninu awon aba n ani ero wonyi wa: -

- Ki a se ise na si ibomiran, yato si eleyi ti a pero re yi;
- Ki a lo awon imo ero miran (alternative technology); ati
- Eto amuse miran (alternative design)

Ni ti sise ise na si ibomiran, eleyi ko ni dara nitori wipe ikun omi ti o ma nsele ni ojudo Kudeti po tobe ti o se pe, bi a ko ba se ise yi, ekun omi yio ma sele lo, beeni awon enia yio ma padanu dukia ati emi won ni ojudo na. Nitori idi eyi, ki a se ise na si ojudo Kudeti ni o to.

Nipa ogbon ero miran, a se ayewo orisirisi ogbon miran, paapaa ni ti afara si oju odo na, sugbon, eto eleyi ti a pinu re yi ni o tona, ti yio si le gba gbogbo awn ti o ngbe ni opopona odo Kudeti lowo ijamba omiyale ti o ma nda won laamu lore koore.

ES 5: AKOSILE NIPA AGBEGBE ATI AWON ENIA TI O WA NI OJU IBI ISE YI

Ayewo awon ohn abemi bi eweko at eranko

A se ayewo awon igi ati eweko ti o po ju ni agbegbe ise akanse yi, a si ri wipe awon eweko kekeke bi girasi ati awon igi kekeke ni o po ju ni ibe. Awon ohun ogbin bi ogeed were ati ogeed agbagba po nibe. Be si ni awon igi eleso bi osan, orombo ati bebe lo po ni ibe. Awon eranko ti o w ani agbegbe na je awon kokoro bi esinsin, labalaba awon igbin ati ekolo, pelu tata ati eera. Awon lamilami po ni etido kakiri.

Ayewo awon enia ti o w ani agbegbe oju ise yi

Lara awon ise owo ti npa owo ti a se akiyesi ni agbegbe ise yi ni igbale sise, mimo biloku, gbigbe iyepe lati inu od, ati beebee lo. Iyepe ti won bag be ninu odo ni awon oni biloku fi nmo biloku won.

Ni ti awon enia ti o ngbe adugbo ise yi, awon okunrin je ida mejidinlogota ninu ogorun (58%) ninu awon ti a fi oro wa lenu wo, nigbati won obinrin je ida mejilelogoji (42%). Ida mejidinlaadota ninu ogorun awon ti a fi oro wa lenu wo ni ojo ori won wa laarin merindinlogbon ati aadota odun (26 to 50yrs).

Nipa owo ti won npa, awon ti won npa owo ti ko to egberun mewa naira (N10,000) ni osu je ida mokanlelogun ninu ogorun, nigbati awon ti o npa laarin egberun mewa ati egberun li ona ogbon je ida mokandinlogbon ninu egberun. Awon ti o npa egberun lona ogorun ati ju bee lo ni osu ko to ida kan ninu ogorun (less than 1%). Fun idi eyi, a ri wipe, awon enia adugbo yi ko pa owo pupo losu, niwon ti o ti se wipe enia kan ninu marun ni o npa owo ti ko to egberun mew ani osu.

Ida marundinlaadorin ninu ogorun awon ti a fi oro wa lenu wo ni o jewo wipe awon ma nda idoti si oju odo Kudeti nigbati ida marundinlogoji wipe awon ki se be., sugbon yal awon ma nsun ile, tabi ki awon ko fun awon kolekodoti.. Enia meta ninu mewa awon ti a fi oro wa lenu we ni eti odo Kudeti ni o jewo wipe inu odo ni awon ma nyagbe si.

ES 6: IPA TI ISE YI MA NI LORI AGBEGBE ATI AWON ENIA

Ni soki, ninu awon ipa ti ise akanse yi ma ni lori adugbo ati awon enia ti ngbe ni itosi ibi ti ise yi yio ti waye ni a se alaye won si tabili ti o w ani isale yi: Ki o ba le rorun fun wa lati ri ohun ti o wa ninu tabili na, a fi awon ohun ti o baramu ati awon ti o lodi si adugbo tabi awon enia si otooto ni ori tabili na.

TABILI 1: ABALA ISE ATI AWON IPA TI YIO NI LORI ADUGBO ATI AWON ENIA

ABALA ÌMÚṢẸ ÈÈRÒ	BÁRAMU	LÒDÍSÍ
SÁJÚ ṢÍṢE/KÍKỌ́		*Ìfọ́ná ìbafẹ́fẹ́jẹ́ látibi eruku àti èéfín .*Ariwo ìgbọ́nrìrì láti ibi lílo ẹ̀rọ àti àwọn ohun ìgbérìn *Pípàdánù igbó láti ibi sísán àti ìpalẹ̀mọ́*Ìṣesí àwọn abẹ̀mí agbègbè àti ìsípòpadànípasẹ̀ sísán ibùgbé wọn

ABALA ÌMÚṢẸ ÈÈRÒ	BÁRAMU	LÒDÍSÍ
		*Dídojú ilẹ̀ kọ àgbàrá àti pípàdánú èrójà inú ilẹ̀ láti ibi igbó sísán*Àkójọpọ̀ àwọn ìrántí ewéko àtàwọn àlòpatí mìíràn títí kan àwọn àlòkù látibi àtúnṣe
		*Ìsọdègbin omi orí ilẹ̀ nípasẹ̀ àwọn ekuru tó ń sàn látibi ìyàngbẹ ilẹ̀
KÍKỌ́/ṢÍṢE	*Ìtànkálẹ̀ igbó	*Ìfọ́nká ìbafẹ́fẹ́jẹ́ látibi ekuru àti èéfín*Ariwo àti ìgbọ̀rìrì látibi lílo ẹ̀rọ àtàwọn ìgbọnrìrìohun ìgbérìn
	*ìmúbọ̀sípò àwọn alájọgbé irúgbì*Ìdọ́gba lórí àjùmọ̀gbépọ̀ àti *Ìdáàbòbò àwùjọ	*Eruku nípasẹ̀ ìdojú ilẹ̀ kọ òjò àti atẹ́gùn
	* Ìmúdúró èròjà ilẹ̀ àtúnkójọpọ̀	*Sísọdí àwọn òkè nípa kòtò gbígbẹ́ lágbègbè tíakitiyan wà
		* Síso ilẹ̀ di àgbàrá nípasẹ̀ gbígbẹ́ kòtò kalẹ̀ láìkọibi ara sí àtúnkójọpọ
		*Rírupọ̀ omi látibi eruku àti àbàtà tó ń sàn látibi àwọn àkìtàn*Ìsọdègbin ilẹ̀ àti ìpàdánù èròjà ilẹ̀
		*Àkójọpọ̀ àwọn àkìtàn àti àlòkù mìíràn látibi àtúnse*Bíba omi inú ilẹ̀ jẹ́ látibi yíyọ́jò àgbá ìképo pamọ́ sí*Sísàlékún ìsàn omi lórí ilẹ̀ látàrí dídarí rẹ̀ lásíkò àtúnse
ÌSẸSE/ÀMÓJÚTÓ	*Ìmúàdínkù bá ìṣẹ̀lẹ̀ tó le ṣokùnfa omiyalé	*Àṣetúnse omíyalé nípasẹ̀ àìmójútó àlòpatì tí ń dà sípadò tàbí sí ojú àgbàrá tó ń dí ìpageere omi lọ́wọ́
	*Àdínkù sí ìṣẹ̀lẹ̀ làlúrí tó le kọlu àwọn ènìyàn àti dúkìyá	
	*Agbéǹde ìmúra sílẹ̀ de ìjàǹbá fún àwọn ìsẹ̀lẹ̀ láabi	
	*Àlékún ìmúbọ̀sípò àwọn agbègbè tó ń bẹ nínú ewu omiyalé àti ìdáàbòbò dúkìá àwọn olùgbé àti okòwò wọn kúrò níbi ewu omiyalé	
	*Àgbéǹde àwọn àmójútó fún àwọn àlòpatì àfojúrí	
ṢAÁJÚ SÍSE		*Ìgbàsísẹ́ àwọn lébìrà tí wọ́n jẹ́ ọmọ onílẹ̀ fún sísán àwọn ibùdó* Àgbémúlémú ohun àgbérìn àti àlékún ìjàǹbá òpópónà* Ewu tó ń bẹ nínú ìjàǹbá iṣẹ́ ìyànláàyò, ìfarapa àti ìkọlù àárùn
KÍKỌ/SÍSE	*Ìgbàsísẹ́ àwọn lébìrà ẹṣẹ̀kùkú fún kíkọ́	*Bíbàjẹ́ àwọn ohun èlò abẹ́ ilẹ̀ tó ńí wúlò àti pípagidínà iṣẹ́*Àtòfimúlémú ohun àgbérìn àti àlékún ìjàǹbá ewu ìjàǹbá òpópónà àti ìfarapa * Ewu ìlera àti ààbò tó rọ̀ mọ́ ṣíṣídìí àti ríri nípa àìkọbi-ara-sí àgbẹ́kalẹ̀ kòtò *Ewu tó ń bẹ nínú ìjàǹbá iṣẹ́ ìyànláàyò, ìfarapa àti ìkọlù àárùn*Àárùn-kògbóògùn àtàwọn àárùn ìbálòpọ̀ mìíràn tó ń súyọ nípasẹ̀ ìbásepọ̀ láárin àwọn òṣìṣẹ́ àti àwọn ará àdúgbò*Ìpalára látibi àṣèèṣì jálulẹ̀ ohun-èlò àtúnṣe lásìkò ìgbòkègbodò lọ sí ibùdó rẹ̀.* Hílàhílo àwùjọ àti àìbalẹ̀àyà látàrí àìsí ìpèsè àgbàse iṣẹ́ abẹ́lé
ÌSẸSE/ÀMÓJÚTÓ	*Dídín ìṣekúpa àti àìlera nípasẹ̀ àárùn látara omi kù	* ìjàǹbá iṣẹ́ ìyànláàyò àti ìfarapa
	*Ìgbọ̀túngbòsì nípa ìgbéayé àwọn ènìyàn àti àléékún akitiyan wọn	* Ewu tó rọ̀ mọ́ jíjálulẹ̀ látibi àwọn afárá tí kò ní ìdáàbòbò
	*Àdínkù ètò ìnáwó ìlú lórí pípàárọ̀ àti àtúnṣe àwọn ohun amáyédẹrùn	* ìjàǹbá iṣẹ́ ìyànláàyò àti ìfarapa

ABALA ÌMÚṢẸ ÈÈRÒ	BÁRAMU	LÒDÍSÍ
	*Ìpèsè iṣẹ́	* Ewu tó rọ mọ́ jíjálulẹ̀ látibi àwọn afárá tí kò ní ìdáàbòbò

ES 7: ÈRÒÒNGBÀ ETO AMOJUTO AGBEGBE ATI ORO AJE AWON ENIA

Ipa òdiwọ̀n iye ọ̀nà lati dènà/ ṣàdínkù ipa ìlòdìsí tábí sèkúnlọ́wọ́ ipa ìbáramu lórí akitiyan kíkọ́ iṣẹ́ ìgbàlérò àti àgbékalẹ̀ èròòngbà ìtọpinpin lórí akitiyan náà. Ekunrere afihan yi ati awon eto nipa abojuto agbegbe ati awon eni li a gbe kale ni ori keje (chapter 7) akosile yi, ni ede Geesi. Ni Pataki, ekúnrẹ́rẹ́ ìgbàlérò ìgbésẹ̀ àdínkù ti eyí tó jẹ mọ́ ìtọpinpin lórí akitiyan ló ńbẹ nínú àtòkalẹ̀ àlàkalẹ̀ èròngbà àyíká, àwùjọ àti ìtọpinpin nínú àpótí 7.1. Àṣeyọrí àmúṣe ìlànà ESMP yìí dá lórí ìfarajìn àti ìkápá onírúnrú àjọ àtàwọn t'ọ́rọ̀ kàn fún àmuṣe ESMP bótiyẹ. Ojúṣe àtàwọn ojú òpó onírúnrú àjọ tó lọ́wọ́ nínú àmúse ESMP yìí ń bẹ nínú àtòkalẹ̀ àpótí 7.2. Nígbà tí oríṣiríṣi ìdánilẹ́kọ̀ọ́ tó ń bẹ nínú ẹro n nì yóó di títẹ́ pẹpẹ lásìkò tí àmúṣe èrò náà bá ń lọ lọ́wọ́, àti pé tí àlàkalẹ̀ iye rẹ̀ sì wà nínú àpótí 7.3. Ìtọ̀sẹ̀ àmúse àti ìgbàlérò ìsúná fún ESMP láfojúbù rẹ̀ sì wà nínú àpótí 7.4 . àti 7.5. Àpapọ̀ iye tó wà fún àmúse ESMP náà ni àfojúbù rẹ̀ jẹ́ ẹgbẹ̀rún-méjì-dín-láàádọ́ta àti òjìléerúgba-dín-márùn-ún dọ́là (US $ 48,235.00). Eléyìí tó jẹ́ mílíọ̀nù mọ́kàndínlógún àti ẹgbẹ̀rún lọ́nà ọ̀ọ́dúnrúndín mẹ́fà náírà (#19,294,000.00).

ES 8: ÌKÀNSÍ ARÁ ÌLÚ

Gegebi ofin akosile yi, a kan si awon ara ilu, paapaa ni agbegbe ibi ti ise akanse yi yio ti waye. Ninu awon ti a kan si ni awon omi ilu ni agbegbe odo Kudeti, awon Ile Ise Ijoba gbogbo, awon lobaloye ati olori ile, pelu egbe awon obinrin ati awon odo. Pataki ninu awon ohun ti awon ti a kan si so nipa ise yi li a se afihan re ninu Tabili keji ti o w ani isale yi

Tabili 2: Pataki ninu Erongba awon ti a kan si

Ero Okan Awon ti A Kan si	Bi a ti da won lohun
Ogbeni Gbadamosi (Ilu Kobomojey) Ogbeni Gbadamos so wipe Ipinu Ijoba Ipinle lati je ki ise yi wa si amuse ko da oun loju.	A fi ye Ogbeni Gbadamosi pe Ijoba Ipinle ti se ipinu ti ko ni ye lati je ki ise yi di amuse.
Iyaafin Silifat Lawal (Ilu Yegide) Awon kan nfoya wipe sie yi yio fa wiwo awon ile ti o sunmo etido ti yio si so awon enia kan di eni ti ko ni ile lori mo.	A fi okan Iyaafin Lawal bale wipe ifilo ti o peye yio sele, ati wipe awon ti yio ba padanu ile won, ijoba yio fun won ni owo "gba, ma binu" ati wipe akosile nipa bi a o ti mu eley se nlo lowolowo, yio si di mimuse ki eto ise yi ki o to bere rara..
Ogbeni Adebisi Ojo ni iu Yejide) So wipe ominu nko oun ni ti pe ise yi yio je ki awon enia row a si adugbo, eyi ti yio fa owongogo ile gbigbe.	A fun Ogbeni Ojo ni idaniloju wipe eleyi ko ni sele, nitori wipe gbogbo awon ti oro yi ba kan, paapa ajo awon onile (Landlord's association) ni a o kan si ki ise to bere, lati ri wipe eleyi ko sele

ES 9: Eto fun ati fi Ehonu han ati mimojuto Ehonu (Grievance Redress Mechanism)

A se afilole awon ajo ti yio ma mojuto or ehonu ni awon ilu ti ise yi yio de. Eleyi yio fun awon enia ni anfani lati so edun okan won nipa ise na, ati ki won le ri idahun tabi iyanju si oro ti won ba gbe kale. Awon enia lati aarin awon ilu ni a yan si ajo wonyi: Awon ilu ti o ni iru ajo bawonyi ni:

Ilu Yegide, Kudeti
Ilu Agbongbon, Kudeti

ES 10: AKOTAN

Li akotan, a ri wipe o seese lati mu eto fife ojudo Kudeti wa si amuse lai si ipalara pupo fun adugbo ati awon enia, paapa ti a ba fi awon eto lole lati din awon ipalara ti a ti se idamo won ni iwaju. Ni afikun a nilati se awon eto ti o w ani isale yi, lati tubo je ki ise na yanranti:

- A nilati ri wipe a fi to awon ilu leti nigbakugba ti a ba fe dari oko ati awon enia si ona miran lati je ki ise see se. A si nilati ri daju pe a ko je ki awon oko nla rin ni asiko ti on aba kun, bi igba ti awon enia nlo tabi ti won mbo lati ibi ise.
- A nilati fowosowopo pelu awon ile ise ti o da si oro ilera lati fun awon enia ni idanileko lori awon aarun ti a le ko nipa ibalopo (sexually transmitted diseases) paapaa julo aarun AIDS.
- A nilati ri wipe a je ki awon ilu ti ise yi yio ti sele je anfani igbanisise, paapa julo awon ise ti ko nilo iwe kika, tabi ise kiko, bi ise lebira ati birisope.Nitorina, eto ni wipe ki a se ifilo fun awon ilu wonyi nigbakugba ti anfani ise be si sile.
- A nilati ri wipe won fi omi won gbogbo opopona ti ise ba tin lo, loorekoore lati ba din eruku ku ninu afefe.
- A nilati ri wipe a ko se awon ise to ma npa ariwo ni igba ti kii se akoko ise, ki a si dahun logan ti awon ara ilu ba ti fi ehonu han nipa ariwo..
- A nilati ri wipe a ko wo awon igi, tabi ro awon eweko ti ko b abo si oju ise. Ibi ti a ba si sesi ro, a nilati ri wipe a gbin awon ohyn ogbin miran si ibe nigbati ise ba pari.
- A nilati ri wipe a ko lodi si gbogbo awon ofin tabi ilana ti o tan mo itoju agbegbe

CHAPTER ONE

1.0 INTRODUCTION

Flood scenarios pose tremendous danger to people's lives and properties across the globe. Indiscriminate dumping of refuse, encroachment upon, and poor channelization of drainages, coupled with the high intensity rainfall are the causes of urban flooding. Floods in Nigerian urban centers have caused much damage which are soon forgotten except by those people directly affected.

In view of the aforementioned, the World Bank is supporting the Oyo State Government to implement the Ibadan Urban Flood Management Project (IUFMP) that aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design.

The project has been designed to keep a good balance between urgent post disaster needs (dredging, reconstruction of bridges, roads, etc.) and medium-to-long term needs (institutional support, upgrading existing and building new infrastructure to upgrade services and mitigate future risks).

The Project Development Objective (PDO) is to "improve the capacity of Oyo State to manage flood risk and to respond effectively and promptly to flooding in the city of Ibadan".

The project has been designed to keep a good balance between urgent post disaster needs (dredging, reconstruction of bridges, roads, etc.) and medium-to-long term needs (institutional support, upgrading existing and building new infrastructure to upgrade of services and mitigate future risks).

1.1 Project Components

The project includes three components. They are as follows:

COMPONENT 1: FLOOD RISK IDENTIFICATION, PLANNING, AND PREPAREDNESS (Us$22.0 Million):

- Sub-Component-1.1: Design of Flood Risk Management Investment Program (US$16.0million)
- Sub-Component-1.2: Development of an Oyo State Long-Term Flood Resilience Strategy (US$ 1.0million)
- Sub-Component-1.3: Establishment of an Integrated Flood Early Warning and Response System (US$5.0million)
- Sub-Component- 1.4 Contingency Component: (US$0)

COMPONENT 2: FLOOD RISK MITIGATION MEASURES- (US$138.0million):

- Sub-Component 2.1: Priority Infrastructure Improvement (US$18.0million)
- Sub-Component 2.2: Long-term Integrated Flood Risk Mitigation (US$115.0million)
- Sub-Component 2.3: Community Resilience Development (US$ 5.0million)

COMPONENT 3: PROJECT IMPLEMENTATION SUPPORT (US$16million)

- Sub-component 3.1: Project Administration (US$7.0million)
- Sub-component 3.2: Project Implementation Support (US$9.0million)

1.1 ESIA Methodology and Approach

The ESIA report was prepared in accordance with the World Bank Safeguard Policies- Nigerian Government-Environmental Impact Assessment (EIA) Act No. 86 of 1992 and Oyo State Enviornmental and Social laws and Policies.

The approach adopted was to obtain environmental and social baseline data from desktop, field and laboratory studies, interviews and consultations with individuals/representatives of the communities of the project area. This approach provided adequate information for establishing the environmental and social baseline status of the study area.

The methodology of assessment was based on a structured checklist The environmental and social, direct and indirect, short and long-term, temporary and permanent impacts were described and assessed.

Irreversible or unavoidable impacts have been clearly identified. Cumulative effects have also been addressed taking into account other projects or actions planned in the study area. Appropriate mitigation measures have also been identified to prevent, minimise, mitigate or compensate for adverse environmental and/or social impacts.

1.2 Objective of the ESIA

The overall objective of this ESIA is to identify and evaluate all potential adverse environmental and social risks and impacts that could arise from the different phases of the proposed channelization on the Kudeti River and associated structures and proactively develop appropriate alternatives and other measures to eliminate or mitigate the risks and impacts on the bio-physical and social environment. This approach will ultimately ensure that all the planned activities throughout the life cycle of the reservoir are executed in a sustainable manner with due consideration given to the environment including nearby dwellers. Ultimately, the outcome/recommendations of this ESIA will be mainstreamed into the final project designs, investment decisions and project implementation processes to assure the sustainable management of the environment during pre-construction, construction, commissioning operation and decommissioning phases.

CHAPTER TWO

2.0 PROJECT DESCRIPTION

2.1 Project Area Size and Location

The proposed sub project is aimed at the channelization of a 2.1km distance and 17 meters ROW (Draft Drainage Masterplan) on the Kudeti River under the Priority Infrastructure Improvement. The proposed channelization project will involve land acquisition, temporary involuntary resettlement on businesses (for which a standalone RAP has been prepared) site preparation, construction, operation/maintenance activities.

Kudeti River is one of the tributaries of Ogunpa channel. The project proponent proposes to channelize this stream by lining the side slopes over a length of **2.1km** starting north east from Orita Aperin-Beere Road and near the United Missionary Church of Africa and ending south west at the confluence with Ogunpa Channel.

The proposed channel crosses 4 roads. It crosses Orita Aperin Bere main road with a bridge that appears to be in good condition, Omiyale road, Asanke road and Yejide Avenue; with 3 bridges and 1 multi-cell Culvert.

This channel includes six existing structures -(bridges/culverts) of which four locations were found to be inadequate.

2.2 Description of Works Necessitating the ESIA

The proposed associated infrastructure includes

- Kudeti channels with a length of 2.1 km and 17 meters ROW to ensure storm water flow without flooding,
- Replacement of the bridge at the location no. 367 with a new bridge.
- Provide maintenance for the Culvert at location no 270.

Further details on the various bridges and culverts are presented in the Draft Drainage Masterplan Design Report

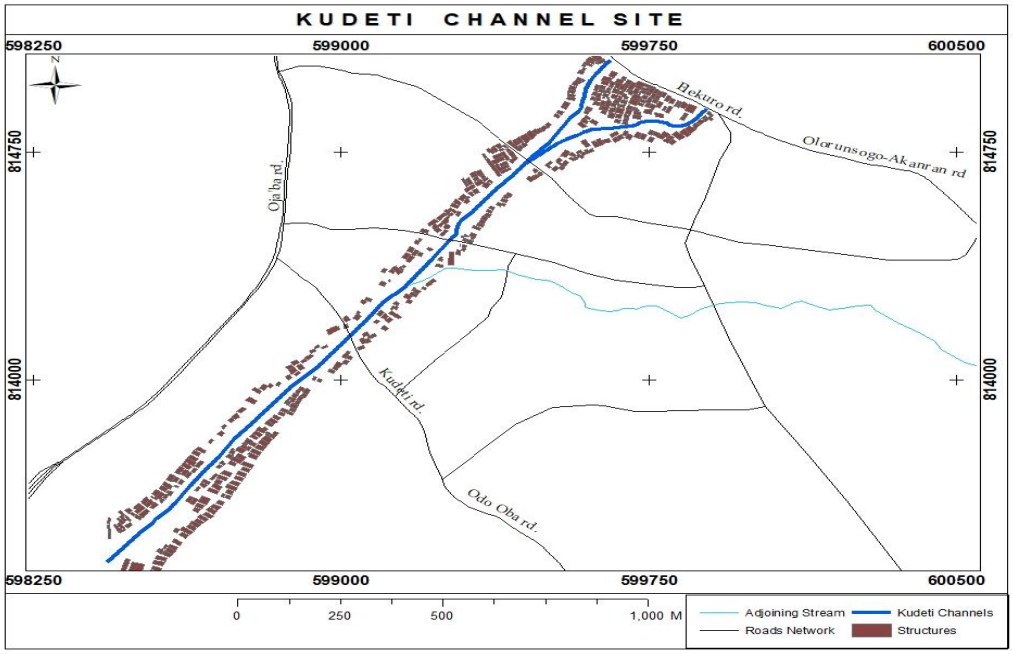

Figure 2. 1: Map of Project Site showing Channelization, Associated Structures and Adjoining Roads

Table 2. 1: Proposed Landscape areas and the Description

Proposed Landscape	Description of Locations and impacts	Description of specific proposed works
L19-20	This area is located at Labo area Landscape area will be used for integrated landscape management which will include multipurpose sporting centre.	Multipurpose sporting centre. Footbridge linking L19-L20 for increased accessibility
L22	Landscape area along kobomoje area for perimeter border tree planting and grassing. This may lead to displacement of some individuals hence, may distort their source of livelihood, but this has been captured in the RAP. However, this would also have positive impacts as they would serve as wind breakers, flood control measures, as shades for relaxation etc.	Perimeter border tree planting and grassing.
L23	Landscape area along kobomoje area for perimeter border tree planting and grassing. This may lead to displacement of some individuals hence, may distort their source of livelihood, but this has been captured in the RAP. However, this would also have positive impacts as they would serve as wind breakers, flood control measures, as shades for relaxation etc.	Perimeter border tree planting and grassing
L24	Landscape area along Agbongbon area for perimeter border tree planting and grassing. This may lead to displacement of some individuals hence, may distort their source of livelihood, but this has been captured in the RAP. However, this would also have positive impacts as they would serve as wind breakers, flood control measures, as shades for relaxation etc.	Perimeter border tree planting and grassing
L25	Landscape area along Yegide Kudeti area for perimeter border tree planting and grassing	Perimeter border tree planting and grassing
L26-27	This is a proposed area at Yegide area of Kudeti. This area is combined together as landscape integrated area.	Perimeter border tree planting and grassing, Landscape integrated area.

See Annex 8 for Landscape Map.

2.2.1 Proposed Civil Works

Designing the potential crossing structure (bridge, culvert and Irish crossings) to achieve the return period capacity depends mainly on the degree of the road which crosses the stream. The road usage (Expressway, Highway, Secondary or Local Road) indicates the importance of the road and the risk of crossing structure's deterioration, damage or submergence. The table below shows proposed civil works along the project corridor.

Table 2. 2: Proposed Civil works

Drainage Infrastructure Items	Excavation/Earthworks	Concrete and Steelwork	Structures (Culverts/Bridges)
• Excavation/Earthworks • Concrete and Steelwork • Structures (Culverts/Bridges) • Channels (Lined/Earth)	This item covers earthworks for earth or concrete channels and conduits. Earth work is expected to be mechanized, in different sections of the project area.	• Concrete Lining (22 -25MPA), 15 cm thickness • Concrete for Culverts (30 to 35MPA), 40 cm thickness • Reinforcement: High tensile steel reinforcement of all diameters	Culvert's barrel length varies from 10 to 60m according to the type of crossing with different kinds of roads, while bridge widths vary from 20m to 30m. For both structures, there are necessary accessories such as culvert inlets, outlets, fences and guardrails.

2.2.2 Channels

As shown in Table 2.3, the earth channels or channels to be provided with river training are mainly based on excavation works, while the lined channels is based on both excavation and lining. The concrete lining of the side slopes with a thickness of 15cm and providing a key to the lining section with an initial dimension of 30cm x 2m.

Table 2. 3: Proposed Dimension of Channels

River Name (ID)	Channel Length (m)	Channel Bed Width (m)	Channel Depth (m)	Side slope Lined (m/m) H:V	Top Width (m)	Lining Material
Kudeti (C55)	2077	25	3	2	37	Concrete

Source: Extracted from first pools of sites - progress report II (July 2017)

Table 2. 4: Proposed Project Phases and Major Activities

PROJECT PHASE	ACTIVITY	DESCRIPTION
Pre-Construction	• Disclosure of safeguards instruments • Mobilization of equipment/staging area • Site clearing • Construction of temporary camp site	Safeguards instruments (ESIA, RAP etc) shall be publicly disclosed, and contractors will mobilize workers to site, clear the site and construct a temporary camp site for workers.
Construction	• excavation, • welding and fabrication, • channel lining and relative structures, • Revegetation	Excavation of soil& waste from the channel will be done, as well as welding and fabrication work on bridges, construction of channel lining and related structures, Planting of trees and landscaping shall be done as a non-structural flood control measure.
Operation	• time to time river monitoring • De- siltation of the channel and dredging of the channel if necessary.	Monitoring shall be done at regular intervals. When silt builds up, it reduces the water retention capacity of the channel, hence the channel needs to be de-silted at intervals.

2.3 Project Justification

Urban flood occurrence and the damages to lives and properties is fast becoming an annual event in Ibadan city. This event has been associated with varying degrees of physical, social and economic impacts and losses. The Kudeti/Ogunpa flood event of 1980 resulted in more than 250 deaths. The outcome of the 2011 floods was the death of more than 100 persons and extensive damage to physical infrastructure including roads, bridges, buildings, property, farms, livelihoods and enterprises across the city.

Significant economic losses estimated at about $40 million were also recorded in the housing, education, agriculture and transport sectors (World Bank, 2014). Hence, the need for the project emanates from the necessity to provide a lasting solution to the threats posed to lives and properties by the annual flood occurrence in the project area.

CHAPTER THREE

3.0 INSTITUTIONAL AND REGULATORY FRAMEWORK

3.1 Introduction

This chapter provides an overview of the institutional structures, policies, laws and regulations applicable to the water sector as well as environment and social sustainability in Nigeria and **Oyo** State. The Chapter also describes the World Bank's environmental and social safeguards policies, and environmental, health and safety guidelines (EHSG) In addition, other relevant international environmental and social standards, policies and agreements to which Nigeria is a party.

Federal Ministry of Environment

The Federal Ministry of Environment (FMEnv) is the statutory government institution mandated to coordinate environmental protection and natural resources conservation for sustainable development in Nigeria. Some of the mandates of the Ministry include:

- Advising the Federal Government on national environmental policies and priorities, conservation of natural resources, sustainable development as well as scientific and technological activities affecting the environment and natural resources; and
- Prescribing standards and formulating regulations on water quality, effluent limitations, air quality, atmospheric protection, ozone protection, noise control as well as the removal and control of hazardous substances.

3.2 Legal and Administrative Framework

Various policies, regulations and guidelines on conducting ESIA studies and implementing projects of this nature with due cognizance for environmental and social issues have been stipulated by various establishments , including the Federal Ministry of Environment, State Ministry of Environment, Caps, Laws and Edicts of International bodies and organizations, etc. The ESMF contains a detailed review of the regulations relevant to this project in this section. In reviewing the regulations two perspectives are given due cognizance:

* Regulations and policies that relate to the Global IUFMP project;

* Regulations specific to the Kudeti channelization project

3.2.1 National Legislation

Responsibility for environmental and social protection at the National level in Nigeria is the primary duty of the Federal Ministry of Environment (FMEnv). A list of some relevant Nigerian regulations and guidelines applicable to environmental and social protection are presented below.

- National Policy on the Environment (1989, revised 1999, 2016);Environmental Impact Assessment Act CAP E12, LFN 2004;
- National Guidelines for Environmental Auditing In Nigeria (1999, revised 2010);
- National Environmental Protection (Management of Solid and Hazardous Wastes Regulations), 1991;
- National Environmental Protection (Effluent Limitation) Regulations, 1991;
- Federal Environmental Protection Agency Act (1988); and
- National Guidelines and Standards for Environmental Pollution Control in Nigeria (1991)
- National Environmental Standards and Enforcement Agency NESREA Act 2007
- Social regulations include the Labour Act, Law of the Federation of Nigeria 1990.
- ILO Decent work Agenda

The **ILO Decent work Agenda** has four pillars namely; "Standards and rights at work, Employment creation& enterprise development, Social protection and Social dialogue"; with gender as a cross-cutting theme. This is further emphasized/supported by the **Nigerian Labour Act** with respect to

Women Employment in sections 54-58 (covering maternity protection, night work etc), Forced Labour (Sections 73-74), Terms and conditions of employment (Sections 13-20) stating certain rights/privileges of employers/employees etc.

3.1.1 State Legislations

Oyo State Policy on Environment (2013)

The Nigerian Constitution allows States to make legislations, laws and edicts on the Environment. Eg. Oyo State Policy on Environment (2013), legislations from the Ministry of Lands, Survey and Town Planning, Oyo State of Nigeria Gazette No. 8, Vol.42- Violence Against Women Law (VAWL), 2016

The VAWL Part 2, has punishments for anyone who compels/threatens a woman for sexual activity, sexual abuse of underaged girls, provisions for widows; duties of police officers to GBV/SEA victims/survivors etc

3.1.2 Applicable International Legal and Administrative Instruments

Internationally, agencies/organizations such as the World Bank and other financial organizations interested in such development projects usually set environmental criteria which must be met by the project proponents before they invest in them.

Some of the relevant international instruments to which Nigeria is a signatory include:

- Convention Concerning the Protection of the World Cultural and Natural Heritage Sites (World Heritage Convention) 1975
- United Nations Framework Convention on Climate Change (1992)
- African Convention on the Conservation of Nature and Natural Resources (1969)
- Convention on the Conservation of Migratory Species of Wild Animals (1979)
- Agenda 21 – United Nations Conference on Environment and Development
- The RAMSAR Convention (The Convention on wetlands of International importance) 1971

Relevant good practice guidelines/policies in line with the World Bank process shall be applied. This is more so since the proposed project is co-sponsored by the World Bank.

World Bank Safeguard Policies

The World Bank has 10+2 Environmental and Social safeguard policies to reduce or eliminate the negative environmental and social impacts of potential projects, as well as improve decision making. Specifically, the overall project has triggered the following policies:

However, the policies triggered by Kudeti Channelization project are presented in the table below;

Table 3. 1: Policies triggered by the proposed project on Kudeti Channel

Operational Policy	Yes	Reason	No
Environmental Assessment (OP.4.01);	**X**	Safeguards policy OP 4.01 is triggered in this study with civil work activities for the immediate restoration of bridges / culverts. Therefore an Environmental and Social Impact Assessment (ESIA) is being prepared. .	
Natural Habitat (OP/BP 4.04)	**X**	This policy is triggered because some project activities may take place near critical natural habitats or environmentally sensitive areas and some mitigation measures may be necessary to minimize any negative environmental and social impacts.	
Involuntary Resettlement (OP/BP 4.12)	**X**	This policy is trigged because most of the sub-projects could involve minimal or moderate land acquisition and or restriction of access to usual means of livelihood as most of the sub-projects will largely be rehabilitation of existing infrastructure. However, some of the projects may involve significant land acquisition and displacement of affected people. As part of the safeguards due diligence, the client has prepared a site specific Resettlement Action Plans (RAPs) which will address the needs of persons who will be affected by loss of economic activities, land acquisition and/or relocation.	

Operational Policy	Yes	Reason	No
Physical Cultural Resources (OP/BP 4.11)	**X**	Graveyards were found around the project area. Hence the need to guide contractors incase of chance finds & similar PCRs.	
Safety of Dams (OP/BP 4.37)		Because there are serious consequences if a dam does not function properly or fails, the Bank is concerned about the safety of new dams it finances and existing dams on which a Bank-financed project is directly dependent. While the rehabilitation of Eleyele dam is included in the global work scope of the IUFMP, the current project will not have any direct or remote contact with the Eleyele dam, and thus the mention of OP 4.37 in this section is only as it relates to the IUFMP as a whole, not the Kudeti channelization project.. This is in recognition of the fact that the Kudeti stream, is at best a seasonal stream in most parts of its reaches, and only becomes a raging torrent during flash floods occasioned by heavy rainfall	
Disclosure Policy (OP/BP 17.50)	**X**	All projects must disclose key information & safeguard documents (including ESIA, RAP etc) in-country and through the Bank's Info shop	

The proposed activities in section 2.2. will essentially entail civil works which has the potential to generate environmental and social safeguards concerns thus triggering the World Bank's Safeguard policies as captured in table 3.1 above.

Consequently, the ESIA is required to address the environmental and social risks and impacts likely to result from project implementation. These anticipated environmental and social risks and impacts may include but not limited to noise and dust generation; waste generation; obstruction of mobility of people living in the area; public and occupational health and safety issues; traffic issues amongst others.

CHAPTER FOUR

4.0 ANALYSIS OF ALTERNATIVES

4.1 Project Options

Project Options represent possible lines of actions to be taken against the problem the project is designed to solve. Having identified the menace associated with the incidence of urban floods and the need to tackle it. The World Bank through the IUFMP in Ibadan is providing a solution through the development and implementation of a comprehensive flood management plan in Ibadan. Thus, efforts should be geared towards evaluating the relative attractiveness by comparing to various selection criteria. The options selected are ultimately characterized by different project variables. The necessary decisions have to be made on the optimum way to meet these needs after having decided on an action option, we then analyze and select on the type of work to be required for the project.
Thus, the following options were considered in respect of the proposed channelization project:-

Option 1 - No - project Option
Option 2 - Do - project Option
Option 3 - Delayed - Project Option

4.1.1 No-Project Option

The No-Project Option addresses the effects of not implementing the project. Adopting this option renders all the resources used at the planning stage wasted. Business-as-usual which implies counter - factual scenario was disqualified due to some of the reasons such as the risk of losing more lives and properties worth billions of naira to flood incidence, associated forgone employment opportunities that would have otherwise arise through the project in the form of direct employment, tourism, and lack of community development and related social programs among the host communities. Hence, this option is not desirable and was not considered.

4.1.2 Delay-Project Option

Due to some unfavourable circumstances like civil unrest, or antagonistic public opinion, government policy, prevailing economic conditions, or other forces , the implementation of a project may be delayed. Applying this alternative to project would imply that all planning and development activities would be stalled until conditions are more favourable. However, none of the above stated conditions apply. Although, the economy is not very favourable for implementing the project at this time, the project can be implemented from funds received from the donor agency (World Bank). In addition, the general public is eager to have development of project like this in place; the project is welcome, even among the host communities. In recognition of no antagonistic situation to the project development, selecting the delayed project alternative was ruled out.

4.1.3 Do-Project Option

This option addresses the effects of implementing the proposed project. This is an option which would have a cumulative short- and long-term positive impact on the locality, its environs and the country at large. It is almost impossible to quantify the overall positive effect and benefit of this project on the locality, economy and the country at large, but the impact will be positive, beneficial and meaningful. The impact of the project if properly implemented would affect the economy, social, environmental and aesthetic quality (through proposed landscape design) of the areadue to some of the reasons such as improved livelihood, investment opportunities, tourism and the development of all other community related infrastructures. This option was finally considered as the best option to the proposed project implementation.

4.2 Project Alternatives

Project alternatives were evaluated as part of the conceptual design process and the alternatives that provide cost-effectiveness, environment friendliness and management. This process is an identification of viable alternatives to meeting the purpose of a comprehensive flood control and management plan in Ibadan metropolis. The analysis of viable alternatives also should consider such parameters as economics, financial, and technical feasibility.

As far as the proposed channelization project is concerned, the alternatives that could be considered may include:-

- Alternative location
- Alternative technologies and design

4.2.1 Alternative Location

Urban flood incident had occurred in various states and cities in Nigeria with which Ibadan city is not an exception. Flood control and River channelization is a site specific project; dredging and other ancillary infrastructures are to be designed on or near the existing river course.

In view of the prevailing circumstances such as loss of lives and properties of the communities residing along the river channel and the need to prevent such occurrence in future, Therefore, the idea of acquiring an alternative location for the project is not a viable alternative to be considered. The Kudeti River is the major point to tackle and address these issues hence, the best location of choice for this kind of project.

4.2.2 Alternative Technologies and Design

The bridge selection process considered the following types of bridge designs;

- **Arch bridge** consists of curve-shaped abutment at each end. Generally, the roadway of bridge lies on the arch structure. The arch squeezes together and this squeezing force is carried along the curve to support at each end. The abutments then push back on the arch and prevent the arch ends from spreading apart.
- **Beam bridges** are the simplest bridge type normally consists of one or more spans, supported by abutment or pier at each end. Beam bridges are usually constructed of RCC or steel or a combination of both RCC and Steel. The concrete elements used in beam bridges may be reinforced, pre-stressed or post-tensioned
- **Cantilever bridge** is constructed using cantilever span, i.e the span is supported at one end and the other end is opened. Usually, two cantilever parts are joined to make the roadway.
- **Suspension bridge**, the deck slab is suspended using ropes, chains or high tensile strength steel cables. The roadway hangs from massive steel cables, which are draped over two towers and secured by anchors on both ends of the bridge. The anchors are made from solid concrete blocks. The cables transfer the loads into compression in the two towers. Usually, this type of bridge can span 2000 – 7000 feet.
- **Truss bridge** is constructed by using trusses which are comprised of many small elements forming triangular trusses. Truss is used because it is very rigid structure and it can transfer the load from a single point to much wider area.

For the sustainability of this channelization project therefore, the **beam bridge** design was selected as the appropriate bridge design for the channel because this design fit into the category of stream order in which the Kudeti River belongs.

CHAPTER FIVE

5.0 Environmental and Social Baseline Conditions

5.1 Introduction

This chapter provides a description of the existing environmental (Meteorology, Air Quality and Noise, water quality and Soil Quality/ geological features, Land use, Vegetation, Wildlife) and social baseline (socio-economic activities, health, ethnicity, religion, educational levels, water supply, infrastructure etc) conditions of the proposed project area which comprise of the biophysical, socioeconomic and health status of the host communities and its catchment area.

5.1.1 Study Approach

Field studies and sampling were conducted in the project area. Primary data were collected during field investigations and socio-economic survey.

The approach adopted includes the following:

- Review of existing literature on the proposed area;
- Reconnaissance survey;
- Field samples collection;
- Field analysis and sample preservation;
- Laboratory / data analysis; and
- Result interpretation

5.1.2 Data gathering

The spatial boundary for both socio-economics and biophysical environmental study is approximately 2km to the right and left of the Kudeti river path. The information on the biophysical baseline is derived from published sources as well as from the dry season field surveys. The dry season survey was conducted between 5thand 17th of February, 2018.

Table 5. 1: Coordinates of Sample Location

S/N	Sample Code	Northing	Easting	Elevation (m)
Soil Samples				
1	SS1a (0 – 15)cm	05’98479	08’13436	166
	SS1b (15 – 30)cm			
2	SS3a (0 – 15)cm	05’98881	08’13967	170
	SS3b (15 – 30)cm			
3	SS4a (0 – 15)cm	05’99026	08’14201	172
	SS4b (15 – 30)cm			
4	SS5a (0 – 15)cm	05’99243	08’14425	180
	SS5b (15 – 30)cm			
5	SS6a (0 – 15)cm	05’99394	08’14666	182
	SS6b (15 – 30)cm			
6	SS7a (0 – 15)cm	05’99501	08’15033	175
	SS7b (15 – 30)cm			
7	SS8a (0 – 15)cm	05’99616	08’15033	184
	SS8b (15 – 30)cm			
8	SS9a (0 – 15)cm	05’99802	08’14877	196
	SS9b (15 – 30)cm			
9	SS10a (0 – 15)cm	05’99867	08’15054	179
	SS10b (15 – 30)cm			
10	SSC (0 – 15)cm	06’03844	08’19658	225
	SSC (15 – 30)cm			
Surface Water+-- Quality (sediment and Hydrobiology)				
1	SW1	05’98457	08’13447	165
2	SW2	05’99241	08’14431	169
3	SW3	05’99644	08’15031	186
4	SWC	05’99803	08’14851	181
Ground Water Quality				

S/N	Sample Code	Northing	Easting	Elevation (m)
1	GW1	05’99242	08’14392	174
2	GW2	05’99672	08’14982	184
3	GW3	05’98497	08’13339	171
4	GWC	05’99847	08’14934	185
Air Quality and Noise				
1	AQ1	05’98480	08’13435	171
2	AQ2	0598584	0813621	172
3	AQ3	0598872	0813959	176
4	AQ4	0599029	0814200	178
5	AQ5	0599271	0814456	176
6	AQ6	0599471	0814701	178
7	AQ7	0599706	0814834	176
8	AQ8	0599868	0814904	179
9	AQ9	0599663	0815055	184
10	AQC	0612083	0814864	174

Source: Field Study 2018.

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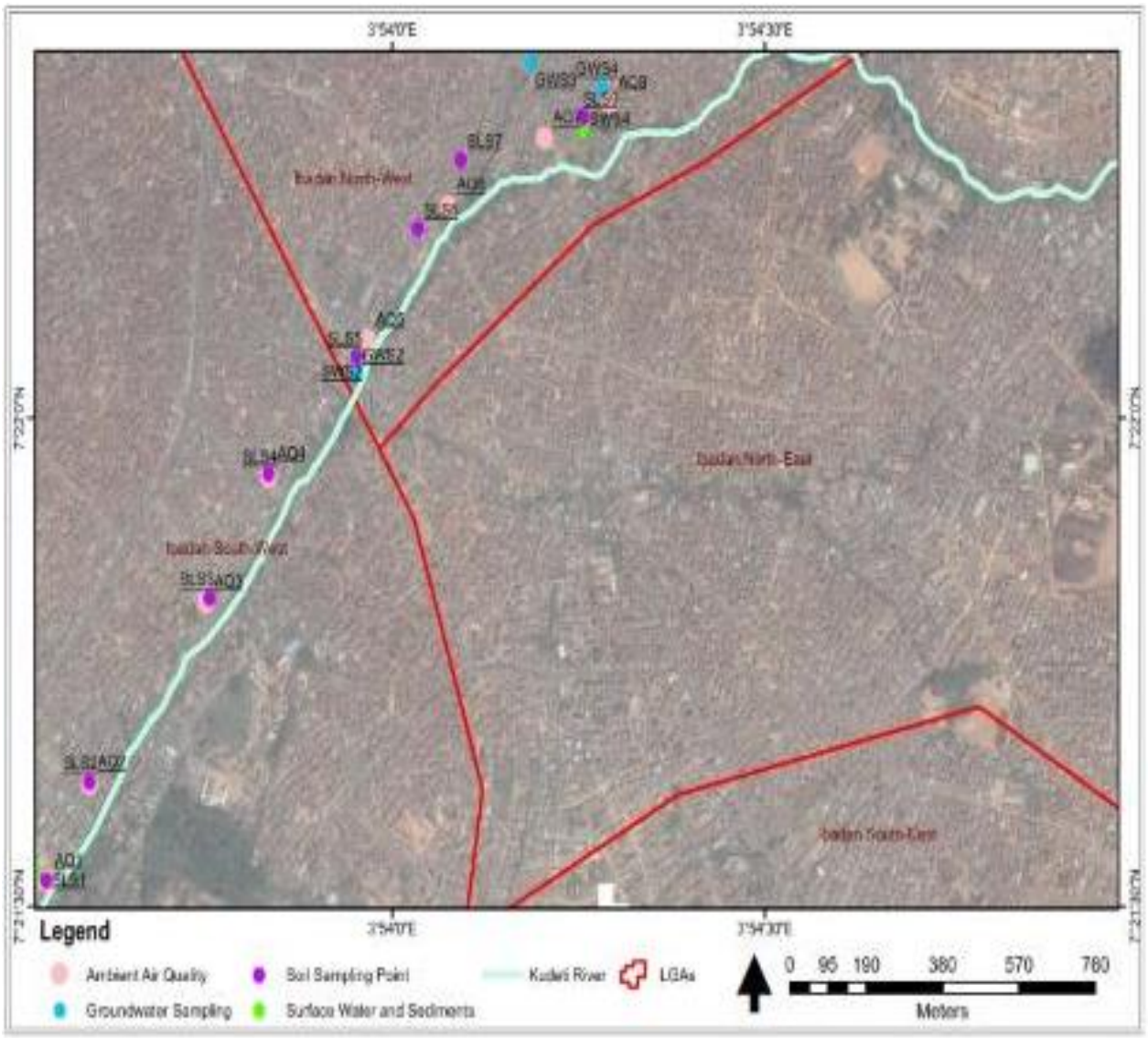

Source: Field Study 2018.

Figure 5. 1: Sampling Map of the Study Area.

5.2 Environmental Baseline Conditions

5.2.1 Climate and Regional Meteorology

- **Temperature, Rainfall and Relative Humidity**

The in-situ weather measurement result showed that the temperature varies between 27.5 ^{O}C and 32.3^{O}C. The mean monthly temperatures in the state ranges between 21.9^{o}c minimum temperature and 32.6^{o}c for maximum temperature with the coolest month being August and the hottest being February/March.

The lowest amounts of rainfall were recorded in December and January corresponding to the dry season months while the total average is 102.9mm. The rainfall pattern shows a bimodal distribution with peaks in July and September. Construction activities occurring in November to February will have the least pollutant removal by rainfall and high dust generation due to dry soil conditions.

Humidity indicates the likelihood of precipitation, dew and fog and encourages growth and sustenance of tall rich vegetation and perennial tree cultivation which is common in the project area.

The in-situ mean relative humidity recorded at the time of study is 71%. Table below shows the average temperature, rainfall and relative humidity of the area under study between 1987 and 2017.

The IPCC (Intergovernmental Panel on Climate Change) reported that the global atmospheric concentrations of greenhouse gases (GHG) will continue to increase in the following decades and resulting in continuing climate change at the regional level. Therefore, it is necessary to forecast climate change induced precipitation effects on water resources (*i.e.*, stream flow and groundwater discharge) for developing future water resources management plan at regional level.

Table 5. 2: Average Temperature and Rainfall Values in Oyo State (1987 – 2017|)

Temperature													
Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
Min T(ºC)	20.3	23.1	24.0	23.8	23.0	22.2	21.9	21.6	21.7	21.7	20.9	19.2	21.9
Max T(ºC)	34.0	36.3	36.3	34.6	32.5	30.9	29.2	28.6	29.9	31.2	33.9	34.2	32.6
Rainfall Values													
Rainfall (mm)	2.5	6.5	32.9	99.5	155.6	185.9	194.9	155.5	224.3	171.1	3.7	2.8	102.9
Relative Humidity													
RH(%)	74.9	45.2	53.5	62.7	70.2	74.7	77.5	79.2	77.3	72.3	58	45.7	65.9

Source: Nigerian Meteorological Agencies (NIMET).

- **Wind speed and direction**

The climatic condition of the study area is influenced by two wind systems related to a global system; south-westerly (SW) and the north-easterly (NW). The winds that prevail over the project site in Oyo state are the same with that which prevail in Nigeria and these are the Tropical Maritime Air mass and the Tropical Continental Air mass.

Generally, the wind speed is relatively low. The measured average value of in-situ wind speed in the study area presented in the figure 5.2 ranges from (0.7m/s) to (1.4m/s).

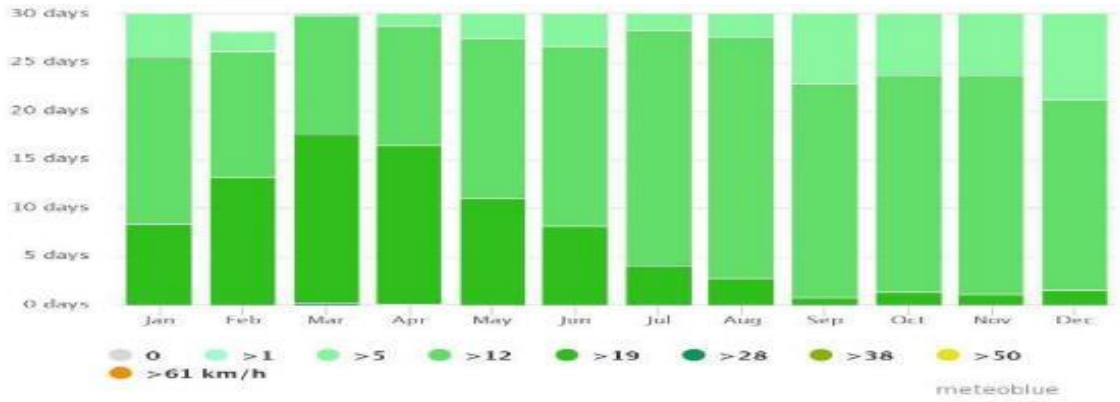

Figure 5. 2: Average Monthly Wind Speed of the Project Area (1987 – 2017)

Source: Nigerian Meteorological Agencies (NIMET).

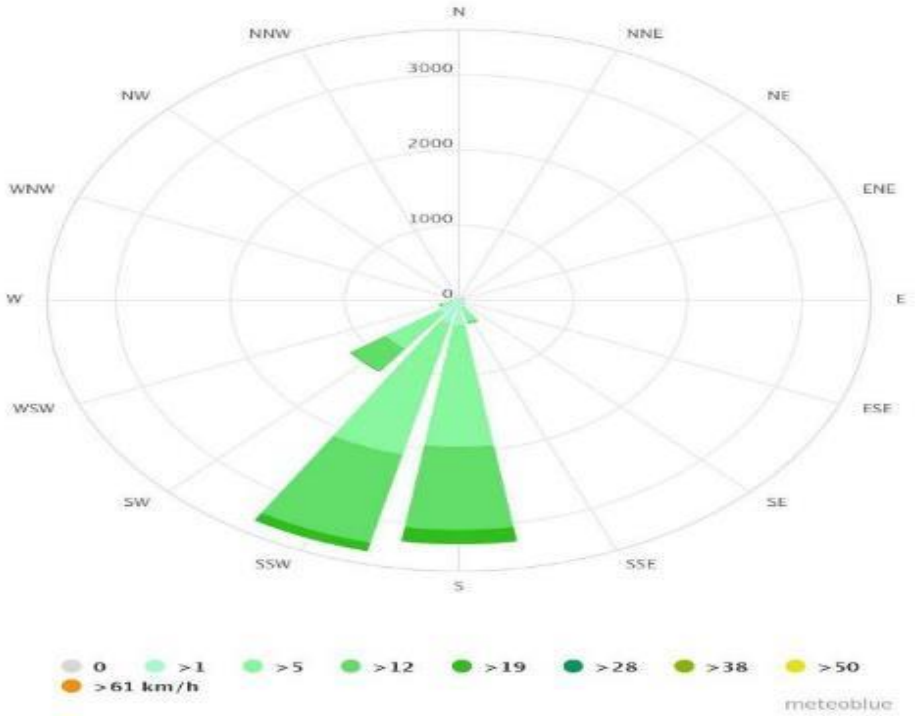

Figure 5. 3: Wind Rose Showing Wind Direction of the Project Area

Source: Nigerian Meteorological Agencies (NIMET).

5.2.2 Air Quality and Noise Measurement

Sampling Method

Ambient air sampling was conducted in accordance with ASTM D5111-99 (which is a standard guide for choosing locations and sampling methods for monitoring atmospheric deposition at non-urban locations). Ten stations were selected for sampling and measurement. At each station, sampling and measurements of air quality parameters and chemical constituents of atmospheric pollutants were carried out *in-situ* using hand-held air quality monitoring equipment described below:

Table 5. 3: Air Quality parameters and measurement devices

Air Quality Parameters	Measurement Device
Suspended Particulate Matter (SPM)	Haz-Dust MODEL HD-1100
Nitrogen dioxide (NO2)	ToxiRAE Model PGM-1150
Sulphur dioxide (SO2)	ToxiRAE Model PGM-1130.
Carbon monoxide (CO)	ToxiRAE Model PGM-1110
Hydrogen Sulphide (H2S) and Volatile Organic Carbons (VOCs)	MultiRAE gas monitor (Model PGM50-5P
Ammonia (NH3)	ToxiRAE Model PGM-1191

Noise Level Measurement

The noise levels at the ten air quality measurement sites within the study area and control stations were determined using a multifunctional sound level meter compatible with standards of IEC 651 Type 2, ANSI 1.4 Type 2 (Internation Electrotechnical Commision(IEC) is a compliance standard which guides noise & acoustic hand held instruments used for the measurement of different kinds of noise especially in the assessment of noise pollution and for compliance purposes).

Noise levels at all sampling locations within the project area ranged between 48.0dB – 77.3dB and 45.6dB – 66.3dB for dry and wet season respectively. Generally, noise levels recorded at the monitoring stations were lower than the 90dBA FMEnv.

The table below shows the ambient air Quality and Noise Characteristics within the Project Site during Dry and Wet season respectively.

Table 5. 4: Ambient Air Quality and Noise Characteristics within the Project Sit (Dry Season)

Sampling Location	**SPM** ($\mu g/m^3$)	**VOC** (ppm)	**CO** (ppm)	**SO_2** (ppm)	**NO_2** (ppm)	**NH_3** (ppm)	**H_2S** (ppm)	**Noise level** (dB)	**RH** (%)	**Temp** (^OC)	**W/Speed** (m/s)
AQ 1	49.8	0.5	2.0	ND	ND	ND	ND	62.4	83.3	27.5	1.1
AQ2	57.9	0.4	4.1	ND	0.03	ND	ND	49.9	79.2	28.5	0.9
AQ3	67.9	0.6	2.0	ND	0.02	ND	ND	50.6	77.5	28.6	0.7
AQ4	67.6	0.4	3.0	ND	0.03	ND	ND	59.0	75.0	29.4	1.3
AQ5	84.6	o.8	5.8	ND	0.3	ND	ND	72.4	71.2	29.8	1.4
AQ6	67.5	3.0	2.0	ND	ND	ND	ND	54.3	69.1	30.2	1.6
AQ7	54.6	0.7	1.0	ND	ND	ND	ND	48.0	67.0	30.2	0.7
AQ8	67.4	0.4	8.1	ND	0.05	ND	ND	77.3	65.4	31.0	1.2
AQ9	67.2	0.6	6.3	ND	0.04	ND	ND	68.7	60.1	32.0	0.8
Control	60.8	0.2	1.1	ND	ND	ND	ND	70.1	58.2	32.3	1.0

Source: Field Study February, 2018 ND: Not Detected

Table 5. 5: Ambient Air Quality and Noise Characteristics within the Project Site (Wet Season)

Sampling Location	**SPM** ($\mu g/m^3$)	**VOC** (ppm)	**CO** (ppm)	**SO_2** (ppm)	**NO_2** (ppm)	**NH_3** (ppm)	**H_2S** (ppm)	**Noise** level (dB)	**RH** (%)	**Temp**(^{O}C)	**W/Speed** (m/s)
AQ 1	47.0	<0.001	2.3	<0.001	<0.001	<0.001	<0.001	59.1	70.4	27.4	1.3
AQ2	52.1	<0.001	3.4	<0.001	<0.001	<0.001	<0.001	52.0	72.3	28.8	1.8
AQ3	38.0	0.001	4.6	<0.001	<0.001	<0.001	<0.001	58.2	68.8	26.5	1.7
AQ4	25.0	<0.001	2.3	<0.001	<0.001	0.001	<0.001	68.3	70.5	23.5	1.0
AQ5	11.6	0.01	1.4	<0.001	<0.001	0.002	<0.001	67.2	68.3	28.2	1.4
AQ6	36.0	<0.001	1.6	<0.001	<0.001	<0.001	<0.001	60.1	72.3	27.8	0.6
AQ7	81.2	<0.001	0.2	<0.001	<0.001	<0.001	<0.001	60.0	70.8	30.3	2.7
AQ8	82.1	<0.001	0.1	<0.001	<0.001	0.001	<0.001	50.0	70.6	25.5	1.9
AQ9	79.8	0.001	0.3	<0.001	<0.001	<0.001	<0.001	63.0	71.1	29.2	1.8
Control	77.9	<0.001	1.7	<0.001	<0.001	0.002	<0.001	65.3	70.2	31.0	1.9

Secondary Source: Field Study 2016 (EIA on the proposed Base Transceiver Station (BTS) in Oyo state)

5.2.3 Water Quality

5.2.3.1 Groundwater Quality

The results of physico-chemical parameters determined in groundwater within the project area are presented in the table below.

Table 5. 6: Physico-chemical characteristics sampling of groundwater in the study area (Dry Season)

PARAMETERS	SAMPLING LOCATION				FMEnv. Standard	NESREA
	GW1	GW2	GW3	GWC		
pH	6.11	6.1	6.06	5.03	6.5 – 8.5	6.5-9.2
Temp. (^{O}C)	28.2	27.5	27.4	28.0	-	-
Conductivity (µs)	1,010	685	640	798	1000	-
TDS (mg/l)	646	438	410	511	500	-
TSS (mg/l)	474	387	620	489	-	-
TS (mg/l)	1120	825	1030	1000	-	1500
BOD (mg/l)	298	158	129	175	-	
Ca (mg/l)	66.5	21.1	28.4	17.1	-	200
Mg (mg/l)	32.2	25.7	14.2	32.3	-	150
Nitrate (mg/l)	0.03	0.07	0.07	3.48	10.0	50
Phosphate (mg/l)	0.01	0.06	0.001	0.02	5.0	-
Sulphate (mg/l)	0.09	1.03	1.03	0.28	500	400
Total hardness (mg/l)	298	158	129	175	250	500
HEAVY METALS						
Cr	BDL	BDL	BDL	BDL	0.05	30
Fe	0.18	BDL	0.39	BDL	1.0	1.0
Ni	BDL	BDL	BDL	BDL	0.05	75
Pb	BDL	BDL	1.02	BDL	0.05	75
Zn	BDL	0.11	BDL	0.10	5.0	15

Source: Susainabiliti Field Study 2018.

Table 5. 7: Microbiological Count and Bacteria Species Found in Ground Water Samples

Sampling Location	Total Heterotrophic count (THC) (×10^3cfu/ml)	Coliform count (MPN index /100ml)	Microflora obtained
GW1	NG	<2	-
GW2	3.8	<2	*S. aureus, Bacillus* sp.
GW3	8.3	<2	*Bacillus* sp.
GWC	NG	<2	

Source: Field Study 2018.

Key:

NG: NO GROWTH

Sulphate, Phosphate, Nitrate, Calcium and magnesium

Low nitrate, sulphate and phosphate levels were recorded in groundwater samples compared to the FMEnv limits.

There is no evidence of adverse health effects specifically attributable to calcium and magnesium in drinking water as Calcium and magnesium ions measured in the groundwater ranged from 17.1 – 66.5mg/L and 14.2 – 32.3 mg/L respectively, with calcium contributing more to the hardness. Undesirable effects due to the presence of calcium in drinking water may result from its contribution to hardness.

Heavy Metals

Heavy metals determined in the groundwater samples showed majorly below detection limit. The concentration range of other metals are in the order of Fe>Mn> Ni > Zn>Pbr> Cu. Copper and zinc recorded concentrations lower than their maximum allowable limits in drinking water. See Annex 2 for Drinking water standards.

5.2.3.2 Surface Water Quality

The summary of the physico-chemical characteristics of the surface water are presented in the Table below.

Table 5. 8: Physico-chemical characteristics of surface water of the project area

PARAMETERS	SAMPLING LOCATION				FMEnv. Standard	NESREA
	SW1	SW2	SW3	SWC		
pH	5.89	7.14	6.75	6.6	6.5 – 8.5	6.5-8.5
Temp. (^{0}C)	32.6	31.6	32.4	30.5	-	-
Conductivity (µs)	948	1020	1110	937	1000	-
TDS (mg/l)	607	653	710	600	500	-
TSS (mg/l)	613	377	435	725	-	-
TS (mg/l)	1220	1030	1145	1325	-	-
DO (mg/l)	0.7	3.8	2.1	7.9	-	4.0
COD (mg/l)	50	84	90	124	-	30
BOD (mg/l)	12	27	29	28	-	6.0
Ca (mg/l)	49.2	50.1	0.30	38.3	-	-
Mg (mg/l)	21.6	23.5	4.9	19.4	-	
Nitrate (mg/l)	0.05	0.04	0.003	0.07	10.0	
Phosphate (mg/l)	0.011	0.012	0.013	0.01	5.0	3.5
Sulphate (mg/l)	1.49	2.43	2.58	2.49	500	-
Total hardness (mg/l)	211	222	20.8	175	250	-
Salinity (g/l)	0.47	0.51	0.56	0.47		-
HEAVY METALS						
Cr	BDL	BDL	BDL	BDL	0.05	0.5
Fe	0.53	0.87	49.80	1.74	1.0	0.5
Ni	BDL	BDL	BDL	BDL	0.05	0.01
Pb	BDL	BDL	1.02	BDL	0.05	0.01
Zn	ND	0.02	1.96	ND	5.0	0,2

Source: Field Study 2018.

Table 5. 9: Microbiological Count and Bacteria Species Found in Surface Water Samples

Sampling Location	Total Heterotrophic count (THC) (×10^{3}cfu/ml)	Coliform count (MPN index /100ml)	Microflora obtained
SW1	7.9	<2	*Bacillus* sp., *Pseudomonas* sp. *S. aureus*
SW2	1.4	<2	*Bacillus* sp., *Pseudomonas* sp.
SW3	3.2	<2	*Bacillus* sp.
SWC	2.4	140	*Enterobacter* sp., *Bacillus* sp., *E. coli*

Source: Field Study 2018

The values of BOD and COD recorded in this study (table 5.8) revealed that the water bodies in the project area are not within the acceptable quality. This can be attributed to faecal contamination due to open defecation &waste disposal along the channel. Waste disposal & sanitation should be improved, and mitigation measures have been stated in the ESMP table (table 7.1)

5.2.4 Soil Samples

Soil sample results for microbiological count and bacteria species in each sampling point are presented in the table below;

Table 5. 10: Microbiological Count and Bacteria Species found In Soil Samples Collected Around Kudeti River

Sampling location/ codes	Total Bacteria count (×10^{4}cfu/ml)	Total Fungal count (×10^{4}cfu/ml)	Microflora obtained
SS1a (0 – 15)cm	9.2	1.2	*Bacillus* spp, Actinomycetes *Fusarium* spp., *Aspergillus* spp.
SS1b (0 – 15)cm	6.2	0.4	*Fusarium* spp.
SS2a (0 – 15)cm	5.4	-	*Bacillus* spp.*Trichoderma* spp,*Penicillium* spp,*Fusarium* spp.
SS2b (0 – 15)cm	5.1	0.7	*Bacillus* spp., *Fusarium* spp.
SS3a (0 – 15)cm	5.4	1.3	*Bacillus* spp.,Actinomycetes *Penicillium* spp,*Aspergillus* spp.
SS3b (0 – 15)cm	3.9	1.7	*Bacillus* spp., *Fusarium* spp.
SS4a (0 – 15)cm	6.5	3.9	*Bacillus* spp, Actinomycetes *Trichoderma* spp,*Fusarium* spp.

Sampling location/ codes	Total Bacteria count ($\times 10^4$cfu/ml)	Total Fungal count ($\times 10^4$cfu/ml)	Microflora obtained
SS4b (0 – 15)cm	4.1	0.7	*Bacillus* spp., *Fusarium* spp., *Aspergillus* spp.
SS5a (0 – 15)cm	5.7	0.1	*Bacillus* spp., *Aspergillus* spp.
SS5b (0 – 15)cm	3.1	0.4	*Bacillus* spp., *Fusarium* spp.
SS6a (0 – 15)cm	2.8	0.3	*Bacillus* spp., *Fusarium* spp.
SS6b (0 – 15)cm	4.4	-	*Bacillus* spp.,
SS7a (0 – 15)cm	3.8	0.9	*Bacillus* spp.,*Penicillium* spp.,*Fusarium* spp, *Aspergillus* spp.
SS7b (0 – 15)cm	2.9	0.3	*Bacillus* spp., *Penicillium* spp. , *Fusarium* spp.
SS8a (0 – 15)cm	11.6	0.7	*Bacillus* spp., *Fusarium* spp., *Aspergillus* spp.
SS8b (0 – 15)cm	3.9	0.6	*Bacillus* spp., *Aspergillus* spp.
SS9a (0 – 15)cm	6.2	2.7	*Bacillus* spp,*Staphylococcus* spp,*Fusarium* spp,*Aspergillus* spp.
SS9b(0 – 15)cm	5.9	0.4	*Bacillus* spp., *Fusarium* spp.

Source: Field Study, February 2018.

Soil Physico-Chemical Characteristics

Soil sample results from each sampling point are presented in the tables below.

Table 5. 11: Physico-Chemical Characteristics of Soil within the Study Area (dry and wet season)

Sampling location	PH	**Particle size (%)**			Per/HC (cm hr^{-1})	Bulk D. (Mgm^{-3})	Porosity (%)	Avail water **(cm^3cm^{-3})**	**TOM %**	**EX. Acidity (cmol/ kg)**	**Fe mg/kg**	**Zn mg/ kg**	**Cr mg/kg**	**Pb mg/ kg**	**Ni mg/ kg**
		Sand	Silt	Clay											
SS1a (0 – 15)cm	7.4	69.4	18.2	12.4	1.87	4.15	1.55	0.107	2.01	0.53	63	1	BDL	BDL	BDL
SS1b (0 – 15)cm	7.46	79.4	6.2	14.4	1.0	40.4	1.58	0.071	0.51	0.27	5740	18	BDL	47.9	BDL
SS2a (0 – 15)cm	6.8	74.5	14.2	11.3	2.02	40.4	1.58	0.094	1.89	0.60	8320	40	BDL	29.2	2.38
SS2b (0 – 15)cm	6.68	73.4	14.2	12.4	1.3	40.0	1.59	0.081	1.73	0.80	8150	182	BDL	51.8	4.48
SS3a (0 – 15)cm	6.82	65.6	21	13.4	1.84	42.6	1.52	0.108	1.41	0.33	8180	147	BDL	44.8	5.28
SS3b (0 – 15)cm	7.32	68.4	19.3	12.3	1.51	40.8	1.57	0.093	1.73	0.53	9510	155	BDL	38.8	6.43
SS4a (0 – 15)cm	7.02	78.6	10	11.4	1.71	39.2	1.61	0.083	0.63	0.27	5460	216	BDL	41.0	3.00
SS4b (0 – 15)cm	8.17	75.6	12	12.4	1.79	40.8	1.57	0.0082	2.99	0.33	4020	118	BDL	73.2	2.75
SS5a (0 – 15)cm	7.01	72.4	14	13.6	1.31	41.9	1.54	0.082	2.52	0.20	1620	426	BDL	15.8	4.60
SS5b (0 – 15)cm	7.14	62.4	18.7	18.9	0.57	43.4	1.5	1.5	2.04	0.13	9870	154	BDL	39.1	3.90
SS6a (0 – 15)cm	7.02	73.4	13.2	13.4	1.73	41.9	1.54	1.54	2.74	0.53	6260	227	BDL	180	3.58
SS6b (0 – 15)cm	6.79	58.6	19	22.4	0.42	45.3	1.45	1.45	2.67	0.53	10600	323	BDL	200	5.33
SS7a (0 – 15)cm	7.1	54.6	28.1	17.3	2.07	43.0	1.51	1.51	3.77	0.60	8530	359	BDL	60.6	4.35
SS7b (0 – 15)cm	7.13	56.4	21	22.6	0.39	45.7	1.44	1.44	2.28	0.20	9020	511	BDL	63.9	7.30
SS8a (0 – 15)cm	6.41	78.4	12.2	9.4	2.75	38.9	1.62	1.62	1.73	0.33	7500	241	BDL	35.3	4.38
SS8b (0 – 15)cm	7.24	70.6	14.8	14.6	0.95	41.9	1.54	1.54	1.1	0.40	9790	250	BDL	41.5	5.20
SS9a (0 – 15)cm	7.44	59.6	25.8	14.6	1.48	44.2	1.48	1.48	2.2	1.20	7130	200	BDL	71.9	4.00
SS9b(0 – 15)cm	7.64	69.4	20.0	10.6	1.52	39.6	1.6	1.6	0.94	0.80	BDL	20	BDL	BDL	BDL
WHO Limits	6.5 – 7.5	-	-		-	-	-	-	-	-	20	5	1.30	2	10

Source: Field Study 2018.

Soil pH

The pH values for soil in the study area ranged from 6.41 to 8.17 which showed that the soil ranged from slightly acidic to very alkaline

Heavy Metals

The result of the analysis in the table 5.6 and 5.8 above shows that heavy metal concentrations for Cr, Fe ,Ni, Pb, Zn in the study area were within FMEnv. limit at the sampling points.

Soil Texture and Microorganism

As shown in the table 5.11, sand-sized particles of the surface soils and top soil varied between 54.6% and 78.6%; Clay was between 9.4% and 22.4%; Silt was from 6.2% to 25.8% while the pattern of particle size distribution of the surface soils shows that the surface soils were heavy in terms of workability with Sand being the dominant Soil Texture.

The microbiological characteristics of soil within the project area is presented in the Table above.

5.2.5 Sediment Studies

Bottom Sediment Physico-chemistry and Heavy Metals Content

Results of physico-chemical analyses of bottom sediment samples from fresh water around the project area during the dry season field work are presented in table below.

The pH ranged from 7.12 to 7.5 for the freshwater sediment samples, while the Available water in freshwater sediment samples ranges from 0.0064 – 0.097(cm^3cm^{-3})

Heavy Metals

In the freshwater sediment samples, Pb was between 31.3 and 134.0mg/kg, Fe varied from 3260 to 7300mg/kg, Zn ranged from 87 to 532mg/kg and Ni was between 0.78 and 2.98mg/kg. A comparison of the recorded values with the USEPA guidelines (2003) indicates that the sediments are heavily polluted, with regards to Zn and Pb (Table 5.12b). The recorded values however compare favourably with results obtained from other parts of Nigeria, and inland sediments from locations such as the Lagos lagoon, and various parts of the Niger Delta, as shown in Table 5.12c.

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Microbiology

In the fresh water sediment sample, the total bacteria count (TBC) ranges from $2.8x10^4$cfu/ml – $7.5x10^4$cfu/ml while the total fungi count (TFC) ranges from $0.6x10^4$cfu/ml – $2.4x10^4$cfu/ml. Dominant micro-flora obtained are *Bacillus spp., Trichoderma spp., Penicillium spp. , Fusarium spp. and Aspergillus spp.*

Table 5. 12a: Concentrations of physico-chemical parameters and heavy metals in sediment samples in

Sampling location	PH	Particle size (%)			Per	Bulk D. (Mgm^{-3})	Porosity (%)	Avail water	TOM	EX. Acidity (cmol/kg)	Fe mg /kg	Zn mg/kg	Cr mg /kg	Pb mg/kg	Ni mg/kg
		Sand	Silt	Clay	/HC ($cmhr^{-1}$)			(cm^3cm^{-3})	%						
SS1	7.27	80.1	8.6	11.3	1.67	38.9	1.62	0.069	1.49	0.73	7300	295	BDL	31.3	2.98
SS2	7.5	76.4	14.2	9.4	3.85	40.8	1.57	0.097	1.1	0.33	5760	151	BDL	134	1.2
SS3	7.24	85.4	9.2	5.4	5.71	34.7	1.73	0.0064	1.1	0.13	3260	87	BDL	88.3	0.78
SSC	7.12	86.4	7.7	5.9	4.25	34.7	1.73	0.065	1.73	0.33	6330	532	BDL	33.7	2.98
Average	7.28	82.075	9.925	8	3.87	37.275	1.6625	0.05935	1.355	0.38	5662.5	266.25	#DIV/0!	71.83	1.99
Minimum	7.12	76.4	7.7	5.4	1.67	34.7	1.57	0.0064	1.1	0.13	3260	87	#DIV/0!	31.3	0.78
Maximum	7.5	86.4	14.2	11.3	5.71	40.8	1.73	0.097	1.73	0.73	7300	532	#DIV/0!	134	2.98

Source: Field Study Feb 2018

Table 5.12b: Heavy Metal Concentrations of Sediments Compared With USEPA

Metals	USEPA Pollution Levels (mg/kg)			This Study Average (mg/kg)	Remarks
	Not at all	Slightly	Heavily		
As	<9.8	9.8-21.4	>21.4	NM	Not measured
Cd	<0.99	0.99-3.0	>3.0	NM	Not measured
Cr	<43	43-76	>76	BDL	Below detection
Cu	<25	25-75	>75	NM	Not measured
Hg	<0.18	0.18-0.64	>0.64	NM	Not measured
Pb	<40	43-70	>70	71.83	Heavily polluted
Zn	<90	90-200	>200	266.25	Heavily polluted

Table 5.12c: Heavy Metal Concentrations of Sediments Compared With Other Sources

Habitat	Mean Heavy Metal Concentration (mg/kg)								Reference
	Fe	Mn	Cr	Zn	Pb	Ni	Cu	Cd	
Continental crust	56,000	950	ND	70	12.5-20	ND	55	0.1	Taylor (1964)
Unpolluted inland sediment	41,000	770	ND	95	19	ND	33	011	GESAMP (1982)
Unpolluted marine sediment	ND	ND	ND	ND	8.6	ND	ND	0.2-5.0	GESAMP (1985; 1988)
Lagos lagoon	36,380	ND	ND	147	178.9	ND	15	4.1	Okoye et al. (1991)
Lagos lagoon (x) (s.d.)	11,858 258	373 134	167 186	186 52.8	66.2 865	400 355	136 8.7	6.7	Ajao and Fagade (1990)
Lagos lagoon (x) (s.d.)	28.401 22,657	653 562	59 41	26.6 18.5	3.2 9.0	12.7 10.5	9.6 7.3	0.56 0.83	ERML (2001)
Niger Delta	20,700	349	ND	62	32.1	ND	23.9	0.79	Kakulu and Osibanjo (1988)
Escravos Area x	7,451	231	12.2	273	5.2	4.5	8.5	10.0	CNL (2002)
s.d.	2,065	131	6.9	122	2.2	2.0	7.3	4.0	CNL (2002)
max	11,687	665	26	525	8.0	9.7	31.3	20.0	CNL (2002)
Kudeti River (x)	5662.5			266.25	71.83	1.99			This study

Table 5. 13: Microbiological Count and bacteria species found in sediment samples collected in Kudeti River

Sampling location	TBC ($\times 10^4$cfu/ml)	TFC ($\times 10^4$cfu/ml)	Microflora obtained
Yejide area	7.2	1.4	*Bacillus* spp., *Trichoderma* spp., *Penicillium* spp. , *Fusarium* spp.
Agbongbon	7.5	2.4	*Bacillus* spp., *Trichoderma* spp., *Aspergillus* spp.
Oranyan area	2.8	-	*Bacillus* spp., *Trichoderma* spp., *Penicillium* spp. , *Fusarium* spp.
Oloju-oro channel, Labo	5.9	0.6	*Bacillus* spp., *Fusarium* spp.

Source: Field Study 2018.

5.2.9 Geology, Geomorphology and Hydrogeology

Geology

The study area Ibadan is entirely underlain by precambrain basement rocks. The basement complex in the Ibadan area in particular, is composed primarily of banded gneiss in which hornblende-biotite rich bands alternate with quartz-oligo clase rich bands.

Hydrogeology

Hydrogeological study reveals that measured static water level and well head varied from 0.8 to 9.9 m and 182 m to 209 m respectively indicating that groundwater generally flow towards the eastern and southwestern parts from two main discharge sites in the northwestern part of the study area.

Coefficient of Resistivity Anisotropy ranges between 1.03 and 1.38. Variation of apparent resistivity is strongest at the eastern and southern parts of the study area with coefficients of 1.33, 1.38, and 1.30. The regions with thick weathered/fractured basement/depressed zones are likely to be most promising sites for borehole drilling.

Thus, with the proposed Kudeti channelization aimed at controlling flooding there are potential impacts on all hydrogeomorphic forms and processes within, upstream, and downstream of the channelized reach. The biotic environment potentially would be severely affected, particularly on the channel banks but also on the adjacent floodplain downstream. Potential impact of affected fluvial-geomorphic processes at within reaches upstream of the kudeti channelized system is the stream channel becomes incised, leading to groundwater elevation lowering, and the normal connectivity between the floodplain and stream flow may be eliminated. Concurrently, the lower reaches may experience increased peak flood stages and flood frequency, these lower reaches may suffer severe aggradation from sediment eroded from upstream reaches sometimes forming substantial valley plugs.

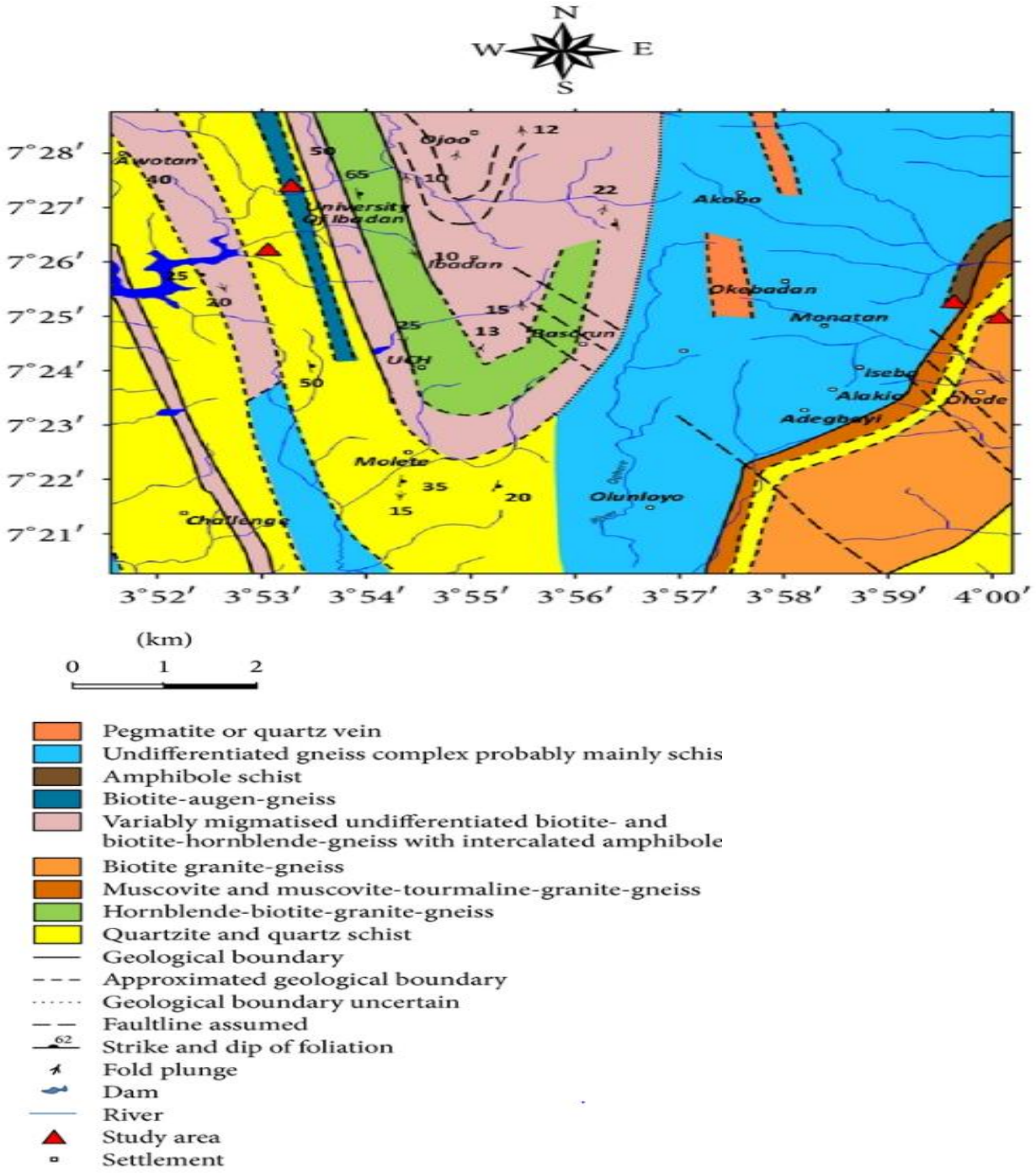

Figure 5. 4: Geological Map of the study Area in Ibadan

Source: (Oladunjoye and Jekayinfa 2015)

5.2.10 Vegetation

The predominant vegetation observed in this area are shrubs, grasslands, weeds and certain economic trees (such as plantain trees, banana etc) alongside other trees that serve as a source of shade. The proposed channelization of Kudeti River will impact on some vegetable farms, economic trees and vegetation that

were sighted along the channel. Some residents engage in subsistence farming as a source of food and for economic purposes. The proposed project may temporarily disturb access to these agricultural lands and their water supply for irrigation, usually taken from the river. However, appropriate compensation has been provided for all affected individuals in the RAP document.

The Plates below show pictures of some plant species and economic trees observed in and around the project area.

Plate 5. 1: Coconut Tree (Cocos nucifera) and Climbers/ Parasitic weeds found in Labo and Agbogbon, Kudeti

Plate 5. 2: Farming activities and economic crops along the project corridor (Yejide, Kudeti)

A total of thirty six (36) plant species belonging to twenty-seven (27) taxonomic families were recorded in the savannah habitat. Some of the species include, *Citrus sinensis, Cola nitida, Colocasia esclulenta, Corchorus olitorus, Mangifera indica, Mariscus alternifolius*, amongst others. Plate 5.1& 5.2 shows some of the flora species found around the study area. A total of 25 of the 77 wild species inventoried had indigenous uses. For example, *Elaeis guineensis (*eight uses*), Khaya ivorensis, Trema orientalis, Spondias monbi, Daniellia oliveri*, and *Daniellia oliveria* (four uses each) are the most used plant species. Conversely, plant species with a solitary use are *Voacango Africana, Spondias monbin, Kigelia Africana, and Parkia biglobosa*. All but twenty-two species are used for medicinal purposes as against three species only used for fencing, erosion prevention and charcoal because of their root structures. For example, *Erythrina senegalensis* which reduces erosion and facilitates water infiltration. These uses will ensure sustainability of the plant if they are used in the landscape of the channel banks while serving dual purposes for erosion control and economic or medicinal.

5.2.11 Fauna

The animals consisted of a wide array of invertebrates and vertebrates. The invertebrates were dominated by insect and molluscs. Snails and termites were exploited for food and for commerce. Crickets, grasshoppers, mantis, butterflies, moths, ants, and bees were common on either in the open vegetation or in cleared forest areas. Dragon flies and mayflies were found near water bodies.

85% (35) fauna species recorded are present in the project area so they are of Least concern(LC), 4.9% (2)species are vulnerable, and only 2% (1) endangered specie was recorded which was the Hooded vulture).However, this impact will be avoided by restricting work activities within a buffer zone (0.5mile from active nest) which is suspected to be in undeveloped areas like Ogunpa. Hence, this specie will not be affected by this project.

5.2.12 Land Use in Kudeti

Land is used for various purposes in this area, which include poultry, farmland, rearing of livestock, houses, stalls/shops, gas stations etc. The land in this area consists of Residential (Buildup Environment), grassland/vegetation (areas that are uninhabited); although there are more residential areas and land used for commercial purposes.

Some predominant economic activities were observed in this area include broom making, cane making, cement block making, farming, sand mining etc. Sand is collected from the river and taken to a portion of land where it is left to dry. Then it is used by local block industries for production of blocks for building.

The impacts on land, residential areas (involuntary resettlement which could be physical/economic, temporary/permanent displacement), crops, and livelihoods in this area has been documented in the standalone RAP report in line with the World Bank safeguard policy (OP 4.12: Involuntary Resettlement). These are depicted in the pictures below.

Plate 5. 3: Sand mining and dry sand being taken to a local Block industry in Kudeti

Other economic activities observed in Kudeti includes broom making, cane production, sales of provision and household items, etc. Some of these brooms were also placed in dye to improve the aesthetic quality of the brooms for sale. Several people are involved in broom making in this area.

Plate 5. 4: Brooms after being placed in dye and Cane production

Table 5. 14: Land Use Analysis in Kudeti

Landuse	Percentage (%)
Built-Up Areas	88
Agricultural Land (row crops, minor grazing) Small Holder Rainfed.	2
Industrial land (Resources production and extraction i.e Mining land use)	0
Forest Land Area (reserved or disturbed /regrowth forest)	2
Natural Water Bodies e.g. Lakes, Rivers, stream, etc.	8
TOTAL	**100.00**

5.3 Socio Economic Characteristics

The data reflected in this ESIA baseline is mostly quantitative and based on the outcome of the interviews with residents in the area, qualitative surveys carried out (i.e. Focus Group discussions). A baseline based on the outcomes of the quantitative data surveys is documented in this baseline section.

Methodology

Open Data Kit (ODK) application implemented using Kobo Tool, was adopted for the questionnaire administration. Convenience and the need to ensure quality data collection informed the use of ODK application for the data collection. The pre-tested questionnaire made up of nine sections was loaded and configured in the ODK software.

The table below presents some socio-ecoonomic attributes of respondents in Kudeti

Table 5. 15: Socio economic Attributes of Respondents in project Area

Item	Category	Results	Percentage Representation
Gender	Male	135	57.9%
	Female	98	42.1%.
	Total	**233**	**100**
Age of respondents	15 - 25 years	30	12.9
	26-50 years	112	48.1
	51-75 years	72	30.9
	75years and above	19	8.2
	Total	**233**	**100**
Maital status	Married	168	72.1
	Single	31	13.3
	widows/widowers	23	9.9
	divorced/Separated	5	2.1
	Cohabiting	6	2.6
	Total	**233**	
Status of respondents	household head (husbands)	74	31.8
	Women	73	31.3
	male senior member of household	51	21.9
	female senior member of household	28	12.0
	Others	7	3.0
	Total	**233**	**100**
Ethnicity	Natives of Ibadan	168	72.1
	Non-natives	65	27.9
	Total	**233**	**100**
Educational status	Primary school completed	64	27.5
	Secondary school completed	61	26.2
	Secondary school not completed	43	18.5
	Tertiary education completed	20	8.6
	Tertiary education not completed	26	11.2
	Never attended any school	19	8.2

Item	Category	Results	Percentage Representation
	Total	**233**	**100**
Religion	Muslims	146	62.7
	Christians	81	34.8
	Traditional worshipers	6	2.6
	Total	**233**	**100**
Sources of Income	employed or self-employed	139	59.7
	Retired	**37**	15.9
	Other	**16**	6.87
	Housewife	**16**	6.9
	Students	**14**	6.0
	Unemployed	**11**	4.7
	Total	**233**	**100**
Average Income	less than N1,000	49	21.03
	N1,001 and N10,000	48	20.6
	N10,001 and N30,000	67	28.76
	N30,001 and N50,000	34	14.59
	N50,001 and N70,000	11	4.72
	N70,001 and N100,000	2	0.86
	No response/Unemployed	22	9.44
	Total	**233**	**100**
Toilet facility	pit latrine	89	38.2
	Open defecation in river channel	73	31.3
	flush toilets	52	22.3
	Open defecation in surrounding bushes	7	3.0
	VIP-latrines	5	2.1
	nylon bags	2	0.9
	Others	5	2.1
	No access to toilet	128	55.0
	Total	**233**	**100**
Waste management	dispose wastes into the Kudeti River	151	64.8
	Don't dispose wastes into the Kudeti River	82	35.2
	Total	**233**	**100**
Source of Water	dug water (well or boreholes),	65	28
	pipe water	61	26
	water from vendors	9	4
	Rain water	7	3
	Satchet/bottle water	91	**39**
	Total	**233**	**100**

Gender Structure

In the proposed project area, the proportion of male and female who participated in the survey were almost uniform with male respondents accounting for 57.9% while female was 42.1%.

Assessment of Available Health Care Facilities: Respondents who indicated the availability of primary health care facility in their neighbourhoods are 72.3% while 27.7% stated otherwise. Malaria is the most common ailment in this area and it was identified by 51.5% of the respondents.

Table 5.16: Health Care facilities and prevalent diseases in the project corridor

Health Care Facility and Prevalent diseases	Availability		Condition of Facilities		
	Yes	No	Poor	Fair	Good
Primary health care facility	72.3	27.7	23.5	60.4	16.1
Private health facility	75.4	24.6	23.8	54.9	21.3
Prevalent Diseases					
Malaria	51.5	48.5			
Diarrhea	12.9	87.1			
Cholera	9.4	90.6			
Typhoid fever	7.7	92.3			
Tuberculosis	2.6	97.4			

5.3.1 Socio economics Data Collection

Field enumerators were subsequently recruited and trained on the use of ODK for data collection. Enumerators recruited have had experience using ODK application on android phone in the past. In addition, two supervisors were recruited to oversee the field work activities conducted by the field enumerators.

Questionnaire administration was conducted in most of the neighbourhoods/localities along the Kudeti River channel. The starting point was the confluence between Ogunpa & Kudeti rivers; the survey team went upstream administering questionnaire to residents living at a distance of not more than 15meters from the Kudeti Chanel. A total of 240 questionnaires were administered within the 150-meter corridor of the Kudeti channel out of which only 233 are valid.

Socio-economic survey covers neighbourhoods such as Kudeti/Kosodo, Labo, Oranyan, Yemetu, Agbongbon, Kobomoje, Yejide, Ile Aperin, Ita Olukoyi, Wesley, and Adekile among others. Map showing location of points where FGDs, socioeconomic characteristics and health conditions assessment were carried out in Kudeti is presented in Appendix.

Respondents include household head (husbands) (31.8%), women (31.3%), male senior member of household (21.9%), female senior member of the household (12.0%) and others (3.0%). The foregoing shows that not only men were interviewed, but also women and youths that lives within the corridor of the Kudeti River.

5.3.2 Ethnicity

Majority of the inhabitants of the neighbourhoods around the Kudeti River are indigene of Oyo State as indicated by 86.7% of the respondents, while the remaining 13.3% are from other states mostly in the south-western Nigeria. Osun (5.2%) and Ogun (3.4%) states account for the highest percentage of non-indigenes. Fewer respondents indicated that they are from the eastern and northern part of Nigeria. Furthermore, within Oyo State, respondents who are native of Ibadan are 72.1% while non-native are 27.9%.

5.3.3 Population, Gender and Marital Status

The growth of the population of Ibadan has also been equally remarkable. In 1952, the city population was counted and it was 286,252. From then on, the population of Ibadan metropolitan area increased at a growth rate of 3.95percent per annum from 1952 and 1963 when the population rose to 1,258,625. The population rose to 1,829.300 in 1999 at a growth rate of 1.65% from 1963 and increased to 1,338,659 in 2006 at a growth rate of 2.35%. However, the population growth is gradually shifting to a growth rate of 4.7% per

annum between 1991 and 2006 according to the provisional census figure released by the National Population Commission (2006). The Population projection from 2006 – 2018 (12 years) is calculated with a growth rate of 3.5 percent as shown in the table below

Table 5. 16 : Population Rate of Growth by Local Government Area

S/No.	Local Government	Population (2006)	Projected Population (2018) (3.5% G.R)
A.	Ibadan Less City		
1.	Akinyele	211,811	322,368
2.	Egbeda	283,643	431,693
3.	Ido	104,087	158,416
4.	Lagelu	148,133	225,452
5.	Ona-Ara	265,571	404,188
6	Oluyole	203,461	309,659
	Sub - Total	1,216,706	1,851,776
B	Ibadan Urban		
1.	Ibadan North	308,119	468,945
2.	Ibadan North East	331,444	504,445
3.	Ibadan North West	154,029	234,426
4.	Ibadan South East	266,457	405,537
5.	Ibadan South West	283,098	430,864
	Sub Total	1,343,147	2,044,217
	Grand Total	2,559,853	3,895,993

Source: National Population Commission of Nigeria (web), National Bureau of Statistics (web).
The population projection (3.5%) assumes the same rate of growth for all LGAs within Ibadan.
Formular: $Nt = P\ e^{r*t}$

From the above analysis, the population density of urban and rural area increased by 52.2 percent within a period of 12 years. This shows that population is moving towards the extended boundary areas of Ibadan metropolis as a result of rapid urbanization of the core area and industrialization of the periphery of the urban center where land is no more available for industrial development.

Marital Status of Population, Household Composition and Size

According to the survey, majority (48.1%) of the respondents are between the ages 26 and 50 years while those between the ages of 51-75 years are 30.9%. The percentage of respondents who are 75years and above is 8.2% while youths between the ages of 15 and 25 years were 12.8%. The family size is moderate with an average of about 8 persons per household.

The household structure in the communities around the project area is typical of most communities in Nigeria. Greater percentage of the respondents are married (72.1%), 13.3% are single, 9.9% are widows/widowers, 2.1% are divorced/Separated while the remaining 2.6% are cohabiting.

GBV Rate in Oyo State

According to a report obtained from the New Initiative for Social Development (NISD), among the female population of 2,778,462 in Oyo state, 48% have experienced physical violence and 3.9% sexual violence. A 2013 report by the News Agency of Nigeria revealed that 20 rape cases were reported on a monthly basis in Ibadan, and the police command reported 365 cases of rape & assault reported & investigated that year. (*Source: Ademola Adesola, 2016; Premium Times).* The 2013 National Health & Demographic Survey (NDHS) reveals that 28% of women aged 15-49 have experienced physical violence at least once, since age 15, and 11% have exreienced this within 12 months prior to survey. 25% of women (15-49) have experienced emotional, physical or sexual abuse from their spouses and 19% of these were victims between

2012 & 2013. (Source: National Standards and Referral standards on GBV in Nigeria)

These statistics show that GBV rates are high in Oyo state. However, with respect to this project, GBV/SEA mitigation measures have been highlighted in the ESMP table.

5.3.4 Religion and Education Levels

The study in terms of religious affiliation reveals, 62.7% of the respondents are Moslems while 34.8% are Christians, the remaining 2.6% are traditional worshipers. Some of the deities typically worshipped include Oya, Obatala, Esu, and Ifa among others. The annual egungun traditional festival is prominent in the area. Names of some of these Egungun include Oloolu, Abidiege, and Alapansanpa among others.

The project study area has both primary and secondary schools located within their communities, see pictures. According to the survey, the literacy status of the respondents, 47.6% speak only Yoruba language, 26.6% read, write and speak English. Those who only read and write English are 18.5% while those who can only read English are 3.0%. Those who indicated that they speak Pidgin English are 4.3%. Therefore, effective communication in the corridor of the Kudeti River can be attained using Yoruba and English.

This is not quite surprising since almost 87% of the resident are indigene. By extension, 27.5% of the respondents completed primary school, 26.2% completed secondary school, 18.5% did not complete secondary school, and 10.3% did not complete primary school. Respondents who indicated that they are or have completed tertiary education were 8.6% while 8.2% never attended any school. Some of the reasons adduced for either not completing education or not going to school include death of parents and shortage of money. Although, it could well be that those with tertiary education have migrated to other neighbourhoods in Ibadan or even outside of Ibadan.

Plate 5. 5**:** A Public and private primary school in the study area

5.3.5 Occupations, Sources of Income and Economy

In the study area, due to urbanization and rapid community growth, farming as an occupation is almost faced-out, however, other sources of income were made known during the survey, Respondents that are either employed or self-employed are 59.7%, those who have retired are 15.9% while those that have other type of employments are 6.87%. Those who are full time housewife are 6.9%, students are 6.0% while those who are unemployed are 4.7%.

In terms of monthly income generation, 21.03% earned less than N1,000, while 20.6% earned between N1,001 and N10,000 monthly. Further, 28.76% earn between N10,001 and N30,000, 14.59% earn between N30,001 and N50,000, 4.72% earn between N50,001 and N70,000 while those who earn between N70,001 and N100,000 were 0.86%. The unemployed accounted for 9.44%. The implication of the foregoing is that income is generally low in the neighbourhoods around Kudeti river as 1 out of every 5 persons earn less

than N1,000 monthly, while 7 out of every 10 persons in the neighbourhoods earn less than N30,000 monthly

5.3.6 Waste Management

In terms of methods used to dispose human waste, pit latrine is the most widely used as indicated by 38.2% of the respondents and this was followed by 31.3% who defecate into river channel in their neighbourhoods. Also, 22.3% of the respondents indicated that they have hand flush toilets, 3.0% defecate into surrounding bushes, 2.1% use Ventilated Improved Pit (VIP)-latrines, 0.9% use nylon bags while 2.1% use other methods. Therefore, 3 out of every 10 persons in neighbourhoods around the Kudeti river defecate into the river. About 55.0% of the respondents do not have access to toilet in their house.

About 64.8% of the respondents admitted that they dispose wastes into the Kudeti River while 35.2% stated otherwise. Generally, 34.8% dispose wastes into the Kudeti river because there is nowhere else to deposit the waste, 17.2% dispose waste into the River because they hold the view that the river will wash away the wastes, 8.2% pointed out that there is no waste management service provided in their neighbourhoods, 7.7% dispose wastes into the River because it is closer to their house, 9.0% dispose wastes into the River because others do so, while 23.2% dispose waste into the River because government did not provide them with waste deposal facility

Plate 5. 6: Waste disposal into channel, human defecation and burning of waste within the project area.

5.3.7 Housing, Settlement and Associated Characteristics

Housing Pattern

Most residents live in rooms opposite each other, sharing a common flat/compound {known as face me -I-face you houses (64.4%)} and a few people stay in bungalows (7.7%) and blocks of flat (6%). Others stay in storey buildongs, and other compounds. About 18 structures (buildings) will be affected by the project.

Satisfaction with Interpersonal Relationships Among Residents

The Kudeti channelisation project can leverage on the existing strong interpersonal relationships that exist among residents to force a behavioural change geared towards improved waste management practices among residents around the Kudeti River.

Table 5. 17: Satisfaction with Interpersonal Relationship among Residents

Indicators	Agreed(%)	Disagree(%)	Undecided(%)
People around here are willing to help their neighbours	83.9	5.2	10.9
This is a close-knit neighbourhood	82.1	5.7	12.2
People in this neighbourhood can be trusted	75.9	11.6	12.5
People in this neighbourhood generally do not get along with each other	24.2	64.3	11.5
People in this neighbourhood do not share the same values	24.5	68.8	6.7

Satisfaction with the Environmental and Physical Conditions of the Neighbourhoods

Satisfaction with available services and infrastructure in a neighbourhood can foster a sense of strong neighbourhood attachment.

Table 5. 19: Satisfaction with the Environmental and Physical Condition in the Neighbourhoods

Indicators	Satisfied	Dissatisfied	Don't Know
Overall satisfaction with my neighbourhood	48.6	46.4	5.0
Physical characteristics (e.g. buildings, monuments, rivers, trees, etc.)	39.7	51.2	9.1
Services (e.g. health services, schools, shopping facilities, public transport, etc.)	21.2	65.8	13.0
Sport and leisure facilities	15.3	67.0	17.6
Parks and other green areas	13.0	74.6	12.4
Environmental health (e.g. level of air pollution, level of noise pollution, traffic, etc)	13.2	74.1	12.7
Privacy	39.7	43.8	16.5
Security	35.1	52.1	12.8
Waste management	16.6	73.0	10.4
Ease of moving around	47.9	39.2	12.9

Source: Field Study Feb, 2018

5.3.8 General Infrastructure

Transportation

The city of Ibadan is a major Nigerian transport hub with Lagos –Ibadan Expressway linking it with Lagos. Lagos –Ibadan and Shagamu –Benin Expressway link it with Shagamu, Ijebu- Ode, Benin and other cities in the eastern part of Nigeria. Ibadan –Ife Road link it with Ife, Ilesha, Akure among others. Ibadan – Oyo Road links to Oyo, Ibadan – Iwo Road links to Ogbomosho and Iwo town in Osun state. The city is also served by an airport, The Ibadan Airport, major terminus railway station on the main railway line linking Lagos with Kano.

According to the survey, Walking is the most prominent means of commuting to work place as indicated by 63.5% of the respondents. This was followed by 33.9% who use commercial buses. Also, 29.6% use commercial taxi, 15.0% use commercial motorbike, 4.7% use private cars, 3.0% use private motorcycle and less than 1.0% (0.4%) use company/pool vehicles to work. The implication of the foregoing is that many of the respondents live close to their place of work and that commercial buses and taxi which account for 63.5% are the most used modes of transportation. Car ownership is low perhaps because of the prevailing socioeconomic status of the residents.

Road network

The major road network that connects project location is the Beere- Mokola to Chalenge. This road is adjoined by other major roads that connects to the project area in various junctions such as the Labo-Oranyan road, Agbongbon road, Kobomoje and Esu awele Road. All the roads leading to the project area

are tarred road. Some of the roads are in good conditions except where they have dilapidated bridges and culverts and will likely get worse during rainy season.

Plate 5. 7: Inter-Community Road Network (Oranyan - Labo road)

Electricity

Ibadan Electricity Distribution Company (IBEDC) is responsible for electricity distribution in Ibdan.It was gathered from the study that approximately 70% of respondent have access to electricity through national grid, 20% make use of generator to compliment the electrical supply while the remaining 10% make use of other sources (e.g lamp, candles and even bush lamp).

Water supply

Oyo State water corporation is responsible for water supply in the state. This project may adversely affect water supply of residents if construction/ rehabilitation works cause a disruption/ damage to water pipes. However, mitigation measures have been flagged in the ESMP table to prevent/solve such issues if this occurs. Furthermore, in neighbourhoods around the Kudeti river, 30.9% of the respondents obtained water from different sources.

From the study, 28% of respondents claimed to get water for their domestic uses from the dug water (well or boreholes), 26% get water from pipe water, 4% get water from vendors while the remaining 3% claimed to use rain water and sachet/bottle 39% for domestic and drinking purposes.

Plate 5. 8: Hand dug well within the study area

Communication

Most of the inhabitants of the proposed project area have access to mobile phones with one or two national networks (such as MTN, Glo, Etisalat and Airtel). It was reported that mobile communication is affordable to most residents. Television and radio signals are also very strong due to the proximity of the first Television and Radio Network and other broadcasting services in Ibadan City. Nonetheless the use of cable satellites from providers like DSTV (multi choice), Startimes, Go TV are also widespread in Ibadan city.

Table 5. 20: Facility Availability and their Condition

	Availability %		Condition of Facilities %		
Facility Type	Yes	No	Poor	Fair	Good
Local Market	87.4	12.6	19.4	43.8	36.8
Public primary school	78.1	21.9	18.5	59.3	22.2
Private primary school	86.0	14.0	18.3	52.9	28.8
Public secondary school	91.5	8.5	25.4	53.7	20.9
Private secondary school	81.9	18.1	21.5	49.3	29.2
Primary health care facility	72.3	27.7	23.5	60.4	16.1
Private health facility	75.4	24.6	23.8	54.9	21.3
Shopping complex	53.7	46.3	32.2	49.6	18.2
Public water supply source	61.0	39.0	38.4	54.1	7.5
Private/individual water supply sources	78.8	21.2	25.6	56.4	18.0
Banks	11.2	88.8	75.0	10.3	14.7
Post office	6.0	94.0	78.9	13.8	7.3
Police station	41.2	58.8	56.9	30.7	12.4
Fire service station	2.3	97.7	82.4	7.4	10.2

Source: Field Study Feb, 2018

5.3.9 Social Infrastructure

Recreational centers

There are a whole lot of recreation centers in Ibadan such as; the pond at "Agbadagbudu" the spring had been serving the core area of Ibadan especially Oke-Aremo, Odoye, Oke-Are, Beere and Mapo. The popular "Alalubosa Lake" which used to be flourishing recreation center during the Easter Holiday is no more. The site was acquired for redevelopment by the Federal Government, but it is now sand filled as a result of deforestation and development of GRA plots. There is an "Ogunpa Lake" (called Dandaru by the Indigenes) at the upper course of Ogunpa River. Agodi Gardens near the lake for recreational activities during the public holidays to mention but a few.

5.3.10 Flood Prone Areas.

The consequence of poorly managed urbanization is the settlement on unstable and risky locations such as along Ogunpa, Kudeti, Ogbere and Orogun floodplains and hillside of Oke-Are, Oke-Aremo, Sapati and Mokola hills in the center of the city.

This phenomenon is partly responsible for the Ogunpa flood disasters and soil erosion. The urban poor live in crowded slums within the core residential areas of Ibadan. (such as Ayeye, Agbeni, Bere etc.), with limited basic infrastructure services, and without land and personal security. Within the city core residential areas, there is lack of comprehensive water and sewage systems, inadequate garbage collection and disposal and unstable urban environments that increase vulnerability to natural disasters and jeopardize public health.

Because of its ever-increasing population and inadequate drainage system, Ibadan had suffered a lot from the problem of refuse disposal. This has resulted in blocking of the few existing drainages, upon which Ibadan's major river Kudeti and River Ogunpa and other smaller ones such as Ogbere stream, Orogun stream and Labelabe stream overflow their banks.

5.3.11 Monarchical system and Traditional leaders

In Nigeria, traditional leaders have a closer affinity to the people than the government, hence they liase with the people and send suggestions to the government on ways to improve the communities. Through this medium, the government passes useful information to them for dissemination to their respective communities. They also ensure peace and harmony in the communities as they are respected. Hence, they act as/assign mediators for addressing disputes/conflict.

5.3.12 Rating of Hazards and Risks

With regards to the rating of residents' exposure to a number of life-threatening challenges, 75.0% rated their neighbourhood exposure to fire accident as good which implies that fire accidents do not frequently occur in the neighbourhoods around the Kudeti River channel.

Table 5. 18: Rating of Risks, Services and facilities in the Kudeti River Neighbourhood

	Low/Good	Medium/Fair	High/Poor
Fire Accidents	75.0	9.9	15.1
Motorcycle/Tricycle Accident	68.4	19.2	12.4
Vehicular Accident	65.7	20.8	13.5
Violence & Gang Groups	48.6	31.9	19.5
Security of Lives and Properties	30.2	45.2	24.6
Neighbourhood Cleanliness	38.9	30.1	31.1
Flooding by Kudeti River	37.6	37.1	25.3
Waste Disposal	25.0	28.4	46.6
Public Water Supply	25.2	48	26.7
Road Condition	22.0	32.7	45.3
Health Facility	20.3	55.5	24.2
Hours of Electricity	12.6	55.4	32

Source: Field Study Feb, 2018

CHAPTER SIX

6.0 Potential Environmental and Social Impacts

Impact Identification

The environmental and social impacts were identified in the context of the project area of influence and were based on the existing E&S baseline data including information obtained through stakeholder's engagement process. A logical and systematic approach was used to capture all project - environment interactions capable of resulting in environmental and social impacts.

6.1 Summary of Potential Beneficial Impacts

Beneficial Impacts

The proposed project is to be executed with the aim of preventing flood occurrence so as to save human lives and properties. The benefits expected from the channelization project are grouped into the two major project phases as follows.

Construction Phase

The project benefits to stakeholders during preconstruction and construction phases shall include but not limited to the following:

- ✓ Stimulate economic growth through local contractor participation in providing construction materials and services.
- ✓ Employment opportunities arising from the recruitment of workers from the area.
- ✓ Creation of indirect jobs through services provided by the community.
- ✓ Creation of avenues for skills development and acquisition
- ✓ Educating and enlightening the people old and young ones on safety measures in case of flood and other related emergencies.
- ✓ Increased economic activities due to influx of workers to the project site

Operational Phase

Accrued benefits from project during operational phase shall include:

- ✓ Proper channel for river flow and prevention of flood occurrence in the area
- ✓ Security and protection of lives, business and properties along the river channel against flood event.
- ✓ Provision and implementation of effective waste management plan for the communities.
- ✓ Generation of income from temporary jobs during the operations.
- ✓ Increased cash flow from new businesses including proposed garden and park services
- ✓ Increased in aesthetic value quality as a result of landscaping and river channelization.
- ✓ Reduced government spending on flood emergency management and response services.
- ✓ Improve general wellbeing and lifestyle of the people.

6.2 Identified Potential Adverse Impacts and their ratings (by Project Phases)

Table 6. 1: Impacts and Mitigation Measures for the Potential Impacts during Pre-construction phase of the Kudeti Channelization Project

PRE-CONSTRUCTION PHASE

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
Application for channel development, community /stakeholders engagement, reconnaissance survey, -site survey, Land acquisition, Project design, Regulatory Registration, Site Verification and Scoping for the Safeguard instruments (ESIA, RAP etc)	Non approval or inability to obtain permits from government and non- acceptance of project by community/stakeholders	MAJOR	Engage all stakeholders and relevant legal and regulatory authorities in land acquisition and obtaining approval. Land acquisition & loss of livelihood has been documented in the standalone RAP report.
-mobilization of equipment, -site clearing, and Construction of temporary camp site, staging area.	Air quality Dust particles and emission from vehicular movement	MEDIUM	Develop and implement a project specific Occupational Health and Safety Plan (OHSP). Use existing path ways/roads to the extent practicable; Restrict access to work areas thereby discouraging increased human activities in the area; Limit clearing of acquired lands to the minimum required, giving due consideration to forest conservation zones in the area. Use native species to re-vegetate the cleared portions during reclamation Use competent drivers (vehicle/vessel) throughout the project; Contractor shall service all vehicles and equipment before mobilisation, and shall use low emission additives and equipment. The operator/ engineer should use appropriate PPE during such activities. Provision of relevant PPE(e.g nose masks, etc) Restriction of unauthorized access to all areas of high risk activities Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians Lighting and/or reflective tapes and signages integrated in all worksites for safety at night Appropriate security measures in place to prevent harassment or kidnapping of workers; Safety Statistics boards at laydown yards and entrances to the perimeter barricade; Safety instructions at the entrances; Project sign posts should be placed along the project area
	Noise and vibration from movement of heavy duty vehicles during mobilization	MEDIUM	Use existing path ways/roads to the extent practicable; Restrict access to work areas thereby discouraging increased human activities in the area; Limit clearing of acquired lands to the minimum required, giving due consideration to forest conservation zones in the area. Use native species to re-vegetate the cleared portions during reclamation Use competent drivers (vehicle/vessel) throughout the project;
	Ground water contamination resulting from accidental leakages and spills from vehicles heavy duty equipment	MEDIUM	

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
	Surface water contamination resulting from accidental leakages and spills from vehicles and heavy-duty equipment	MEDIUM	Develop and maintain an affective journey management plan; Ensure vehicles/vessels are periodically maintained and records kept; Ensure pre-mobilization checks are carried out on vehicles/vessels before departure;
	Loss of vegetation cover due to site clearing and preparation activities	MINOR	Replanting/ Landscaping after construction works to replace vegetation cover.
	community agitation over demolition of houses	MAJOR	Sensitize the general public on the importance of the project through Stakeholder Enagement so as to establish a co-operative and open working relation especially with residents within the immediate project area; Provision of a standalone RAP to address all resettlement issues. Employ good communication strategies to foster relationship with communities and a GRM can be used to mitigate conflicts that may arise between both parties (workers and residents/locals)
	Labour Influx- Influx of people (migrant workers, sub-contractors and suppliers) and increased pressure on existing infrastructure	MEDIUM	Educate workers on the culture and norms of the host communities; Encourage mutual existence between the workers and the communities by appointing community liaison officers (CLO); Sign a Memorandum of Understanding (MOU) with the immediate host communities. Notice to the communities on transport ways diversion and warning signs. Development of **Labour Management Procedures (LMP)** which will include a site specific labour influx management plan Prioritize and balance the hiring of locals for qualified skilled and unskilled work
	Increase in social vices resulting from increased number of people in the area	MEDIUM	Limit land acquisition to the minimum required for operational effectiveness and safety. Pay adequate compensation to landowners according to the RAP report which has been prepared for this purpose ; Create awareness for the project through consultations with host communities and public media in order to avoid communal disturbances. An effective GRM should manage conflicts from the project.
	Increased risk of accidents leading to injury/death and loss of assets during mobilization/ Occupational Health and Saefty/ Community Health and Safety	MAJOR	Training of personnel on Work-related accidents, Provision and appropriate use of PPE All Contractors shall be required to maintain HSE plans, ensure Random Alcohol test, Drug test, Safety meetings, Medical check-up, safety audit too ensure that safety measures are adhere to at all time during operation •Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to: -Prohibition of drug and alcohol use by workers while on the job. -Provision of adequate first aid, first aiders, PPE, signages

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
			-Restriction of unauthorized access to all areas of high risk activities -Provision of specific personnel training on worksite OHS management -Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers -Any uncovered work pits should have appropriate signage and protection around them -Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before -Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians -lighting and/or reflective tapes and signages integrated in all worksites for safety at night •appropriate security measures in place to prevent harassment or kidnapping of workers; Safety Statistics boards at laydown yards and entrances to the perimeter barricade; Safety instructions at the entrances; Project sign posts should be placed along the project area
	Increase in rate of STDs and HIV due influx of people to the host community	MEDIUM	Training/enlightenment programs on sexually transmitted diseases and genral hygiene Provision of free condoms
	Sexual Exploitation and Abuse (SEA) and other forms of Gender-Based Violence (GBV) including Sexual Abuse of minors	MEDIUM	Map out GBV prevention and response services in project area of influence; Make certain the availability of an effective grievance redress mechanism (GRM) with multiple channels to initiate a complaint (parallel GBV GRM may be warranted for "substantial" and "high" risk projects); During implementation, ensure that CoCs are signed and understood by all contractor and consultant staff. During works, separate facilities for women & men, GBV-free zone signage. Develop a GBV Action plan including an Accountability and Response Framework, as part of project ESMP

Table 6. 2: Impacts and Mitigation Measures for potential impacts during construction phase of the Kudeti Channelization Project

CONSTRUCTION PHASE

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
• Construction of security/equipment house • Access road construction • Excavation of waste and soil from channel	Fauna disturbance and displacement from construction activity area	MEDIUM	There shall be visual check for mammals within 500m; There shall be adequate time elapse after last sighting of any animal before start of driving operations; HPDs shall be provided for workers on and visitors on site. Ensure all onsite welders wear appropriate PPE
	Flora Vegetation loss and disturbance from clearing and within the site	MINOR	

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
• Welding and fabrication works on bridges • Construction ofchannel lining and relative structures	Noise and vibration from movement of heavy duty vehicles during construction	MEDIUM	(nose mask, eye goggle etc.); Provide first aid facilities on work site and also train personnel on first aid administration; Carryout daily safety briefings before commencement of work each day; Ensure the best available welding techniques are used in its operations; Ensure all electrical wires are insulated.
	Effects on Surface water quality during dredging and construction of the channel,	MEDIUM	
	Effects of accidental oil spillage on soil quality	MEDIUM	
	Generation of hazardous waste (especially heavy metal laden sediment) from construction activities, and associated effects on handlers, as well as disposal point).	MINOR	The technology for handling heavy metal polluted sediment is not readily available in Nigeria. Therefore, where it is established that sediment is polluted with heavy metals, contractor shall mix such sediment with clean materials and employ thin-layer spreading of such sediment over a wide area, to minimize concentration of the pollutants per unit area Details of proposed contaminated sedminet handling is presented as part of Annex 1 (Waste Management Plan) to this report.
	Generation of dust and particles and emissions from heavy duties equipment during construction	MINOR	Implement a project specific Occupational Health and Safety Plan (OHSP). Maintain all drilling equipment at optimal working conditions; Ensure all equipment are periodically maintained and records kept; Carry out pre-mobilization checks to ensure equipment designated for the job are atoptimal workingconditions; Limit land acquisition to the minimum required through the adoption of mitigation hiererchy Pay adequate compensation to PAPs according to the RAP report which has been prepared for this purpose Enforce policies on efficient use of energyi.e. no equipment will be kept running when operations isdown; Develop and implement Traffic Management Plan (TMP) Ensure an inventory of emissions is developed and maintained. Adopt the use of low noise generating equipment in all operations; Bolt/fasteners shall be done up tightly to avoid rattles; Enforce the use of ear muffles, where noise level exceeds the recommended FMEnv limit. Support vehicles shall be serviced and regularly maintained by contractors Support vehicles shall be turned off when not in use. Open burning shall not be allowed to avoid loss of vegetation;
	Effects of accidental oil spillage on Groundwater quality during construction.	MEDIUM	
	Effects on the General Hygiene and sanitation in the project comunity.	MEDIUM	
	Resident/community agitation over demolition of houses	MAJOR	
	Temporary distruption in regular traffic flow along routes where existing bridges/culverts are to be replaced or rehabilitated	MEDIUM	
	Work place accidents leading to injury or fatalities from cuts, bruises, trip and fall during Construction	MAJOR	
	Risk of flooding during civil works		

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
			Ensure all personnel wear appropriate personnel protective equipment (PPE); Ensure only competent and well trained personnel are used for the job; Ensure safety awareness meetings are held prior to work each day; Ensure all incidents are reported and documented and corrective actions taken. Employ the use of personnel and environmental friendly construction techniques in operations; Construct drainages to controlsurface water/runoffs; Use existing roads/tracks to minimize surface disruption as a result, restrict erosion potential; Ensure compaction of soil is minimal as existing roads will be used. Prohibition of drug and alcohol use by workers while on the job. - Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba languages). - Restriction of unauthorized access to all areas of high risk activities - Provision of specific personnel training on worksite OHS management - Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers Any uncovered work pits should have appropriate signage and protection around them - Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before - Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians - lighting and/or reflective tapes and signages integrated in all worksites for safety at night • appropriate security measures in place to prevent harassment or kidnapping of workers; Safety Statistics boards at laydown yards and entrances to the perimeter barricade; Safety instructions at the entrances; Project sign posts should be placed along the project area
	Impact on Physical Cultural Resources		Adequate measures shall be taken to avoid impact on cultural resources such as graveyards and shrines. Where this is impossible, due consultation and compensation shall be arranged for the owners

Table 6. 3: Impacts and Mitigation Measures for the Potential Impacts during operation and maintenance phase of the Kudeti Channelization Project

OPERATION AND MAINTENANCE PHASE

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
• Periodic river monitoring, • De- siltation of the channel,	Effects on Surface water quality during dredging and river monitoring activities on the channel.	MINOR	Ensure that Dredging activities be limited to the required sections only; Maintain all vehicles and internal combustion engines at optimal working conditions;
	Effects of accidental oil spillage on Groundwater quality during operational phase	MEDIUM	
• dredging of the channel if necessary, and Waste management to avoid degeneration	Effects of accidental oil spillage on soil quality	MINOR	Ensure equipment/vehicles are periodically maintained and records kept; Carried out pre-mobilization checks to ensure all vehicles/equipment designated for the job are at optimal working conditions; Ensure an inventory of emissions is developed and maintained. Put in place a comprehensive and dedicated EMS, to carter for all generated waste; Ensure workers undergo environmental awareness training in waste handling and management; Ensure all waste fuel and lubricants are stored with the same precautions as unused fuels. Ensure all waste oils are disposed of through a reliable re- user/recycler

Table 6. 4: Impacts and Mitigation Measures for the Potential Impacts during Decommisioning phase of the Kudeti Channelization Project

DECOMMISSIONING PHASE

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
Dismantling of Structures	Impairment of air quality	MEDIUM	Support vehicles and other combustion operated equipment shall be serviced and regularly maintained Support vehicles and combustion operated equipment shall be turned off when not in use
	Noise from dismantling activities	MEDIUM	Support vehicles and other combustion operated equipment shall be serviced and regularly maintained Support vehicles and combustion operated equipment shall be turned off when not in use HPDs shall be provided for workers on and visitors to site
	Ocuppational Health and Safety	MEDIUM	Training of personnel on Work-related accidents, Provision and appropriate use of PPE All Contractors shall be required to maintain HSE plans, ensure Random Alcohol test, Drug test, Safety meetings, Medical check-up, safety audit too ensure that safety measures are adhere to at all time during decommissioning. •Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to: -Prohibition of drug and alcohol use by workers while on the job.

Project Activities	Associated and Potential Impact	Significance Rating before Mitigation	Mitigation
			-Provision of adequate first aid, first aiders, PPE, signages -Restriction of unauthorized access to all areas of high risk activities -Provision of specific personnel training on worksite OHS management

Table 6. 5: Summary of Significant Socio-cultural/ Economic Impacts and Mitigation Measures

Potential Impact/Community issues	**Mitigation Measures**
• Population impact.	• Discourage population movement through employment of indigenes and members affected in communities with close proximity.
• Socio-cultural impacts.	• Proponent shall provide accommodation for employees and limit interaction with host communities. • Awareness campaigns and information to employees to discourage anti-social behaviours that are not aligned to traditional community behaviors.
•	•
• Health and safety impacts: • Increased road usage and accident • Increased transportation vehicular emissions and air quality reduction. • GBV/SEA, STDs/HIV/AIDS etc.	• Safety issues to be seriously considered in all operations and a safety officer should prepare/implement an Occupational Health and Safety plan (OHSP) • Install speed breakers/bumps, zebra crossings, and traffic signs where necessary and route to and from project built-up areas e.g., speed limit, dangerous bends, etc. • Use of well-serviced vehicles. • Health campaigns and regular trainings both to workers and host communities. • A GBV action plan including a GBV Code of conduct should be developed and strictly adhered to.

6.3 Cumulative Impacts Evaluation

Many interests and users are impacted by channelization of the Kudeti River, from change in water levels and flows in the Kudeti River, ranging from businesses and governments to private individuals and to the ecosystem. It was determined that a qualitative evaluation of impacts on all interests and users was most appropriate. The analysis of cumulative impacts considers the effects of other past, present, and reasonably foreseeable future actions such as the Ibadan city master plan project that has the Kudeti area as part of the core areas to be improved.

Table 6. 6: Potential Cumulative/Indirect Effects

S/N	**Impacts**	**Resources, Ecosystems, Human Communities**	**Potentially Important from Perspective of Cumulative or Indirect Effects**
1	Land Use	a. Relationship between land use and transportation – consistency with local plans	a. Facilitate already established growth trends, consistency with plans of local communities and development patterns
		b. Socioeconomic	b. Population and employment growth, changing community cohesion, building displacements
		c. Impacts to ethnic, and special groups (low income-communities)	c. Environmental justice effects – Assess whether there would be disproportionate impact to minority and low-income groups
2	Wetland resources	a. Wetlands	Degradation or loss (erosion/sedimentation, filling), fragmentation, increased volumes of water due to increased impervious areas, increased pollutant loads, and potential loss of biological resources
3	Water	a. Water quality	a. Sedimentation; pollutant loading (e.g; oil, grease, heavy metals,

S/N	Impacts	Resources, Ecosystems, Human Communities	Potentially Important from Perspective of Cumulative or Indirect Effects
	resource		suspended solids, and debris from demolition/construction activities, traffic operations, and maintenance); altered hydrology; potential impact to designated water uses b. water levels and flows that will result from climate change predictions by the period 2020 to 2040 are of such a large magnitude that they will have tremendous effects on the users and interests.
4	Biological resources	a. Flora and fauna diversity b. Habitat fragmentation c. Potential threatened and endangered species d. Tree loss during constructio	a.–d. Habitat loss, degradation of habitats, and impacts to plant and animal populations from construction and/or ongoing operation/maintenance activities
5	Social	Decreases in property damages	Social benefits, including reduced stress from the disruption and financial loss associated with flooding and erosion.

6.4 Emergency Preparedness and Contingency Plan

There shall be adequate contingency plans and measures in place during the construction and operation of the facility and this shall include the following:

- Fire
- Continuous pressurized firefighting system, hydrants and monitors (including foam monitors) shall be strategically placed around the entire site.
- Explosion
- Hazardous area classification, electronic and electrical components incompliance.
- Blast resistant design of critical buildings.
- Adequate spacing of fuel storage facility and power generating plant shall prevent the possibilities of damage to adjacent structures.
- Risk of flooding during civil works

CHAPTER SEVEN

7.0 Environmental and Social Management Plan (ESMP)

An Environmental and Social Management Plan (ESMP) is essentially a management tool that profers mitigation measures for reducing the effects of adverse potential impacts as well as those proposed for enhancing beneficial impacts of the project throughout the project lifecycle. This chapter presents the ESMP, which outlines the strategies for managing associated and potential impacts of the project and implementation/monitoring measures to promote environmental & social sustainability for the proposed channelization of Kudeti River.

7.1 Maintenance Program

The maintenance officer to be employed by the contractors for the project shall develop a comprehensive maintenance program for all equipment.

The maintenance schedule contained in the program shall be designed in line with manufacturer's specifications for each of the equipment. A maintenance logbook shall also be operated and it shall be regularly audited/ checked by the HSE and Security Team Leader. In addition, the maintenance status (last and next service dates) shall be displayed at appropriate and clearly visible points on each equipment and machine.

7.1.1 Emergency Response and Preparedness Plan

The following equipment shall be provided as minimum requirements for emergency response action.

- Safety signs and notices shall be provided throughout the site in accordance with the existing guidelines and standards;
- Walkways across pipes and equipment shall be provided with non-slip surfaces;
- A general alarm system shall be provided, capable of giving an audible alarm in all areas of the site and visual display in areas of high background noise;
- Two sets of self-contained breathing apparatus shall be provided in the control building to allow rescue activities to be performed in smoke conditions.
- Emergency response procedures shall be put in place for snakebites, road traffic accidents, and medevac / medial rescue and oil/chemical spills.

During operations, associated facilities shall be inspected and tested on a periodic basis to verify inventory and function. Also, the proponent shall carry out programs to educate the communities and local health facilities on what to do in case of a major incident of fire/ accident.

Table 7. 1: Environmental Management and Monitoring Plan throughout project lifecycle (Pre-construction, Consturuction, Operation & Maintenance, Decomissioning)

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
ENVIRONMENTAL IMPACTS											
Preconstruction (Site preparation)	Reduction in air quality (dust, exhaust fumes)	ensure that only vehicles with pre-mobilization certificates are used to reduce emissions from vehicle exhaust Trucks carrying sand, granite, cement etc should be covered during transportation to site.	Contractor	20,000	SPM, SO2, CO, NOX	Visual Observation, instrument measurement using standard, calibrated air quality monitoring equipment	Pre-mob certificates and statistics	Project/ Construction site	Ensure testing Once a week (night and day each time)	Safeguards Unit of PIU, , Oyo State MEWR, Supervising Engineer,	480,000
Construction & Operation phase	Air quality	Water shall be sprayed on construction sites to reduce dust levels especially during dry season ensure that all stationary internal combustion engines are properly maintained ensure that appropriate maintenance programs are in place for all equipment	Contractor	20,000	SPM, records of respiratory diseases	Visual Observation, instrument measurement using standard, calibrated air quality monitoring equipment	Records on compliance, SPM at selected sites within 500m band	Construction site	Weekly	Safeguards Unit of PIU Supervising Engineer, contractors	150,000
		Provision of PPEs for workers and Ensure that PPE (nose masks etc) are worn by site workers during excavation and other site activities. ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and Safety provisions specified).***	Contractor HSE personnel	90,000	SPM, records of respiratory diseases	air monitoring equipment	SPM, records of respiratory diseases and noise levels	Construction site	Monthly	Safeguards Unit of PIU Oyo State MEWR,	10,000
Preconstruction, Construction, Operation & Decommissioning	**Increase in noise levels**	Ensure night work is prohibited to prevent noise and vibrations from machines Ensure proper use of PPE (ear muffs) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and Safety provisions specified).***	Contractor	140,000 (PPE/Noise monitoring equipment)	Noise level should not exceed 90dB	Noise measurement equipment	Noise level should not exceed 90dB limit.	Construction site	Weekly	Supervising Engineer, PIU-Environmental safeguard, FMEnv. Oyo State MEWR	30,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		ensure that all vehicles and equipment conform to World Bank and FMEnv limits for noise(90dB) inform other stakeholders in advance of likely increase in noise level during construction	Contractor/ PIU-Environmental safeguard	30,000	Vehicle maintenance records	Noise measurement equipment	noise levels	Construction site	Monthly	Environmental specialist, FMEnv. Oyo State MEWR	20,000
		Ensure use of ear muffs, Low noise equipment and installation of Silencer on machinery to reduce noise generation - inform stakeholders in advance of likely increase in noise level during decommissioning	Same as above Compliance oise Quality Monitoring	150,000 90,000	Compliance Noise Quality Monitoring			Project site	Throughout project phase		10,000 10,000
Throughout project cycle	Increase in Waste generation	ensure that wastes are disposed off in accordance with state waste management policy Develop and enforce adequate waste management on site and detailed Waste Management Plan {WMP) Debris removed during excavation should be re-used for filling potholes and levelling of uneven surfaces around the project corridors notify Local and State management of the type and volume of wastes anticipated for the different phases of the project Implementation.	Oyo state Waste management authority, Contractor	30,000 500,000	Waste, odours, general aethestics etc	Visual observation of surroundings Ensure waste management plan is implemented	Proper sorting and waste management Clean environment	Project site	Monthly	Safeguards Unit of PIU FMEnv.Oyo State MEWR, Oyo state Waste management authority.	100,000
Construction& operation phase	Blockage of Natural Drainages	ensure that wastes are disposed off at all appropriate locations for waste disposal Preparation of proper waste management plans Encourage community participatory sanitation Awareness program on waste management practices	Community Development Association (CDA), contractor etc	100,000	Waste management	Visual observation of drainage channels to kno Ensure waste management plan is implemented	Waste management plan	Project site	Quarterly	Safeguards Unit of PIU, FMEnv.	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Provide waste skips near culverts/bridges to discourage dumping directly into rivers. Debris and spoils removed during excavation should be re-used and not abandoned along the project corridor.									
Preconstruction, construction & Decommissioning	Loss of flora and fauna	-Primary site clearing will be conducted by contractor i.e. clearing shall commence from developed (e.g. roads) to undeveloped areas to provide escape routes for wildlife. -Replanting of lost vegetation	Contractor	45,000	The number useful tree and plant species (NTFP) lost,	Quadrant count ratio to estimate the number of flora & fauna species	Site clearing Inspection records	Project site	Bi-monthly	Safeguards Unit of PIU FMEnv and LGI.	5,000
	Cumulative impact on Wetland and biological resources	educate construction workers on the nature of the biodiversity of the area and the need for conservation	contractor	35,000	Records of HSE meetings	Assessment of understanding of biodiversity &conservation		Construction site	Weekly	Safeguards Unit of PIU Oyo State MEWR, HSE	10,000
Pre-construction, construction & Decommissioning	**SOIL** Potential increase in erosion risk of contractors using non-registered quarries, illegal sand-mining or creating new quarries through illegal extractions	re-vegetate areas not needed for construction as soon as possible Ensure clear signage of impending hazard/flood prone- areas should be displayed at high risk areas. Validation of soil stability before deployment of equipment near high risk areas to prevent overturn and staff exposure to accident list of raw material suppliers should be crosschecked to ensure quarries are registered. Illegal sand mining should be prohibited	contractor HSE officer,	60,000	Records of re-vegetation exercise	Visual assessment of the project area showing caution/ safety signages. Ensure re-vegetation exercise	Visibility of road signs	Project area	Bi-monthly	Safeguards Unit of PIU, FMEnv. Oyo State MEWR and LGI.	10,000
Pre-construction, construction & Decommis	**Ground/ surface water contamination &** Degradation of soil from spills, leaks, oil/grease,	ensure maintenance of clean up equipment at site. Spill containment Regular assessment of soil quality by testing.	contractor	45,000	Soil	Soil quality testing	Soil monitoring records Audit/	Construction site	Weekly	Safeguards Unit of PIU Oyo State Ministry of Environment and Water	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
sioning	fuel in equipment yards -Cumulative impact on water quality						inspection reports			Resources	
Pre-construction, construction, operation & Decommissioning	**Sanitation** Increased pressure on sanitary facilities of temporary location due to rise in population.	Provide gender-sensitive temporary Sanitary Facilities along project site to prevent open defecation and pollution of water bodies Inspect facilities provided such as (mobile toilets, storex tank for flushing, tissue paper, disinfectant/hand sanitizer etc) Ensure facility provided align with the expected number of workers	Contractor, Health personnel	765,000	Water, soil	Water and soil quality assessment	Adequate Number of sanitary facilities and toilets	Project site	Weekly	Safeguards Unit of PIU, Oyo State Ministry of Environment and Water Resources	50,000
		SUB TOTAL COST ₦2,120,000.00								**₦985,000.00**	
HEALTH IMPACTS											
Pre-construction, construction & Decommissioning	Increase in morbidity (including STDs. HIV/AIDs and other STIs) & mortality	Health awareness on the mode of transmission of STDs (including HIV/AIDS) Workers, individuals along project corridor etc should have access to the nearest health services (Agbongbon Health Center) IUFMP shall assist state/local government health facility and this should be accessible to all. Contracting of HIV service provider to be available on-site; and provision of free testing kits for voluntary examination/test	PIU, Contractors HSE officer, medical personnel etc	500,000	Statistics of health awareness lectures Support provided Checking recruitment record	Monitor health records	Health assessment records	Project area	Before Recruitment/ and monitored Quarterly	Safeguards Unit of PIU Occupational Health teams Supervising Engineer and Oyo State Ministry of Health	50,000
		-As much as possible, psychological support shall be provided to persons living with the HIV virus, this should be conducted only with prior and informed consent of the individuals	Contractors HSE officer, medical personnel	200,000	Records of HIV support programs	Psychological assessment records	Psychological assessment records		Quarterly	Safeguards Unit of PIU Health teams, Oyo State Ministry of Health	30,000
		Immunization of workforce as appropriate	Same as above	50,000	Records & statistics of	Evaluate immunization records	Health records	Construction site	During mobilizatio	Same as above	10,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
					Immunization				n		
		Vector control to reduce incidence of malaria and other ailments (such as regular spraying/fumigation of camp and provision of insecticide treated nets) (ITN)	Same as above	90,000	Records &statistics of ITN distribution	Evaluate health records on malaria prevalence	Availability of mosquito nets Fumigation certificates	Project site	Quarterly	Same as above	30,000
		Introducing awareness campaign to enlighten all stakeholders on common communicable & air/water borne diseases, and the health implications of drug and alcohol abuse, unprotected sex, prostitution and the need to sustain cultural values.	Same as above	100,000	Statistics of health awareness lectures	Random alcohol testing, Air/water quality monitoring	Record of air/water monitoring	Project site	Quarterly	Same as above	30,000
		Alcohol and drug policy shall be implemented to encourage healthy lifestyle for workers	PIU-Social safeguards,, Contractors HSE officer, medical personnel	50,000	Records of violations	Random alcohol testing,	Alcohol test records	Project site	monthly	Same as above	50,000
		make use of provided clinic to take care of minor illnesses for all workers	Contractor, Occupational Health team	900,000	Ailments, medical complaints	Statistics of attendance morbidity& mortality	Health registers/records	Project site	Weekly	Safeguards Unit of PIU Oyo state Ministry of Health	100,000
		provide condoms for construction workers	Contractor, HSE officer	50,000	Health records	Assess health records	Condoms availability to workers	Project site	Monthly	Same as above.	15,000
	Occupational Health & Safety (OHS) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries - Provision and maintenance of the Health and***	ensure contractors carry out first aid training & HSE awareness program for workers at induction and on a continuous basis throughout the life of the project Contractor should ensure that the safety officer conducts a Job Hazard Analysis (JHA) prior to the commencement of work to identify the hazards associated with the job activities	Contractor, HSE officer	650,000	First aid awareness reports Statistics of social and health awareness program	Assessment of first aid & HSE knowledge	Number of first aid certificates issued and first aid kit records Job Hazard Analysis (JHA) report	Project site	At induction and quarterly	Safeguards Unit of PIU	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Safety provisions specified.	Provide and enforce appropriate use of PPEs (e.g. hard hats, eye goggles) Provision of first aid box	Contractor, HSE officer	400,000	Compliance	Routine unannounced inspection of PPE, and first aid box	Availability of PPE and first aid kit records	Project site	Weekly	Safeguards Unit of PIU	70,000
		ensure toolbox talks are held,prior to work activities • Develop and implement a project specific Occupational Health and Safety Plan (OHSP). OHSP to include but not limited to: - Prohibition of drug and alcohol use by workers while on the job. -Provision of adequate first aid, first aiders, PPE, signages (English and Yoruba languages). -Restriction of unauthorized access to all areas of high risk activities -Provision of specific personnel training on worksite OHS management -Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers -Any uncovered work pits should have appropriate signage and protection around them -Workers should get a daily induction/toolbox before going on the site and a refresher of what happened on site a day before -Adequate safety signage on construction sites should be installed to alert community/drivers/pedestrians -lighting and/or reflective tapes and signages integrated in all worksites for safety at night •Appropriate security measures in	Contractor, HSE officer	Part of normal operation	Compliance	Use of PPE and safety compliance among personnel	Compliance	Project site	Weekly	Safeguards Unit of PIU	Part of normal operation

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		place to prevent harassment or kidnapping of workers Safety Statistics boards at laydown yards and entrances to the perimeter barricade; Safety instructions at the entrances; Project sign posts should be placed along the project area									
	Community Health and Safety	Support the activities of the State action committee on STDs/HIV/AIDS within the local communities Partner with local community health care providers to supply free mosquito nets to communities. Public Health Awareness/health walk in communities	Contractor	30,000	Health, HIV/AIDs, STDs etc	HIV/AIDs, STD tests	Records of Engagement of an NGO Health record	Project site	monthly	Safeguards Unit of PIU, Occupational Health team, NGO	50,000
	possibility of fire outbreak	Ensure availability of an Emergency response plan and trained fire rescued team Collaborate with state fire service and communicate toll-free emergency numbers to personnels. Availability of fire extinguisher, hydrant etc. Accessibility of muster point incase of emergency.	Contractor, HSE officer, Oyo State Fire Service	200,000	Emergency drills statistics	Emergency drills	Emergency response plan	Project site	Before recruitment & monitored Quarterly	PIU-Environmental & Social safeguards, Contractor HSE officer, Oyo State Fire Service	50,000
	SUB TOTAL		**₦3,220,000.00**							**₦535,000.00**	
	SOCIAL IMPACTS										
	Physical/Economic displacement: Impact on small businesses, Temporary disruption of access to livelihoods, Impacts on economic crops/trees, piggery, fishery	Prior information, consultations and effective grievance redress mechanism to address complaints/grievances from affected persons Vulnerable groups should not be marginalized but considered and carried along during consultations and throughout the project cycle Compensations for assets to be affected, and disturbance allowance	PIU-Environmental & Social safeguards specialist, contractor.	Included in RAP budget	Monitor GRM records RAP Implementation report	Ensure implementation of RAP	GRM records RAP Implementation report	Project area	Before Commencement of Civil Works	Supervising Engineer, PIU-Safeguards Unit of PIU and M&E Unit	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	etc Impacts on vulnerable people. -Potential Cumulative impact on land use	for temporary loss of access where applicable Resettlement assistance for livelihoods restoration, moving allowance to cover transport costs as well as provision to offset any transaction cost associated with the impacts of the sub project The full scope, description, mitigation measures and costs of these impacts have been exhaustively addressed in the standalone RAP document									
	GBV/SEA etc), ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Mitigation of social impacts (Labour Influx Management, Sexual Exploitation & Abuse risk reduction program, etc.)***	Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws preventing GBV. Implement workplace programme for GBV awareness and prevention through skilled GBV service providers for workers and neighbouring communities Provision of opportunities for workers to regularly return to their families; GBV/SEA & VAC victims/survivors should be taken to the nearest health facility (Agbongbon Primary Health centre) for immediate medical attention or referred to University College Hospital (UCH) for further medical and psychological care. Information and awareness raising campaigns for community members, specifically women and girls; Provision of information to host community/contractors about GBV	PIU-Social Safeguard specialist, Contractor	200,000	Complaint or incidents recorded on GBV/SEA	Ensure Compliance and Signing of the GBV CoC Ensure Defaulters are punished severely according to laws preventing Rape, sexual abuse etc	GRM records Rape/sexual exploitation, reports GBV Code of Conduct compliance -Percentage of children who report feeling usafe from GBV while travelling to and from school -Percentage of health care facilities following national and international guidelines on clinical care for GBV/SEA victims/ survivors	Project area	Before Recruitment/ And Monitored quarterly	Supervising Engineer and Safeguards Unit of PIU	50,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Code of Conduct (See Annex 5 for Code of Conduct in preventing GBV/VAC).									
	Child Labour/School Drop out	Ensuring that children and minors are not employed directly or indirectly on the project. Communication on hiring criteria, minimum age, and applicable laws. Ensure contractors comply with Labour Act Unplanned monitoring should be undertaken to ensure underage labour are not involved in processes such as off-loading of construction materials and other construction activities	PIU- Social Safeguards, contractor.	50,000	Recruitment records	Checking recruitment record Inspection of construction Sites	Labour Act	Construction site	Before every task, Before Recruitment and Monitored Bi-monthly	Supervising Engineer and Safeguards Unit of PIU	100,000
	Physical Cultural Resources (PCR)	-Consultations with the chief priests and communities. -Modify the project design to avoid PCRs -Stop construction activities in the area in case of chance finds until a solution is proffered; -Delineate the discovered site or area See details in Annex 9	contractor, Social Safeguard specialist-PIU	150,000	Graveyards etc	Visual assessment of project area	Archaeological records/ maps etc	Project area	Before the commencement of project, monitored biannually	Safeguards Unit of PIU, Oyo state council for Arts and Culture	30,000
	Other Social risks associated with Labour influx; Risk of social conflict	Consultations with and involvement of local communities in project planning and implementation; MOU should be adhered to throughout the project cycle Development of site specific labour influx management plan Prioritize and balance the hiring of locals for qualified skilled and unskilled work GRM would address conflicts that will arise. See annex 6 for GRM Awareness-raising among local community and workers.	PIU- Social Safeguards,	200,000	Complaints lodged, suggestion box, GRM process	Reporting of social conflict Eye-Witness Reports of incidents	GRM Records Rates of crimes reported		Monitored periodically	Safeguards Unit of PIU,	40,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Increased risk of illicit behaviour and crime (including prostitution, theft and substance abuse)	Provision of cultural sensitization training for workers regarding engagement with local community IUFMP shall ensure contractor enforces laws on drug abuse/trafficking; alcohol and drug policy for staff Police monitoring to prevent drugs trafficking, prostitution, theft/crimes etc Pay salaries into workers' bank accounts rather than in cash; IUFMP shall provide security systems Create supervised leisure areas in workers' camp; Introduce sanctions (e.g. dismissal) for workers involved in criminal activities;	contractor, Community Development Association (CDA), NDLEA etc PIU- Social Safeguards, contractor, Community Development Association (CDA), Police department, vigilante etc	150,000 1,200,000 650,000	Incident reports Presence of security personnel	Inspection of construction Sites/ camps Inspection of construction Sites/ camps	Enlightenment campaign/ health education statistics; Incident reports records of cases of abuse in the workforce, etc Availability of services in workers camp for recreation etc	Project area	Monitored Bimonthly Before Recruitment ad monitored quarterly	Supervising Engineer and CDA	250,000
	Adverse impacts on community dynamics by Labour Influx Local inflation of prices and crowding out of local consumers Increased pressure on accommodation and rents, Camp related land use, access roads,and lights,	Provide services in the workers' camp to reduce the need for workers to use local community facilities (internet, sports, events, and entertainment) etc or mix with them. Communications campaign to manage expectations and discourage spontaneous influx of job seekers; Local government to address this additional influx of the "followers" to ensure that no illegal and unsafe settlements develop. Mix local and non-locally procured goods to allow local project benefits while reducing risk of crowding out of and price hikes for local consumers.	PIU- Social Safeguards, contractor.	Part of contractor's responsibility	Recruitment records Camp facilities	Checking recruitment record Inspection of construction Sites Inspection of construction Sites	Availability of workers Accommodation, shop/stalls etc	Project area	Before Recruitment ad monitored quarterly	Supervising Engineer and Safeguards Unit of PIU, CDA	70,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
		Provide camp facilities with enough capacity to cater for workers, subcontractors, support staff etc Place workers camp away from environmentally sensitive areas to avoid impacts on the local wildlife; Routing of new access routes for workers' camp to avoid/minimize environmentally sensitive areas									
	Impacts on Public Utility (water, electricity, etc) ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Allow for the removal and relocation of existing installations for electricity, telephone cables, water supply pipes, and other utilities including unauthorized signboards and obstructions within the RoW of the roads).***	Consult with the utility companies to demarcate the location and alignment of electrical cables, water mains and communication cables so that they can be avoided. Inform utilities prior to excavation within the 15meters of their alignment Prepare a detailed works planning and construction phasing schedule and coordinate service interruption with public utilities and services. Inform citizens in advance concerning programmed interruption Replace all broken pipes or facility disrupted as a result of the project	PIU- Social Safeguards, Oyo state water corporation, Ibadan Electricity Distribution company (IBEDC), Contractor	100,000 for dissemination of information Repair of damaged utilities is contractor's responsibility	Presence Broken pipes, cut wires/cables	Inspection of public utilities along the project corridor Monitor GRM reports (Complaints received from affected persons verbally, written or through the GRC)	Detailed works planning/ construction schedule document Absence of disruption in public utility (e.g absence of Broken pipes, cut wires/cables)	Project site	Bi-monthly	Contractor, Supervising Engineer and PIU- Social Safeguards, IUFMP	120,000
	Potential increase in road traffic volume	As much as possible, large and slow moving vehicles should be scheduled during off peak periods Raise stakeholder's awareness of Project activity and likely traffic issues Pre-mobilization of all vehicles	PIU- Social Safeguards, Oyo state Traffic Management	100,000	Night driving permit& statistics; Record of awareness sessions	Monitor Traffic Situation reports	Monitor Traffic Situation reports and Traffic Management Plan	Project area	Weekly Monthly	Contractor, Safeguards Unit of PIU, OYOTMA, Federal Road Safety Corps (FRSC)	350,000

Project Activity	Impacts	Mitigation measures	Responsibility for Mitigation	Cost of Mitigation (Naira)	Parameters to be Measured	Method of Measurement	Performance Indicator	Sampling Location	Frequency of Monitoring	Responsibility for Monitoring	Cost of Monitoring (Naira)
	Potential increase in road traffic incidents ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries; Provide and maintain diversion roads for traffic control and pedestrians, including provision and erection of road signs).***	Develop a **traffic management plan** and ensure alternative routes are motorable and safe for motorists and pedestrians. Visible warning signs on roads Alternative routes should be provided for road users and these routes should be communicated prior to commencement of civil works Ensure alternative routes are motorable and safe for both motorists and pedestrians Speed breakers should be provided at sections traversing communities/residential ares/schools. Defensive driving course for IUFMP and contractor drivers	Authority (OYOTMA), FRSC, Contractor HSE officer	450,000 500,000 150,000	Road signage's, dissemination of information, Driving permit and statistics	Monitor Traffic Situation reports, Monitor Accident records, IVMS records etc	Journey management record; Number &adequacy of signs/ speed breakers Federal traffic regulation	Project area	Before commencement of civil works and monitored bi-monthly	Contractor, Safeguards Unit of PIU, OYOTMA, Federal Road Safety Corps (FRSC),	100,000 50,000
		Vehicle monitoring device /IUFMP journey management policy/ night driving and alcohol policy shall be enforced •Integrated Vehicle Monitoring systems (IVMS) can also be installed in project cars as check to ensure compliant monitoring in line with Journey Management Plan and Speed Limit		150,000	Journey management record; IVMS record, night driving permit and statistics		Journey management record; IVMS record,	Project Area	Weekly		50,000
		Sub total	**₦4,050,000.00**							**₦1,260,000.00**	
		GRAND TOTAL			**₦9,390,000.00**						**₦2,780,000.00**

7.2 Capacity Building and Training Plan

On the basis of the training needs assessment (annex 15), there is need for strengthening the capacity of personnel and stakeholders on World Bank Environmental & social safeguards policies for the implementation of this ESIA. This shall require collaborative efforts from the identified stakeholders as outlined in the capacity building plan in table 7.2.

Table 7. 2: Budgets for Capacity Building and Training Plan

Schedule	Capacity Need	Target Participants	Duration	Cost (₦)
DAY 1	• World Bank safeguards policies and Nigerian Extant laws on environmental protection • ESIA/ESMP implementation, project monitoring and evaluation, environmental management for construction contracts	Relevant Contractors staff, Supervising consultant staff Relevant staff of Oyo State Ministry of Environment and Water Resources FMEnv (EA) Officers of PIU-Environmental Specialist/Social Development Specialist Oyo State Waste Management Board and other relevant MDAs (Ministry of Health, OYSEMA) LGA departments, NGOs, CBOs.	4 hours	150,000
DAY 2	• Introduction to HSE in the workplace • The use of PPE, management concerns, occupational safety and health • Basic health awareness on communicable diseases and prevention • Community and stakeholder engagement roles in this project • Train all staff and contractors on Gender Based violence and child labour preventive measures • GBV/SEA/VAC prohibition laws and applicable penalties	Relevant staff of Oyo State Ministry of Environment and Water Resources FMEnv (EA) Officers of PIU-Environmental Specialist/Social Development Specialist Oyo State Waste Management Board and other relevant MDAs LGA departments, NGOs, CBOs.	4 hours	250,000
Total Capacity Building Budget ***(Unpriced BOQ – Lot 1 – TD, Bill #1 – General – Preliminaries -Training; pre-construction training for Contractor staff and line MDAs, Mid-term refresher training and review, decommissioning/close out workshop)***				**₦400,000.00**

7.3 Safeguard Roles and Responsibilities of Institutions

The successful implementation of the ESIA requires the collaborative efforts of the PIU and other relevant institutions, and the capacity within the institutions to apply or use the ESIA/ESMP effectively, as well as the appropriate/functional institutional arrangements, among others. The roles and responsibilities of these levels of institutions are outlined in Table 7.3.

Table 7. 3: Safeguard Responsibilities

S/N	Category	Roles & Responsibilities
1	Oyo State Ministry of Environment and Water Resources	• Environmental monitoring and compliance overseer at the State level • Review of draft ESIA report (in liaison with Federal Ministry of Environment) • Site assessment and monitoring of ESMP implementation.
2	Federal Ministry of Environment/EIA Department&NESREA	• Lead roles in the provision of advice on screening, scoping, review of draft ESIA report (in liaison with State Ministry of Environment), receiving comments from stakeholders, public hearing of the project proposals and social liability investigations, monitoring and evaluation process and criteria.

3	IUFMP-PIU Safeguard Unit, (Environmental & Social)	**Environmental Safeguards** • Collate environmental baseline data on relevant environmental characteristics of the selected project sites; • Analyze potential community/individual sub-projects and their environmental impacts; • Ensure that project activities that are implemented will in accordance to best practices and guidelines set out in the site specific ESMP; • Ensure that the project design and specifications adequately reflect the recommendations of the ESIA/ ESMP • Identify and liaise with all stakeholders involved in environment related issues in the project; and be responsible for the overall monitoring of mitigation measures and the impacts of the project during implementation. • Review the performance of the project through an assessment of the periodic environmental and social monitoring reports; provide a summary of the same to the Project Manager, and initiate necessary follow-up actions • Prepare monthly environmental safeguards reports for the attention of Safeguards unit/PIU • Liaise with the Federal and State Ministries of Environment to disclose safeguard documents • **Social Safeguards** • Develop , coordinate and ensures the implementation of the social aspects of the ESMP • Identify and liaise with all stakeholders involved in social related issues in the project; • Conduct impact evaluation and beneficiaries assessment; and • Establish partnerships and liaise with organizations, Community Based Organizations (CBOs) and Civil Society Organizations (CSOs) • Supervise the Grievance Redress Committee (GRC) which is in charge of handling and addressing grievances/complaints. **PIU** • Liaise closely with Oyo State Ministry of Environment and Water Resources in preparing a coordinated response on the environmental and social aspects of project development respectively. • E&S Safeguards due diligence. • Undertake intermittent and unannounced monitoring on Occupation Health and Safety (OHS) reports received from the Safety officer • Stop work procedures, in the event of breaches of ESIA/ESMP conditions that may lead to serious impacts on local communities, or affect the reputation of the Project
4.	Contractor	• Compliance to BOQ specification in procurement of material and construction • Hire Safeguards personnel implement ESMP during project implementation • Mitigate environmental and social Impacts • Implementation of code of conduct for all staff • Develop contractor ESMP (C-ESMP) • Preparation of work plans for environmental and social management in line with the ESMP • Ensure any changes during construction process that may have a significant environmental and social impact are communicated to ESO in time and managed accordingly. • Maintain records of environmental incidents as well as corrective and preventive actions taken • Supervision of implementation of all the measures and preparation of required Monitoring report • Contractor should ensure that the safety officer conducts a Job Hazard Analysis (JHA) prior to the commencement of work to identify the hazards associated with the job activities • Ensure all contractors and workers sign the Code of Conduct (CoC) and are routinely trained on the contents of the CoC • Provide adequate basic amenities and PPEs to workers, and ensure that the PPEs are worn by workers during work. • Prepare and maintain records and all required reporting data as stipulated by the ESMP, for submission to the Supervising Consultant
5.	Supervising Engineer	• Preparation of the engineering designs for the project. • Provides an independent oversight ensuring contractor adhere strictly to the engineering specifications and provide frequent reports on contractor/ Clients compliance • Preparation and implementation of the Environmental and Social Monitoring Plan during construction • Supervision of contractor performance of implementation of the Construction and Work Camp Management Plan • Hire Safeguards personnel implement ESMP • Thorough supervision of the mitigation of the environmental and Social impacts such as labour influx and GBV • Reporting any incidents or non-compliance with the ESMP to the IUFMP • Ensuring adequate training and education of all staff involved in environmental supervision • Making recommendations to the IUFMP regarding ESMP performance as part of an overall commitment to continuous improvement • Supervise contractor performance of implementation of the Construction Campsite/Staging area Camp Management Plan/CESMP • Prepare monthly safeguards report including recommendations to the PIU regarding ESMP performance as part of an overall commitment to continuous improvement
6.	State Government MDAs	• Other MDAs come in as and when relevant areas or resources under their jurisdiction or management are likely to be affected by or implicated projects. • They participate in the EA processes and in project decision-making that helps prevent or minimize impacts and to mitigate them. These institutions may also be required to issue a consent or approval for an aspect of a project; allow an area to be included in a project; or allow impact to a certain extent or impose restrictions or conditions, monitoring responsibility or supervisory oversight.

7.	Oyo state solid waste management authority	• Inspection of project premises in order to ensure strict compliance with sanitation and waste management standards in the state. • Collaboration with other MDAs at the State and Federal level, NGOs and Donor Agencies in environmental protection and management especially in areas of waste recycling etc.
8.	Ibadan North East/LGA	• Provision of oversight function across project within its jurisdiction for ESMP compliance. • Monitoring of activities related to public health, sanitation, waste management amongst others.
9.	Affected Community	• Promote environmental awareness. • Review environmental and social performance report made available by PIU. • Provide comments, advice and/or complaints on issues of nonconformity. • Attend public meetings organized by the PIU to disseminate information and receive feedback.
10.	CDA	• Ensure community participation by mobilizing, sensitizing community members; • Support with provision of necessary infrastructures and engage/ encourage carrying out comprehensive and practical awareness campaign for the proposed projects, amongst the various relevant grass roots interest groups.
11.	NGOs/CSOs	• Assisting in their respective ways to ensure effective response actions, conducting scientific researches alongside government groups to evolve and devise sustainable environmental strategies and techniques.
12.	World Bank	• Overall supervision and provision of technical support and guidance. • Recommend additional measures for strengthening the management framework and implementation performance; • Supervising the application and recommendations of sub- project ESIA/ESMPs.
13.	Others/General Public	• Identify issues that could derail the project and support project impacts and mitigation measures, Awareness campaigns.

Environmental and Social Auditing

To promote compliance with the environmental and social issues identified in the ESMP tables, an auditing of the project sites shall be carried out on every quarter during the construction phase; and annually when the project gets into operation phase or as required/ directed by the PIU. The objectives of these environmental auditing shall include the following;

- Ensuring compliance with environmental and social guidelines;
- Recommending areas of improvements in the current ESMP;
- Updating database of environmental and social issues encountered on the sub project

Bidding and contract documents: This ESIA/ESMP requirements should be captured into bidding and contract documents to ensure that obligations are clearly communicated to contractors and implemented.

7.4 Project Timeline/Schedules

The proposed project will be done progressively in stages. Table 7.4 presents the timeline for the proposed project activities and it shows the time period for each of the project phases, and the overall time for operation of the facility and the life span of the proposed project.

Table 7. 4: Timeline for the Proposed Project Activities

YEAR	2019			2020				OPERATION PHASE					2021			
Project phases	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4						Q 1	Q 2	Q 3	Q 4
Pre-Construction Phase																
ESIA Approval																
Land Acquisition																
Site Preparation/ survey																
Engineering site design																
Mobilization of Personnel, Mat. & Equipment																
Resettlement Action Plan (RAP)																
Construction Phase																
Construction of site structures and ancillary facilities; Base camp infrastructures/Amenities within the site (water, electricity etc.)																
Site Fabrication (Welding and construction of road and bridges across the channel);																
Operation Phase																
river monitoring, DE siltation of the channel, dredging																
Decommissioning phase																
Dismantling of Structures																
Land reclamation																

ESHS Monitoring and Reporting

This provides the basis for tracking performance and verifying performance with Environmental, Social, Health and Safety (ESHS) issues. Therefore, Reports shall be produced through the course of implementation of monitoring programs, collecting incident/grievances forms, consulting with local community and auditing performance of existing programmes/mitigation measures within the ESIA. Table 7.5 below describes the types of reports/measures that shall be followed.

Table 7. 5: Environmnetal Social Health and Safety (ESHS) Reporting

Responsibility	Type of Report	Purpose/Details of Reporting	Frequency of Submission	Submit to:
Contractors Environmental and Social Officer	Daily ESHS Compliance Checklist	Checklist of environmental, social, health and safety compliance of construction	Daily	Supervision Consultant
Contractor	Accidents/Incident Report	Filing/notification of accidents or unplanned events	Within 1-3 hours of the incident	Supervision Consultant
Supervision Consultant	Accidents/Incident Report	Filing/notification of accidents or unplanned events	Upon discovery of incident, notify the PIU of an incident occurring or its occurrence being discovered within 1-3 hours of the incident	PIU to escalate World Bank within 24 hours of the incident secure the psafety of workers, public, and provide immediate care.
	ESHS Non-compliance Report	Detail the cause, nature and effect of any environmental, social, health and safety non-compliant act performed	Within 24 hours of the event	PIU

Responsibility	Type of Report	Purpose/Details of Reporting	Frequency of Submission	Submit to:
Contractors Environmental and Social Officer	Daily ESHS Compliance Checklist	Checklist of environmental, social, health and safety compliance of construction	Daily	Supervision Consultant
Environmental and Social Officers, PIU	Monthly Safeguard Report	Report on monthly safeguard compliance, issues, actions taken	Monthly	PIU/WB

7.5 Public Disclosure

The Project is responsible for dissemination of the documents in the project area in a form and language understandable to the local populations.

Adverts shall be placed in national daily newspapers of documents displayed in the following locations:

- PIU office
- Oyo State Ministry of Environment and Water Resources
- Oyo State Water Corporation
- Ibadan South East LGA
- Kudeti Meeting centres for Landlord association, market associations etc.

After this process of disseminating information to the project community and country, the PIU would provide the Bank with the newspaper advert for the Bank to disclosure on its website.

7.6 ESIA Implementation Budget

The estimated costs for the successful implementation of the ESIA is presented in the table below

Table 7. 6: Estimated Cost for ESIA Implementation

Heading	Indicative Costing (₦)	Cost Estimate ($)	Sources of Funds
Cost of Mitigation	9,390,000.00	30,686.27	IUFMP Project fund
Capacity Building and Training	400,000.00	1,307.19	;;
Monitoring Programme	2,780,000.00	9,084.97	;;
Sub Total	12,570,000.00	41,078.43	
Contingency (5%)	628,500.00	2,053.92	
Total (1$ = ₦306)	13,198,500.00	43,132.35	**;;**

CHAPTER EIGHT

8.0 Stakeholder Consultation

8.1 Key Issues raised during consultation

Project stakeholders have requested that on-going stakeholder engagement be undertaken throughout the Project lifecycle and that the engagement activities involve accredited members of the executive council and chiefs of the community as well as the community youth association. Stakeholder engagement activities must also take into consideration the traditions and customs of stakeholders showing respect to the community leader and chiefs. There is uncertainty among the stakeholders with respect to the frequency of engagement activities and who is responsible for undertaking these activities.

Issues Raised During Consultation

Respondents' opinions about the proposed Kudeti channelization were diverse. While some of the respondents declined to comment on the proposed channelization, others commented thus;

Table 8. 1: Key Issues Raised During Consultation

Name of Community(stakeholders)	**Kudeti**
Date of Public consultation:	January 26th 2018
Number of Persons in attendance	Kudeti Community representatives
Focus Group Locations	Agbongbon, Yejide and Kobomoje communities (See Pictures of focus groups in Appendix)
Language of Communication:	English & Yoruba
Introduction	The Consultants introduced the project and the purpose to the community members present and stated that the meeting was part of preliminary requirements for the commencement of construction work Feedback was requested in order to get opinions, suggestion and address concerns of stakeholders with respect to the roject
Key Stakeholders	Community leaders; executives of landlord associations; women and youth groups; NGO/CBOs, Vulnerable groups, religious groups (Christian and Muslim); opinion groups, Consultant's team: experts, research assistants and enumerators

Feedback of Stakeholders (Concerns/Complaints Raised)	**How Concerns were addressed comments**	**Remarks / Perceived Positive expectations (Effects the proposed project would likely have on respondents/neighborhood)**
Mrs Silifat Lawal (Yegide community) on behalf of some residents expressed fear that the channelization would lead to demolition of houses that are close to the river channel and may eventually lead to displacement of some people from the community.	The Consultant re-assured them that there would be proper dissemination of information and appropriate compensation for physically/economically displaced persons as a RAP report was being prepared for this purpose. RAP implementation would be done prior to commencement of works.	It will create a better environment that will likely enhance the health and livelihood of the people. They are also expectant about the positive image it will bring to the neighborhood.
Mr Gbadamosi (Kobomoje Community) expressed skepticism about the commitment of the Government to the project.	The Consultant affirmed the commitment and dedication of the government towards the project.	Some envisaged that the project will help in reducing dumping of waste into the channel
(Mr Adebisi Ojo of Yejide) was of the opinion that the project will bring more people to the neighborhood and therefore cause accommodation problem.	He was assured that this problem would not arise and consultations with Landlord associations will be done to address this.	Create a better environment free of dirt and offensive odour. The indigenes also expect the proponents to gear their CSR's towards the need of the community and ensure all the people of the proposed project area benefits from these plans.
(Nurudeen Gbadamosi of Agbongbon) on behalf of the people envisaged that the improvement in the neighbourhood environment will likely make the neighbourhood more competitive and attractive hence increase rent on properties.	Some Labour influx mitigation measures were discussed with the stakeholders and they were assured that labourers would be recruited locally to prevent this issue. They were assured that this problem would not arise and consultations with Landlord associations will be done to address their fears.	• Enhancement of business and job opportunities • Apart from beautifying the environment around the Kudeti River channel, it will also beautify the community and increase economic activities in the community. Furthermore, it will reduce stench from the piggeries around the channel
(Mrs Fatima Salami of Agbongbon community), also expressed fear that the channelization might possibly lead to the	If piggery farms would be affected, there would be prior information and commensurate compensation to ensure	• Reduced flood incidence • Majority of the respondents apart from agreeing that it is a welcome development

Feedback of Stakeholders (Concerns/Complaints Raised)	How Concerns were addressed comments	Remarks / Perceived Positive expectations (Effects the proposed project would likely have on respondents/neighborhood)
relocation of their piggery from where it is presently to other location	their source of livelihood is not adversely affected by the project. All affected structures/businesses have been captured in the RAP document	also want government to speedily execute the project.
(Mr Femi Layode of Yejide community) also observed that waste disposal will be difficult for the residents. They therefore advocate the government should not only focus on the channelization but also on addressing the waste management challenge confronting the residents.	Waste management has been flagged in the ESMP tables and waste bins would nbe provided. Proper waste management plans would also be put in place to ensure ease of access to proper waste disposal. A detailed waste management plan has been incorporated in this ESIA report (Annex 1). In addition, since Waste Management is under the control of the OYOMA, the project sites will be incorporated into the coverage of the OYOWMA or its accredited contractors. Also, the State government is in the process of preparing a Solid Waste Masterplan for Ibadan, which will include quick-win options for IUFMP sites. The Long-Term Investment works will be included in the coverage of the quickwins.	• Good air free of odour • Provision of jobs for the youths • Would make movement/commuting easy for resident • It will reduce mosquitoes and subsequently malaria fever most especially among children and pregnant women.

In addition, a greater percentage (83.7%) of respondents do not envisage any conflict between the residents and the project while 16.3% envisage such conflicts most especially as it relates to building demolition, compensation payment and relocation of piggery farms from the bank of the Kudeti river to somewhere else.

Some of the people that may disrupt the project activities include people whose house has been marked for demolition and whose compensations have not been paid. Also, people whose business may have to be relocated as a result of the channelization project. Others include youths and area boys. Some also think some market women may oppose the project. Proper education and enlightenment of the people would help in dousing tension. In addition, prompt payment of compensation to affected people will also help in dousing tension between the project and the community.

8.2 Vulnerable Group Stakeholders Engagement

It is important to consult with groups classified by the World Bank as potentially marginalized or vulnerable. This group of people should be put into consideration throughout the project cycle.

About 52.0% of the respondents are not aware of the existence of vulnerable group along the Kudeti river corridor, while 42.9% were emphatic that such group do not exist and only 4.7% indicated that such group exist. When probed further to identify the vulnerable group location, they zero in on people living along the project corridor and the vulnerable group as people who may by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage or social status are more adversely affected by resettlement than others; and who may have limited ability to claim or take advantage of resettlement assistance and related development benefits.

These people may suffer occupation loss or displacement (piggery farmers) etc as a result of the proposed project. Furthermore, 67.0%, 35.6%, 14.6%, 12.9% 7.7%, 6.4% identified church, mosque, school, burial ground, health facility and small-scale industries respectively as being within the 15 meters corridor of the Kudeti River in their neighbourhoods.

CHAPTER NINE

9.0 Grievance Mechanisms

There shall be 3 core institutional blocks dedicated to Project grievances at (i) Site-Community, (ii) Local government and (iii) State levels. These core institutional blocks are:

- The Site- Community Grievance Redress Committee
- Oyo State Mediation Centre (already existing, but to be extended to Project LGs and further strengthened)
- IUFMP PIU Community Relations Team, including the Social Safeguards officer as the key driver and the Environmental safeguards, Communications and M&E officers as members.

9.1 Expectations when Grievances Arise

When local people present a grievance, they generally expect to receive one or more of the following: acknowledgement of their problem, an honest response to questions/issues brought forward, an apology, adequate compensation, modification of the conduct that caused the grievance and some other fair remedies. In voicing their concerns, they also expect to be heard and taken seriously. The company, contractors, or government officials must therefore convince people that they can voice grievances and work to resolve them without retaliation.

To address these challenges, the project shall take the lead and work with their host communities to fund non-judicial, dialogue-based approaches for preventing and addressing community grievances. The overall process of grievance redress will be as follows:

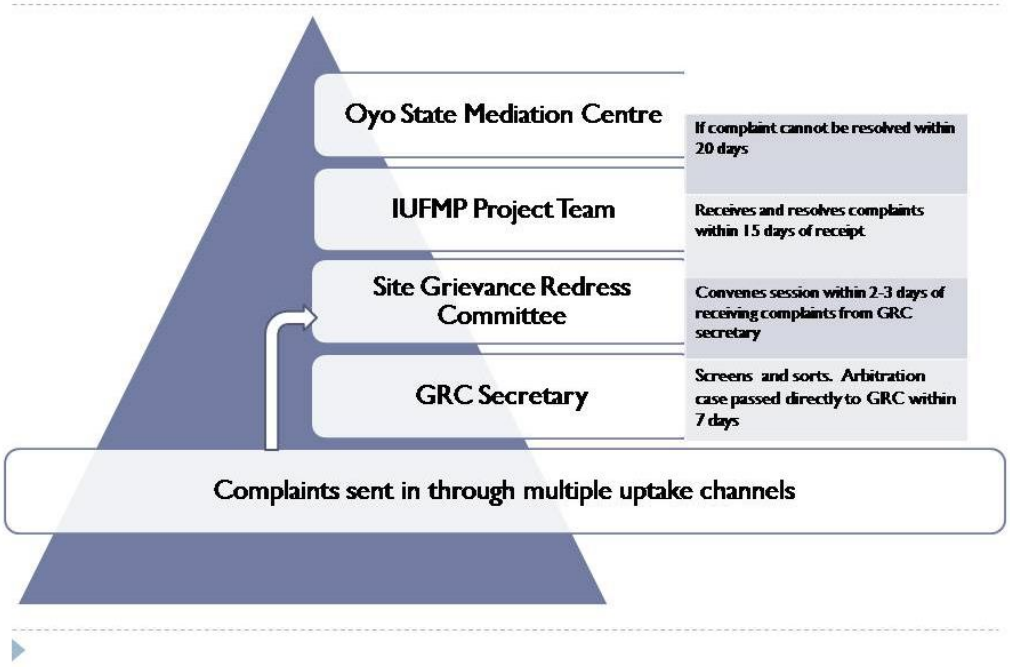

Figure 6.1: Process of Grievance

PAP files complaints or grievances with regard to any aspect of the resettlement project verbally, in writing or through a representative in English or local language. The mechanism would include toll free numbers where possible that allows PAPs to freely call the project GRM officer to report complaints and written reports using designated forms**.**

Four (4) levels of appeals are proposed to ensure that complainants can move to a higher level if they are not satisfied with the grievance redress suggested before going to the law courts.

Step 1: Referral to GRC Secretary

Step 2: Site GRC Mediation Session

Steps 3: Referral to IUFMP Team

Step 4: Oyo State Mediation Centre (OYMC)

The managing grievances should be as follows:

a. Each person responsible at its own level (community GRC, local government and IUFMP) should disseminate their phone number for SMS complaints.

b. The IUFMP environmental and social safeguard officers will be the direct liaison with PAPs in collaboration with the Landlord committee representative and local government representative to ensure objectivity in the grievance process.

c. Where the affected person is unable to write, the designated community representative or social safeguards officer will write the note on the aggrieved person's behalf and duly thumb printed by the complainant.

d. Any informal grievances will also be documented.

9.2 Grievances Redress Mechanism Progress

The GRM process is described in Table 6.1 below:

Table 6. 7: Grievance Procedures Steps

Step	Category	Activities
1	***Reception and registration***	• PAP files complaints or grievances regarding any aspect of the resettlement project verbally, in writing or through a representative in English or local language. • The community Grievance Redress Committee is the first step in the determination of complaints related to RAP implementation at the ward/ local level. If the ward cannot resolve the complaint, then the ward will bring it up to the local government. If the grievance can be solved at 'local government level", then it stops at that level. If the grievance is not resolved at the "local government level", then it is escalated to the project office (IUFMP). If still unresolved, then a notification to the State Government (Oyo State Ministry of Environment. • Complaint recorded by the implementing agency with the name of the griever, address and location information, the nature of the grievance and the resolution desired. • Grievance made acknowledged within 48 hours of receipt by an official authorized to receive grievances
2	***Resolution***	• All grievances referred to the appropriate party for resolution • Resolution made within 10 days after receipt of grievance. • If additional information is needed, project management can authorize additional 5 days for resolution. • Results of grievances disclosed to the griever in writing with an explanation of the basis of the decision. • The resolution of the grievances will be handled by the "Social and Environmental officer" with the support of the Local Authorities and the Social Safeguards of IUFMP PMU.
3	***Appeals***	• Grievers dissatisfied with the response to their grievance may file an appeal. • In such cases, the responsible authority assembles "The IUFMP PMU (Project Coordinator" to hear cases including at least one disinterested party from outside the agency responsible for the resettlement project. • There will be no further redress available outside the resettlement project. In such cases, grievances would need to be pursued through the legal system.
4	**Monitoring**	During project implementation and for at least 3 months following the conclusion of the project, monthly reports will be prepared by the Social Safeguards officer regarding the number and nature of grievances filed and made available to project management.

CHAPTER TEN

10.0 CONCLUSION AND RECOMMENDATIONS

From the results and the predicted associated impacts of the project, the proposed channelization of Kudeti River could be carried out successfully with minimal environmental and social effects if all the identified mitigation measures proposed in the report are applied and the suggested monitoring requirements are complied with.

Also, the management of Ibadan Urban Flood Management Project shall follow the principles/precepts/guidelines of the Oyo State Ministry of Environment and Water Resources and Federal Ministry of Environment as listed in this ESIA report. All mitigation measures shall also be carried out promptly. The Management of Ibadan Urban Flood Management Project shall ensure that the members of the host community are carried along at every step to avoid community unrest.

Ibadan Urban Flood Management Project therefore, requests the kind approval of this ESIA report to support sustainable implementation of the proposed Kudeti River Channelization and Associated Infrastructure Project.

The summary and recommendations for this ESIA include:

- The contractor and PIU shall coordinate with the Oyo State Federal Road Safety Commission and Oyo State Traffic Management Agency all through pre-construction and construction works on site to ensure that safety is maintained and potential traffic impact managed;
- The Safeguard Unit of PIU should ensure active monitoring to ensure the contractor adhere strictly to the requirements of this ESMP especially in the application of mitigation measures during project implementation.
- Community members shall be carried along during project implementation and shall be mobilized to provide community security for equipment and personnel working on site;
- Priority should be given to local workers for casual labour and semi-skilled labour as much as practicable during project implementation to stimulate local socioeconomic activities, improve livelihood and poverty reduction in the affected communities. This will also lead to fewer social problems at the community levels.
- Provide information to host community/contractors about GBV Code of Conduct and ensure strict compliance.
- Ensure that children and minors are not employed directly or indirectly on the project.
- Develop a **traffic management plan** and ensure alternative routes are motorable and safe for motorists and pedestrians.
- Contractor should ensure that the safety officer conducts a Job Hazard Analysis (JHA) prior to the commencement of work to identify the hazards associated with the job activities.
- Undertake intermittent and unannounced monitoring on Occupation Health and Safety (OHS) on site.
- All bare and exposed soils should be re-vegetated with native vegetation immediately after construction to prevent erosion.
- The silt, vegetation and solid wastes obstructing the stream shall be cleared and evacuated;
- Pre-construction and construction works shall be carried out in an environmentally sustainable and socially responsible and inclusive manner;
- Railings should be provided on the pedestrian bridge for safety of the elderly and school children.
- Install proper lightening and relevant road signage and barriers for safety precautions;
- Ensure affected communities, vulnerable groups/minors etc are assisted & have a voice in appropriation of mitigation measures.
- Community members shall be sensitized and duly informed on the time and duration of civil works through consultations.

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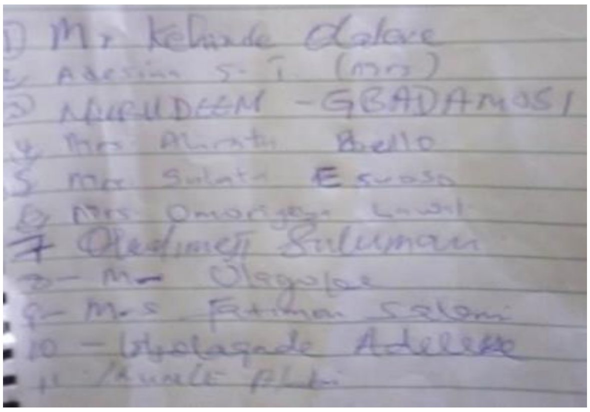
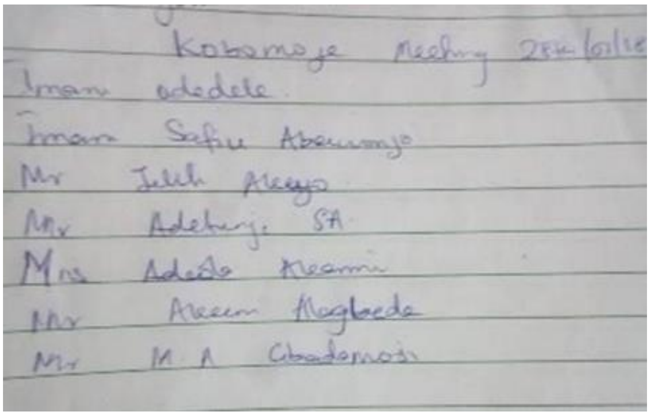
APPENDIX

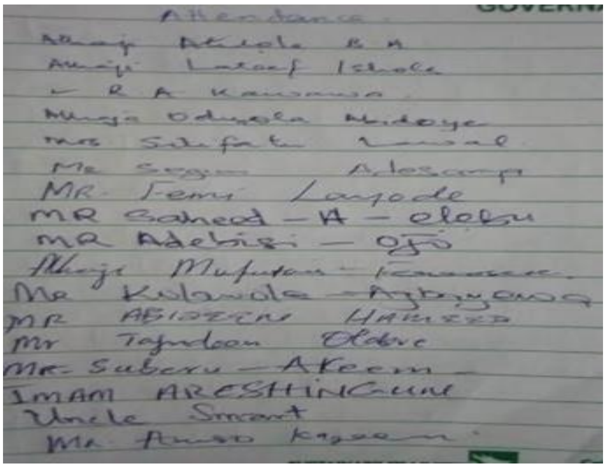
APPENDIX 1: Attendance List Taken during the Socio Economics/ Stakeholder Engagement of the Proposed Kudeti Channelization Project.

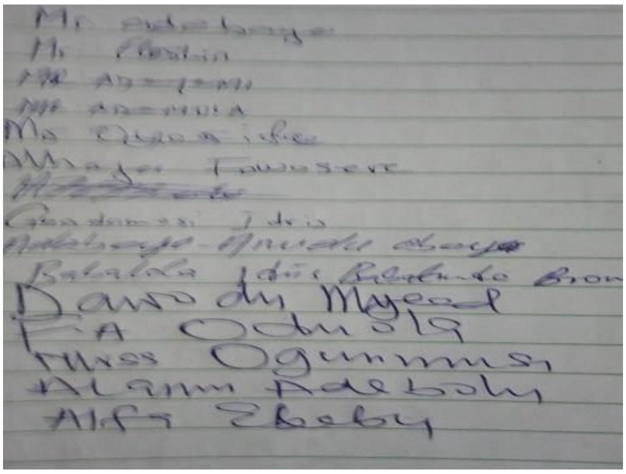
Stakeholders' Consultation Attendance List at Agbongbon and Kobomoje



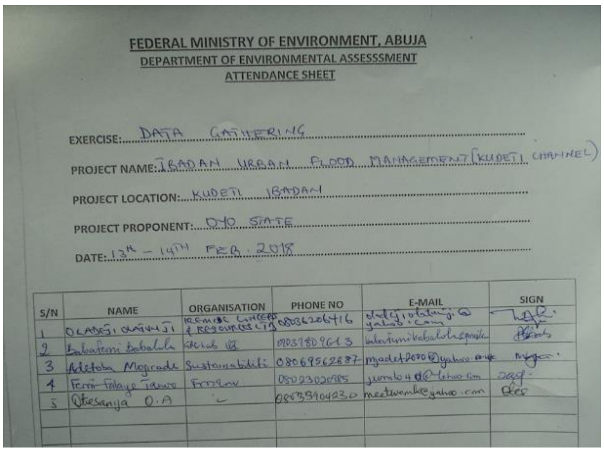


A. Stakeholders' Consultation Attendance List at Yegide Community



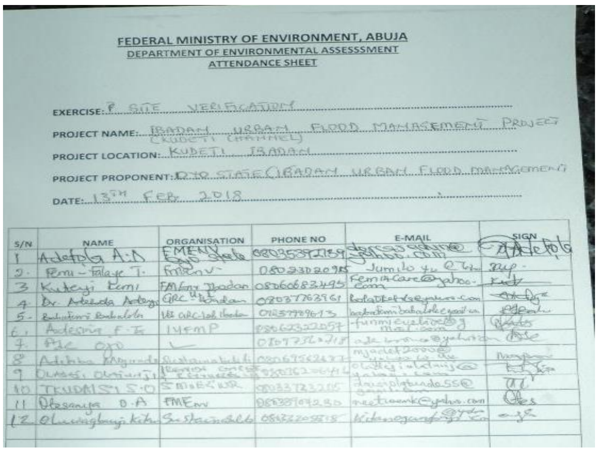


Data Gathering and Site Visit (Officials Attendance)



FEDERAL MINISTRY OF ENVIRONMENT, ABUJA
DEPARTMENT OF ENVIRONMENTAL ASSESSSMENT
ATTENDANCE SHEET

EXERCISE: DATA GATHERING
PROJECT NAME: IBADAN URBAN FLOOD MANAGEMENT (KUDETI CHANNEL)
PROJECT LOCATION: KUDETI IBADAN
PROJECT PROPONENT: OYO STATE
DATE: 13TH – 14TH FEB. 2018



FEDERAL MINISTRY OF ENVIRONMENT, ABUJA
DEPARTMENT OF ENVIRONMENTAL ASSESSSMENT
ATTENDANCE SHEET

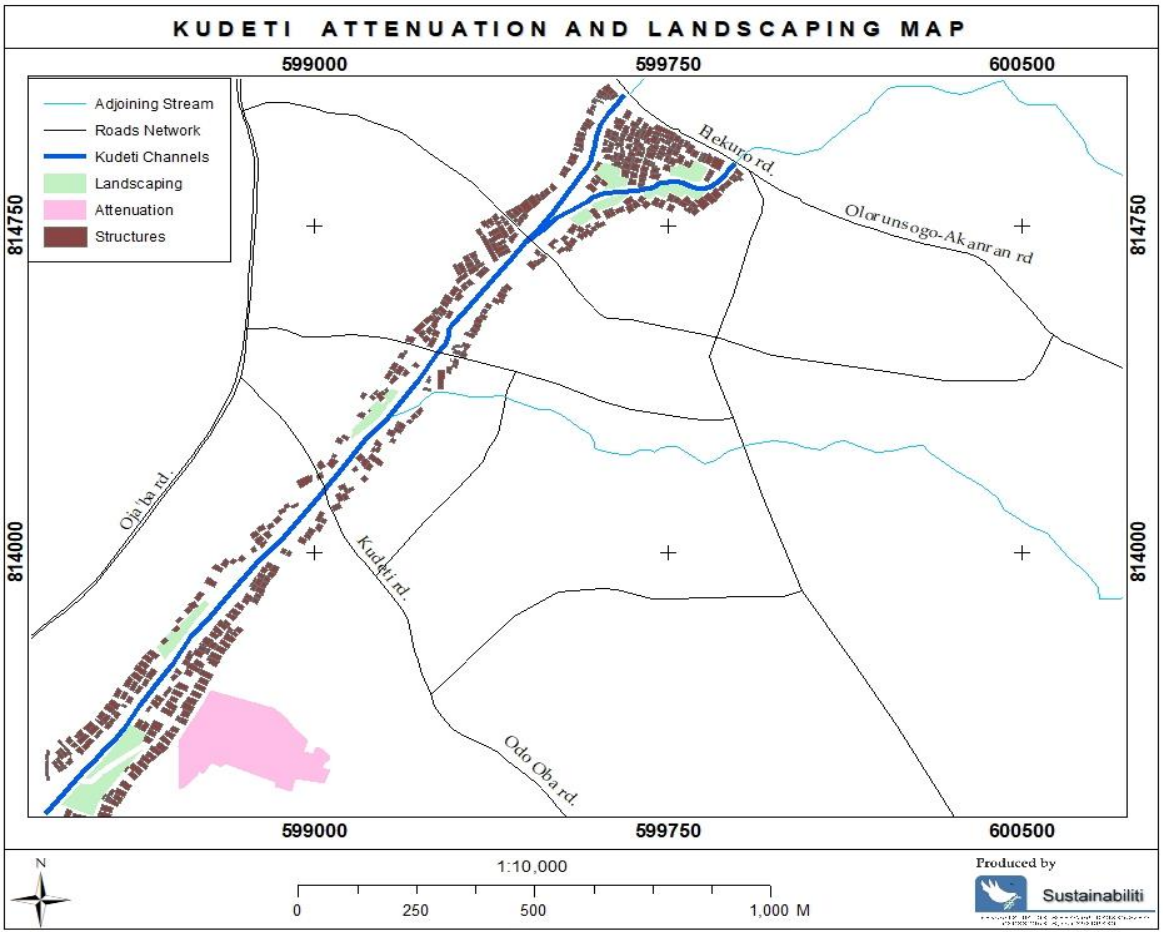
EXERCISE: SITE VERIFICATION
PROJECT NAME: IBADAN URBAN FLOOD MANAGEMENT PROJECT (KUDETI CHANNEL)
PROJECT LOCATION: KUDETI IBADAN
PROJECT PROPONENT: OYO STATE (IBADAN URBAN FLOOD MANAGEMENT
DATE: 13TH FEB. 2018

APPENDIX 2: Pictures of Stakeholder Engagement/Focus Group Discussion in Kudeti

Cross section of Participants at the Consultations/FGDs at Agbongbon, Kudeti

Cross section of Participants at the Stakeholders Consultations at Yejide and Kobomoje

Appendix 3: **The Proposed Landscape and Attenuation Area and the Description**



Aerial photo imagery of the proposed Landscaping and attenuation site (Kudeti Channel)

Pictures showing proposed Landscaping sites in Kudeti
























ANNEXES

Annex 1: Waste Management Plan

1.0 BACKGROUND

This draft waste management plan has been developed as part of the ESIA for the proposed channelization of Kudeti River in Ibadan, Oyo State. The document examines the possible types of wastes to be generated during the various phases of the proposed project as well as details of how the wastes can be handled. In putting this document together, due cognizance has been taken of the World Bank EHS Guidelines on Environmental waste management, which requires, among others:

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

2.0 TYPES OF WASTES ANTICIPATED

Generally, a generic list of waste types typically associated with projects of this nature and the estimated quantities for this project has been developed. This, to a large extent, followed the World Bank Guidelines (2007), as shown in Table 1 below. The wastes can be classified into two broad categories: Hazardous and non-hazardous wastes. The non-hazardous wastes include packaging materials like tins, cans, wooden and carton boxes, polythene bags, etc. Hazardous wastes include spent oils, oil filters, fuel filters, spent batteries, flight tubes and bulbs, etc. A list of anticipated wastes from this project is presented in Table 2 below.

Table 1: Sources and Types of Municipal Solid Waste (World Bank, 2005)

Source	Typical Waster Generators	Types of Solid Waste
Residential	Single and multifamily dwellings	Food waste, paper, cardboard, plastic, textiles, leather, yard waste, wood, glass, metal, ash, special waste (e.g., bulky items, consumer electronics, white goods, batteries, oil, tires) and household hazardous waste
Industrial	Light and heavy manufacturing, fabrication, construction sites, power and chemical plants	Housekeeping waste, packaging, food waste, construction and demolition materials, hazardous waste, ash, special waste
Commercial	Stores, hotels, restaurants, markets, office buildings	Paper, cardboard, plastic, wood, food waste, glass, metal, special waste, hazardous waste
Institutional	Schools, hospitals, prisons, government centers	Same as commercial
Construction and Demolition	New construction sites, road repair, renovation sites, demolition of buildings	Wood, steel, concrete, dirt, etc.
Municipal Services	Street cleaning, landscaping, parks, beaches, other recreational areas, water and wastewater treatment plants	Street sweepings; landscape and tree trimmings; general waste from parks, beaches and other recreational areas; sludge from water and wastewater treatment plants
Process	Heavy and light manufacturing, refineries, chemical plants, power plants, mineral extraction and processing	Industrial process waste, scrap materials, off-specification products, slag, tailings
Source: World Bank (2005)		

Table 2: List of Anticipated Wastes, Estimated Quantities and Recommended Disposal Options for Kudeti Channelization Project

S/N	Waste	Category	Major Source	Envisaged Waste Volume	Approved Disposal
	CONSTRUCTION PHASE				
1	Packaging materials (polythene bags, jute bags etc.)	Non-Hazardous	Operation and maintenance	5kg/month- construction	Reuse/recycle or dispose at designated Oyo state waste disposal site
2	Batteries	Hazardous	Maintenance workshop	10kg/month construction	Return to supplier or manufacturer for reuse or disposal
3	Cans and tins	Non-hazardous	Catering services	15kg/month-construction period	Reuse/recycle or dispose at designated Oyo state waste disposal site facility
4	Cartons and wooden crates	Non-hazardous	From materials packaging Buildings	10kg/month-construction	Same as above
5	Construction debris e.g. wood planks	Non-hazardous	Infrastructure	100kg/month-construction	Same as above
6	Dredge spoil	Non-hazardous	construction	$2.4x10^6m^3$	Side-casting to adjacent banks or possible use as fill or construction materials.
	Dredge Spoil	(hazardous)	Dredging and excavation of channel	To be Determined	Although there area different established international methods for handling heavy metal polluted sediment, including methods such as acid washing, as recommended by Peng et. al. (2009), this is not readily available in Nigeria. Therefore, where it is established that the sediments are polluted by heavy metals, contractor shall apply the following measures to minimize the effects of the polluted dredged materials: • Provide all personnel with required PPEs, including rubber boots (Wellington type) and hand gloves • Mix the excavated materials with clean soil from other sources • Spread the materials out in thin layer (not more than 1 foot thick) over a wide area, to minimize the concentration of metals per unit area of spread The PIU will undertake strict monitoring and enforcement of safe disposal of contaminated sediment
7	Food waste	Non-hazardous	Catering services	5kg/day - construction	Composting at Oyo state. Approved third party facility
8	Oil and fuel filters	Hazardous	Maintenance workshop transportation	5kg/day- construction	Reuse/recycle or contract certified third party contractor to evacuate to approved incineration facility

S/N	Waste	Category	Major Source	Envisaged Waste Volume	Approved Disposal
9	Oily rags	Hazardous	Same as above	2kg/ day - construction	contract certified third party contractor to evacuate to approved incineration facility
10	Scrap metals	Non-hazardous	Water pipeline construction	500kg/month – construction	Reuse/recycle or dispose at designated Oyo state waste disposal site facility
11	Spent lube oil	Hazardous	Maintenance	20L/week	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration facility
12	Tires and tubes	Hazardous	Maintenance	50kg/month-construction	Same as above
13	PPE	Non-hazardous	Domestic maintenance Catering services	5kg/month	Same as above
OPERATIONAL PHASE (FROM RESIDENTIAL AREA)					
1	Packaging materials (polythene bags, jute bags etc.)	Non-Hazardous	Operation and maintenance	15kg/month-operations	Reuse/recycle or dispose at designated Oyo state waste disposal site
2	Batteries	Hazardous	Maintenance workshop	20kg/month-operations	Return to supplier or manufacturer for reuse or disposal
3	Cans and tins	Non-hazardous	Catering services	20kg/month operations	Reuse/recycle or dispose at designated Oyo state waste disposal site facility
4	Cartons and wooden crates	Non-hazardous	From materials packaging Buildings	20kg/month-operations	Same as above
5	Fluorescent tubes/ bulbs	Hazardous	Used ones from buildings and camp sites, Infrastructure	5kg/month-operations	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
6	Food waste	Non-hazardous	Catering services	10kg/day - operation	Composting at Oyo state. Approved third party facility
7	Furniture waste	Non-hazardous	Infrastructure	20kg/month-operations	Reuse/recycle at Oyo state waste management facility
8	Garbage	Non-hazardous	Office/domestic	5kg/day-operations	Landfill at Oyo state. Approved third party facility
9	Garden waste	Non-hazardous	Domestic gardening	200kg/ month - operations	Incinerator at Oyo state. Approved third party facility
10	Glass waste	Non-hazardous	Catering services	10kg/ week -operations	Reuse/recycle at Oyo state waste management facility
11	Oil and fuel filters	Hazardous	Maintenance workshop transportation	20kg/week-operations	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
12	Oily rags	Hazardous	Same as above	10kg/ week -operations	contract certified third party contractor to evacuate to approved incineration facility
13	Paper waste	Non-hazardous	Office operation	20kg/ week -operations	Reuse/recycle at Oyo state waste management facility
14	Plastics	Non-Hazardous	Office operation	20kg/month-operations	Same as above
15	Printer cartridge and toner	Hazardous	Office operation	5kg/month-operations	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
16	Scrap metals	Non-hazardous	Water pipeline construction	500kg/month – operation	Reuse/recycle at Oyo state waste management facility

S/N	Waste	Category	Major Source	Envisaged Waste Volume	Approved Disposal
17	Spent lube oil	Hazardous	Maintenance	200L/week	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
18	Tires and tubes	Non-hazardous	Maintenance	50kg/month-operations	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
19	Machine parts	Hazardous	Maintenance workshop	20kg/month-operation	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
20	PPE	Non-hazardous	Domestic maintenance Catering services	5kg/month during operation	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
DECOMMISIONING PHASE					
1	Pckaging materials (polythene bags, jute bags etc.)	Non-azardous	Operation and maintenance	Above 150kg-during decommissioning	Reuse/recycle at Oyo state waste management facility
2	Construction debris e.g. wood planks	Non-hazardous	Infrastructure	Above 1000kg/- during decommissioning	Same as above
3	Fluorescent tubes/ bulbs	Hazardous	From office buillsing and infrastructure	5kg/month-operations	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
5	Glass waste	Non-hazardous	Same as above	Same as above	Reuse/recycle at Oyo state waste management facility
4	Furniture waste	Non-hazardous	Infrastructure	Same as above	Same as above
7	Plastics	Hazardous	Same as above	100kg-decommissioning	Reuse/recycle at Oyo state waste management facility
8	Scrap metals	Non-hazardous	From machinery, office buildings and Infrastructure	15,000kg/– during decommissioning	Same as above
9	Spent lube oil	Hazardous	From removal of equipment	1,000L/ during decommissioning	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
10	Condemned machineparts	Hazardous	Same as above	150kg/decommissioning	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
11	PPE	Non-hazardous	Site compound	Same as above	Return to supplier to reuse/recycle, or contract certified third party contractor to evacuate to approved incineration
Cost of Mitigation for waste management (from pre-construction to decommissioning phase)					**630,000.00**
Cost of monitoring for waste management (from pre-construction to decommissioning phase)					**150,000.00**

3.0 GENERAL WASTE MANAGEMENT STRATEGY

Waste management is premised on certain principles, which include avoidance, minimization, reuse/recycle, and proper disposal. For the current project, waste generation shall be limited to the lowest possible.

3.1 Avoidance/Minimization

It is impossible to avoid generation of wastes since specific activities which will inevitably generate waste materials will have to be undertaken. Such activities include dredging of the channel and the associated dredge spoil. To this effect therefore, all project activities will be strategically undertaken to minimize the volume of wastes generated. In addition, only required quantities of materials will be acquired/used

3.2 Disposal

The wastes that will be generated from the various project activities include those that can be recycled (plastics, cans, bottles, etc), those that can be reused (dredge materials), and those that need to be disposed (food and other domestic wastes, etc.). Arrangements will be made to ensure that reuse/recycling is optimized in the project. To this effect, the contractor shall ensure that only accredited waste handling contractors are contracted to handle project wastes. As indicated in Table 1 above, hazardous wastes will be subjected to special handling. As much as possible, the contractor shall ensure that supply contracts for hazardous products include a waste collection clause. For example, the supplier of bateries shall have the options to collect spent batteries and return to manufacturer for reuse or proper disposal. The same wil apply for fluorescent tubes/bulbs

For oily wastes and other wastes that require incineration, there is no certified waste incinerator in Oyo State and thus contractor will be required to liaise with the supplier of such products to collect such wastes and transport to a certified incinerator. Prior to collection, special storage facilities shall be provided for such wastes, to ensure that they do not have direct contact with soil and or groundwater. Also, in order to ensure proper disposal of such wastes, the contractor shall have a waste tracking system in place, which shall be based on the principle of “Cradle-to-grave”.

For routine biodegradable wastes such as textiles, food wastes, etc. an Oyo State Waste Management Authority (OYOWMA) accredited waste contractor shall be contracted to handle collection and transportation of wastes to designated/approved

dumps in Ibadan. There are four (4) designated/approved dump sites around Ibadan. An overview of the locations and brief descriptions of these sites are presented in Table 3 below, while figure 1 shows the relative locations of the different dump sites.

Table 3: Location and Description of Municipal Solid Waste dumpsites in Ibadan

S/N	Site Name	Coordinates	General Description
1	Aba Eku	N07°19 E03° 59	The Aba-Eku (also referred to as Afonfura dumpsite) is located along Amuloko-Akanran road at Aba Eku village in Ona-Ara LGA and covers an area of over 10 hectares. The dumpsite is in operation since 1994. The site is located on a hillside, declining towards the northeast, and is surrounded by residential houses on all sides.
2	Ajakanga	N07°18' E03°50'	Ajakanga dumpsite was opened in 1997 and is located over an approximately 10 hectares of land off Odo-Ona Elewe road. The site is located on a hilltop, partly surrounded by residential houses and loose dwellings with gardens, located around the foot of the hills to the north, east and west. Large quantities of poultry waste from chicken farms are also disposed at Ajakanga.
3	Lapite	N07°34 E03°54	Lapite dumpsite is situated over approximately 10 hectares of land at Moniya, along Ibadan-Oyo road. This facility was opened in 1998. The site is located in a rural, agricultural and woodland area with only very few residential houses nearby. The topography is slightly undulating and almost flat at the dumpsite.
4	Awotan	N07°27 E03°50	Awotan dumpsite is situated along Akufo-Ibadan Polytechnic road over an approximately 15 hectares of land area. It was opened in 1998. Currently, approximately half of the land is being used for refuse dumping. The site is located on a hilltop, slightly tilted, and surrounded by residential houses and loose dwellings with gardens, located around the foot of the hills on all sides.

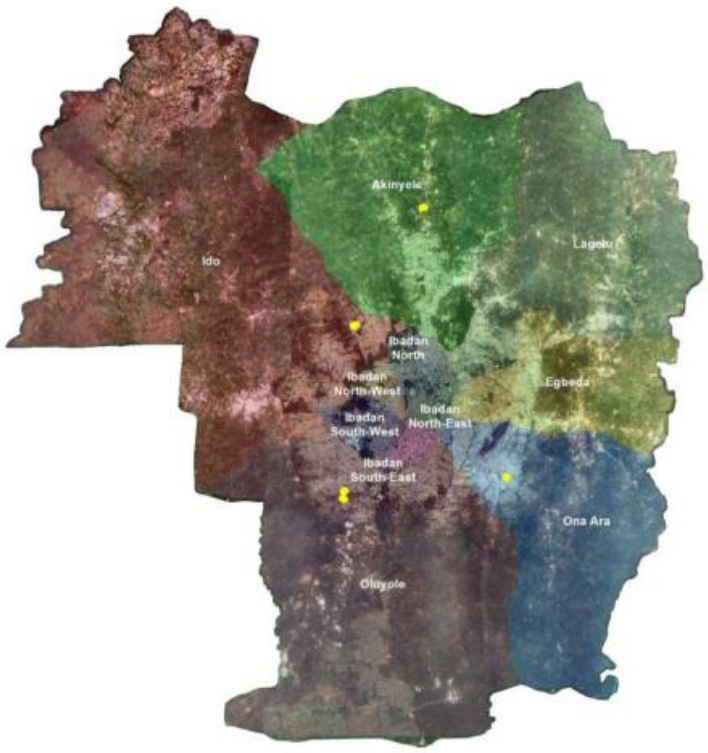


Figure 1: Relative locations of designated disposal sites around Ibadan

4.0 **CONCLUSION**

The waste management plan iterated above has been prepared with a view to ensuring that ALL wastes generated from the proposed project are effectively disposed. The effectiveness of the plan is premised on a number of factors, including, prompt and timely carting away of the wastes and using the right materials and equipment. To this end, waste disposal will be carried out only by contractors certified/approved by the Oyo State Waste Management Authority (OYOWMA). In addition however, adequate supervision shall be provided by the PIU and the Oyo State Ministry of Environment and Water Resources.

Annex 2: Drinking Water Quality Standards

Parameter	FMEnv.a	WHOb	EUc	USEPAd
pH	6.50 – 8.50	6.50 – 8.50	6.50 – 9.50	6.50 – 8.50
E. C. (µS/cm)	1000	-	2500	1000
TSS (mg/l)	<10.0	-	-	-
TDS (mg/l)	500	-	500	500
Turbi. (NTU)	5.0	5.0	-	-
Alkal. (mg CaCO3/l)	-	30 – 500	-	-
T. Hard. (mg CaCO3/l)	200	80 – 100		
Cl- (mg/l)	250	250		250
$SO4^{2-}$ (mg/l)	500	250	250	250
NO3 (mg/l)	50 (10 as N)	50.0	50.0	50.00
$PO4^{3-}$ (mg/l)	<5.0	-	-	-
S^{2-} (mg/l)	0.05	-	-	-
THB (cfu/ml)	-	-	100 at 22oC	-
Coliform (MPN/100ml)	-	Nil	Nil	-
E. coli (MPN/100ml)	-	Nil	Nil	-
Heavy Metals				
Cd	0.01	0.003	0.005	0.005
Cr	0.05	0.05	0.05	0.1
Cu	0.1	2.0	-	1.0
Fe	1.0	0.3	0.2	0.3
Hg	0.001	0.001	0.001	0.002
Mn	0.05	0.05	0.05	0.05
Ni	0.05	0.02	0.02	
Pb	0.05	0.01	0.01	0.015
V	0.01	-	-	-
Zn	5.0	3.00	-	5

a FMENv,1999; b WHO, 2002; c EU, 1998; dUSEPA, 2002

Annex 3: World Bank Safeguard Policies

- ***Environmental Assessment (OP 4.01).*** Outlines Bank policy and procedure for the environmental assessment of Bank lending operations. The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA process. This environmental process will apply to all sub-projects to be funded by The World Bank.
- ***Natural Habitats (OP 4.04).*** The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank does not support projects involving the significant conversion of natural habitats unless there are no feasible alternatives for the project and its sitting, and comprehensive analysis demonstrates that overall benefits from the project substantially outweigh the environmental costs. If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g. strategic habitat retention and post-development restoration) and establishing and maintaining an ecologically similar protected area. The Bank accepts other forms of mitigation measures only when they are technically justified. Should the sub-project-specific ESMPs indicate that natural habitats might be affected negatively by the proposed sub-project activities with suitable mitigation measures, such sub-projects will not be funded under the The World Bank.
- ***Involuntary Resettlement (OP 4.12).*** This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. This policy will most likely not apply to The World Bank as this project will not entail taking of land or restriction of access to sources of livelihood.
- **Disclosure Policy (OP 17.50).** This policy requires that all safeguards policy documents prepared for projects funded by the Bank be disclosed to the public at two levels: 1) In-Country disclosure at domains accessible to stakeholders, 2) At World Bank infoshop.

Summary of Safeguard Policies triggered by the project in Kudeti

Operational Policy	**Yes**	**Reason**
Environmental Assessment (OP.4.01);	**X**	Safeguards policy OP 4.01 is triggered in this study with the civil work activities for the immediate restoration of bridges / culverts. Therefore an Environmental and Social Impact Assessment (ESIA) is being prepared and under review.
Natural Habitat (OP/BP 4.04)	**X**	This policy is triggered because some project activities may take place near critical natural habitats or environmentally sensitive areas and some mitigation measures may be necessary to minimize any negative environmental and social impacts.
Involuntary Resettlement (OP/BP 4.12)	**X**	This policy is trigged because most of the sub-projects could involve minimal or moderate land acquisition and or restriction of access to usual means of livelihood as most of the sub-projects will largely be rehabilitation of existing infrastructure. However, some of the projects may involve significant land acquisition and displacement of affected people. As part of the safeguards due diligence, the client has prepared a site specific Resettlement Action Plans (RAPs) which will address the needs of persons who will be affected by loss of economic activities, land acquisition and/or relocation.
Safety of Dams OP 4.37	**X**	Because there are serious consequences if a dam does not function properly or fails, the Bank is concerned about the safety of new dams it finances and existing dams on which a Bank-financed project is directly dependent. While the rehabilitation of Eleyele dam is included in the global work scope of the IUFMP, the current project will not have any direct or remote contact with the Eleyele dam, and thus the mention of OP 4.37 in this report is only as it relates to the IUFMP as a whole, not the Kudeti channelization project.. This is in recognition of the fact that the Kudeti stream, is at best a seasonal stream in most parts of its reaches, and only becomes a raging torrent during flash floods occasioned by heavy rainfall
Disclosure Policy (OP/BP 17.50)	**X**	All projects must disclose key information in-country and through the Bank's Info shop

Annex 4: Phytoplankton and Zooplankton Spectrum

The phytoplankton recorded 3 (three) group of species. They were the Diatoms (Division – Bacillariophyta), Blue-green algae (Division – Cyanophyta) and Euglenoids (Division – Euglenophyta). The dominant group of phytoplankton was the Euglenoids. A checklist of the phytoplankton spectrum (first / left most column) is presented within the table below alongside the distribution of the phytoplankton species at the stations investigated.

The key species occurring for the study were *Oscillatoria curviceps, Lynbgya limnetica* (Blue-green algae), *Trachelomonas* sp. (Euglenoid) and *Nitzschia palea* (Diatoms) in terms of occurrence and abundance.

Composition and Abundance Distribution of Phytoplankton Per ml.

Taxa	271	272	363
DIVISION – BACILLARIOPHYTA			
CLASS-BACILLARIOPHYCEAE			
ORDER I – CENTRALES			
Cyclotella menighiniana Kutzing	15	55	115
ORDER II – PENNALES			
Navicula cryptocephala (Kutz) Hustedt	50	45	75
Navicula rhynchocephala Kutzing	450	280	350
Nitzschia palea (Kutzing) Wm smith	1150	1250	1180
Synedra ulna (Nitzsch) Ehrenberg	85	15	45
DIVISION – CYANOPHYTA			
CLASS – CYANOPHYCEAE			
ORDER II – HORMOGONALES			
Lynbgya limnetica Lemm	1550	850	600
Oscillatoria curviceps C.A. Agardh	2850	2590	750
Oscillatoria tenius Agardh	950	700	450
Oscillatoria trichodes Szafer	350	255	45
Scytonema crustaceum C.A. Agardh	35	-	15
DIVISION – EUGLENOPOHYTA			
CLASS – EUGLENOPHYCEAE			
ORDER – EUGLENALES			
Euglena acus Ehrenberg	350	375	410
Euglena sp.	110	75	55
Phacus curvicauda Swirenko	25	5	-
Phacus acuminatus Stokes	15	-	5
Trachelomonas hispida (Perry) Stein	45	75	150
Trachelomonas sp.	780	1750	2500
Total species diversity (S)	16	14	15
Total abundance (N)	8810	8320	6745

Source: Field Study 2018.

Phytoplankton community composition parameter.

Bio-indices	**271**	**271**	**363**
Total species diversity (S)	16	14	15
Total abundance (N)	8810	8320	6745
Log of Species diversity (Log S)	1.20	1.15	1.18
Log of abundance (Log N)	3.94	3.92	3.83
Shannon-Wiener Index (Hs)	0.88	0.84	0.85
Menhinick Index (D)	0.17	0.15	0.18
Margalef Index (d)	1.65	1.44	1.59
Equitability Index (j)	0.73	0.74	0.73
Simpson's Dominance Index (C)	0.18	0.18	0.20

Source: Field Study 2018.

Zooplankton Spectrum.

The zooplankton recorded 2 (two) groups of species for the zooplankton (Holoplankton and Meroplankton forms). The Copepods (1 species) and Rotifers (3 species).

The diversity and distribution of zooplankton per ml per station is shown in Table 4.15 whereas Table 4.16 tabulates the zooplankton community's eco-mathematical indices (biological indices).
Tetrasiphon hydrocoral was the key species and a rotifer in terms of occurrence and abundance. It was followed by another rotifer namely *Lecane bulla.*

Composition and abundance distribution of Zooplankton per ml.

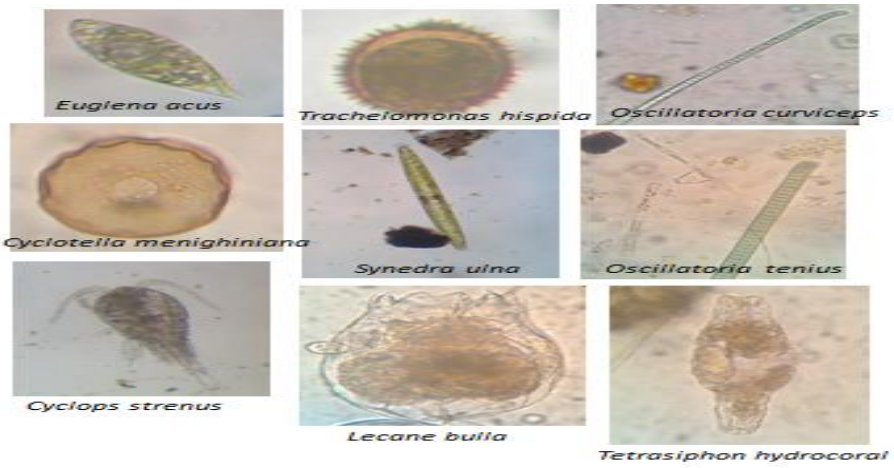
TAXA	**271**	**272**	**363**
PHYLUM: CRUSTACEA			
CLASS: COPEPODA			
ORDER: CYCLOPOIDA			
Cyclops strenus Fisher	-	5	5
PHYLUM: ROTIFERS			
CLASS: MONOGONOTA			
ORDER: PLOIMA			
Lecane bulla Gosse	10	5	-
Lecane sp.	5	-	5
Tetrasiphon hydrocoral Ehrenberg	20	5	-
Total species diversity (S)	**3**	**3**	**2**
Total abundance (N)	**35**	**15**	**10**

Source: Field Study 2018.

Zooplankton community composition parameter.

Bio indices	**271**	**272**	**363**
Total species diversity (S)	3	3	2
Total abundance (N)	35	15	10
Log of Species diversity (Log S)	0.48	0.48	0.30
Log of abundance (Log N)	1.54	1.18	1.00
Shannon-Wiener Index (Hs)	0.42	0.48	0.30
Menhinick Index (D)	0.51	0.77	0.63
Margalef Index (d)	0.56	0.74	0.43
Equitability Index (j)	0.87	1.00	1.00
Simpson's Dominance Index (C)	0.43	0.33	0.50

Source: Field Study 2018



Some of the recorded phytoplanktons and zooplanktons in the study area

Benthic Macro-invertebrates Community

All the species sampled are fresh water species. The larvae of the aquatic insect, *Chironomus* sp. constituted 95.7% of the total benthic fauna samples during the period of study, and were sampled in almost all the three study stations. *Chironomus* sp has been identified as an indicator of polluted fresh water (Iyiola, 2015).

Both the diversity and abundance of the benthic macrofauna were low.
The conclusions of this study can be summarized as follows:

- The benthic macrofauna community is dominated by the aquatic insects.
- The dominance of the pollution indicator species, *Chironomus* sp., and *Tubifex* sp. is an indication that the study area could be under stress.
- The absence of crustaceans (e.g. crayfish and crab) which are impact-sensitive could be attributed to the level of organic pollution in the study area
- The relatively high numerical abundance of the benthic fauna in the study area does not translate to high diversity, rather it is as a result of the dominance of pollution-tolerant opportunistic species.

The numerical abundance of benthic macro invertebrates at the study area

TAXA	**SAMPLING STATIONS**			
	KUDETI 271	**KUDETI 272**	**KUDETI 363**	**TOTAL**
Phylum Arthropoda				
Class Insecta				
Chironomus sp. (larva)	25	19	22	66
Phylum Annelida				
Class Clitellata				
Tubifex sp.	0	0	3	3
TOTAL	**25**	**19**	**25**	**69**

Source:Field Study Feb, 2018

Samples of *chiromonus* larva, *Tubifex sp.* and Hydrobiologist during the field survey

Annex 5: Company Code of Conduct on Preventing Gender Based Violence and Violence Against Children

The company is committed to creating and maintaining an environment in which gender based violence (GBV) and violence against children (VAC) have no place, and where they will not be tolerated by any employee, associate, or representative of the company. Therefore, in order to ensure that all those engaged in the project are aware of this commitment, and in order to prevent, be aware of, and respond to any allegations of GBV and VAC, the company commits to the following core principles and minimum standards of behavior that will apply to all company employees, associates, and representatives including sub-contractors, without exception:

1. The company—and therefore all employees, associates, and representatives—commit to treating women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status. Acts of GBV and VAC are in violation of this commitment.
2. Demeaning, threatening, harassing, abusive, culturally inappropriate, or sexually provocative language and behavior are prohibited among all company employees, associates, and its representatives.
3. Acts of GBV or VAC constitute gross misconduct and are therefore grounds for sanctions, which may include penalties and/or termination of employment. All forms of GBV and VAC, including grooming are unacceptable, regardless of whether they take place on the work site, the work site surroundings, at worker's camps or at worker's homes.
4. In addition to company sanctions, legal prosecution of those who commit acts of GBV or VAC will be pursued if appropriate.
5. Sexual contact or activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense or excuse.
6. Sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior are prohibited.
7. Unless there is full consent[1] by all parties involved in the sexual act, sexual interactions between the company's employees (at any level) and members of the communities surrounding the work place 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.
8. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual acts of GBV and/or VAC by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV and VAC Allegation Procedures.
9. Managers are required to report suspected or actual acts of GBV and/or VAC as they have a responsibility to uphold company commitments and hold their direct reports responsible.

To ensure that the above principles are implemented effectively the company commits to ensuring that:

10. All managers sign the 'Manager's Code of Conduct' detailing their responsibilities for implementing the company's commitments and enforcing the responsibilities in the 'Individual Code of Conduct'.
11. All employees sign the project's 'Individual Code of Conduct' confirming their agreement not to engage in activities resulting in GBV or VAC.
12. Displaying the Company and Individual Codes of Conduct prominently and in clear view at workers' camps, offices, and in in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
13. Ensure that posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
14. An appropriate person is nominated as the company's 'Focal Point' for addressing GBV and VAC issues, including representing the company on the GBV and VAC Compliance Team (GCCT) which is comprised of representatives from the client, contractor(s), the supervision consultant, and local service provider(s).
15. Ensuring that an effective Action Plan is developed in consultation with the GCCT which includes as a minimum:
    a. **GBV and VAC Allegation Procedure** to report GBV and VAC issues through the project Grievance Redress Mechanism (GRM);
    b. **Accountability Measures** to protect confidentiality of all involved; and,
    c. **Response Protocol** applicable to GBV and VAC survivors and perpetrators.
16. That the company effectively implements the Action Plan, providing feedback to the GCCT for improvements and updates as appropriate.

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[1] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

17. All employees attend an induction training course prior to commencing work on site to ensure they are familiar with the company's commitments and the project's GBV and VAC Codes of Conduct.
18. All employees 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 project's GBV and VAC Code of Conduct.

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

Company name: _____
Signature: _____
Printed Name: _____
Title: _____
Date: _____

MANAGER'S CODE OF CONDUCT ON PREVENTING GENDER BASED VIOLENCE AND VIOLENCE AGAINST CHILDREN

Managers at all levels have particular responsibilities to uphold the company's commitment to preventing and addressing GBV and VAC. This means that managers have an acute responsibility to create and maintain an environment that prevents GBV and VAC. Managers need to support and promote the implementation of the Company Code of Conduct. To that end, managers must adhere this Manager's Code of Conduct and also sign the Individual Code of Conduct. This commits them to supporting and developing systems that facilitate the implementation of the Action Plan and maintain a GBV-free and VAC-free environment at the workplace and in the local community. These responsibilities include but are not limited to:

Implementation

1. To ensure maximum effectiveness of the Company and Individual Codes of Conduct:
    a. Prominently displaying the Company and Individual Codes of Conduct in clear view at workers' camps, offices, and in in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
    b. Ensuring all posted and distributed copies of the Company and Individual Codes of Conduct are translated into the appropriate language of use in the work site areas as well as for any international staff in their native language.
2. Verbally and in writing explain the Company and Individual Codes of Conduct to all staff.
3. Ensure that:
    a. All direct reports sign the 'Individual Code of Conduct', including acknowledgment that they have read and agree with the Code of Conduct.
    b. Staff lists and signed copies of the Individual Code of Conduct are provided to the GCCT and the client.
    c. Participate in training and ensure that staff also participate as outlined below.
    d. Staff are familiar with the Grievance Redress Mechanism (GRM) and that they can use it to anonymously report concerns of GBV or VAC incidents.
    e. Staff are encouraged to report suspected or actual GBV or VAC through the GRM by raising awareness about GBV and VAC issues, emphasizing the staff's responsibility to the Company and the country hosting their employment, and emphasizing the respect for confidentiality.
4. 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.
5. Ensure that when engaging in partnership, sub-contractor or similar agreements, these agreements:
    a. Incorporate the GBV and VAC Codes of Conduct as an attachment.
    b. Include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the Individual Codes of Conduct.
    c. Expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and VAC, to investigate allegations thereof, or to take corrective actions when GBV or VAC has occurred, shall constitute grounds for sanctions and penalties in accordance with the Individual Codes of Conduct.
6. Provide support and resources to the GCCT to create and disseminate internal sensitization initiatives through the awareness-raising strategy under the Action Plan.
7. Ensure that any GBV or VAC issue warranting police action is reported to the client and the World Bank immediately.

Training

8. 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 and VAC Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the Action Plan for addressing GBV and VAC issues.
9. Ensure that time is provided during work hours and that staff attend the mandatory project facilitated induction training on GBV and VAC required of all employees prior to commencing work on site.

10. Ensure that staff attend the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and VAC during civil works.
11. Managers are required to attend and assist with the project facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce the self-evaluations.
12. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Response

13. Managers will be required to provide input to the GBV and VAC Allegation Procedures and Response Protocol developed by the GCCT as part of the final cleared Action Plan.
14. Once adopted by the Company, 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 and VAC (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
15. If a manager develops concerns or suspicions regarding any form of GBV or VAC by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he is required to report the case using the GRM.
16. 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 to sanction was made.
17. Managers failing to report or comply with such provision can in turn be 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:
    a. Informal warning.
    b. Formal warning.
    c. Additional Training.
    d. Loss of up to one week's salary.
    e. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
    f. Termination of employment.
18. Ultimately, failure to effectively respond to GBV and VAC cases on the work site by the company's managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Manager's 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 Manager's Code of Conduct or failure to take action mandated by this Manager's Code of Conduct may result in disciplinary action.

Signature: _____
Printed Name: _____
Title: _____
Date: _____

INDIVIDUAL CODE OF CONDUCT ON PREVENTING GENDER BASED VIOLENCE AND VIOLENCE AGAINST CHILDREN

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, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behavior 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 defense. Consent from the child is also not a defense or excuse.
- Not engage in sexual favors—for instance, making promises or favorable treatment dependent on sexual acts—or other forms of humiliating, degrading or exploitative behavior.
- Unless there is the full consent[2] 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 labor 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 labor laws in relation to child labor.

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.

[2]**Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the Code of Conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- 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: _____

Annex 6: Grievance Redress Mechanism (GRM)

For this project, a grievance mechanism is recognized as the formal legal mechanisms for resolving complaints and dissatisfactions. Grievance mechanisms are designed with the objective of solving disputes at the earliest possible time in the interest of all parties concerned.

Expectations when Grievances Arise

When local people present a grievance, they generally expect to receive one or more of the following: acknowledgement of their problem, an honest response to questions/issues brought forward, an apology, adequate compensation, modification of the conduct that caused the grievance and some other fair remedies. In voicing their concerns, they also expect to be heard and taken seriously. The company, contractors, or government officials must therefore convince people that they can voice grievances and work to resolve them without retaliation.

To address these challenges, the project shall take the lead and work with their host communities to fund non-judicial, dialogue-based approaches for preventing and addressing community grievances.

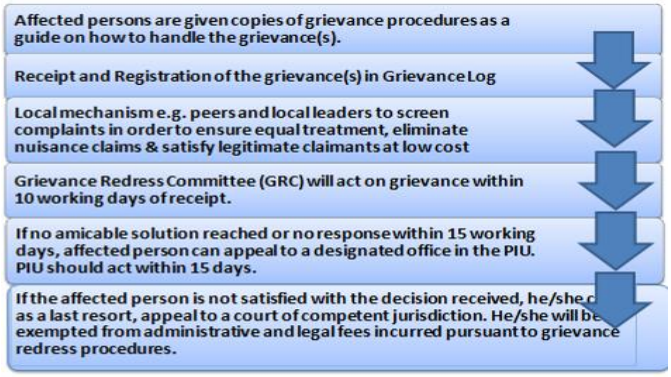
Grievance Redress Process

There is no ideal model or one-size-fits-all approach to grievance resolution. However, for simplicity, accessibility, affordability, and accountability, the following components make for a good grievance mechanism:

- Receiving and registering a complaint by chairman / secretary of GRC.
- Screening and assessing the complaint.
- Formulating a response.
- Selecting a resolution approach.
- Implementing the approach.
- Provide feedback to GRM users.
- Tracking and evaluating the results.
- Preparing a timely report to management on the nature and resolution ofgrievances.

As much possible, a localized mechanism that take account of the specific issues, cultural context, local customs, and project conditions and scale have been adopted for this ESIA.

The overall process of grievance redress will be as follows:



Process of Grievance Redress

Composition of Grievance Redress Committee (GRC) under this Project

A functional GRC shall be constituted in collaboration with LGA representatives and the local communities. This selection would be done through a gender sensitive and transparent/non-biased process. The composition of the committee will include the following:

Grievance Redress Committee

S/N	Representative	Community/ organization
1	Community leader	Community
2	Representative of Local Government	Ibadan South east & North east Local Government
3	Chairman Landlord Association	Community
4	Women Representative	Community
5	Youth Representative (Bolagade LATEEF)	Community
6	IUFMP Social safeguards (Mrs Bola Dada)	IUFMP
7	IUFMP Communication (Mrs Babanumi)	IUFMP

Members of GRC in Yegide Community, Kudeti

- Atiloba B.A
- Ashiomolowo Kawawa
- Olayiwola Kamarudeen
- Mrs Silifat Lawal (Women Representative)
- Bablola Idris Babatunde (Youth Representative)
- IUFMP Social safeguards (Mrs Bola Dada)
- IUFMP Communication (Mrs Babanumi)

Members of GRC in Agbongbon Community, Kudeti

- Mr Shikini Adegboro
- Alfa Kola Hamzat
- Bolagade Adeleke
- Bolagade Lateef (Youth Representative)
- Mrs Salami (Women Representative)
- Mrs Bola Dada (IUFMP Social safeguards)
- Mrs Babanumi (IUFMP Communication)

Grievance Log

The designated officer assigned as the Project Liaison Officer by the GRC will ensure that each complaint has an individual reference number and is appropriately tracked and recorded actions are completed. The log should contain a record of the person responsible for an individual complaint, and records dates for the following events:

- Date the complaint was reported.
- Date the Grievance Log was uploaded onto the project database.
- Date information on proposed corrective action sent to complainant (if appropriate).
- The date the complaint was closed out.
- Date response was sent to complainant.

Monitoring Complaints

The Project Liaison Officer will be responsible for providing the sub-project Grievance Redress Committee (GRC) with a periodic report detailing the nature, number and status of complaints any outstanding issues to be addressed tri-monthly reports, including analysis of the type of complaints, levels of complaints, actions to reduce complaints and initiator of such action.

Annex 7: Labour Act

Laws of the Federation of Nigeria 1990

Extracts from Nigerian Labour Law

Section 1. (2) An employer may provide food, a dwelling place or any other allowance or privilege as part of a worker's remuneration if the food, dwelling place, allowance or privilege is prescribed by law, by a collective agreement or by an arbitration award because it is customary or desirable in view of the nature of the industry or occupation in which the worker is engaged; but in no case shall an employer give to any worker any intoxicating liquor or noxious drug by way of remuneration.

Section 2. No Employer shall impose in any contract for the employment of any worker any terms as to the place at which, or the manner in which, or the person with whim any wages paid to the worker are to be expended; and every contract between an employer and a worker containing any such terms shall be illegal, null and void.

Section 3. Wages shall not be paid to a worker in premises used for sale of intoxicating liquor or for the retail sale of goods, except in the case of a worker employed on the premises.

Section 4. (1) No Employer may make an advance of wages in excess of one month's wages.

(2) Where an advance in respect to wages has been paid to a worker the minimum period for the recovery of the advance by the employer shall be three months.

Section 7. (1) Not later than three months after the beginning of a worker's period of employment with an employer, the employer shall give to the worker a written statement specifying the name of employer, address. If the contract is for a fixed term, the date when the contract expires, the rate of wages and method of calculation thereof and periodicity of payment of wages.

Section 16. Subject to the Workmen's Compensation Act, a worker shall be entitled to be paid wages up to 12 working days in any one calendar year during absence from work caused by temporary illness certified by a registered medical practitioner: Provided that this section shall not apply unless –

(a) The contract remains in existence during the period of absence and the workers is ready and willing to perform his part of the contract save for the incapacity produced by the illness; and

(b) The worker, if so requested by the employer, consents to be examined by a qualified medical practitioner nominated by the employer.

Section 18. (1) Every worker shall be entitled 12 months continuous service to a holiday with full pay of at least 6 working days; or in the case of persons under the age of sixteen (16) years (including apprentice) at least twelve working days.

Section 59. (1) No child shall –

(a) Be employed or work in any capacity except where he is employed by a member of his family on light work of an agricultural, horticultural or domestic character approved by the Minister: or

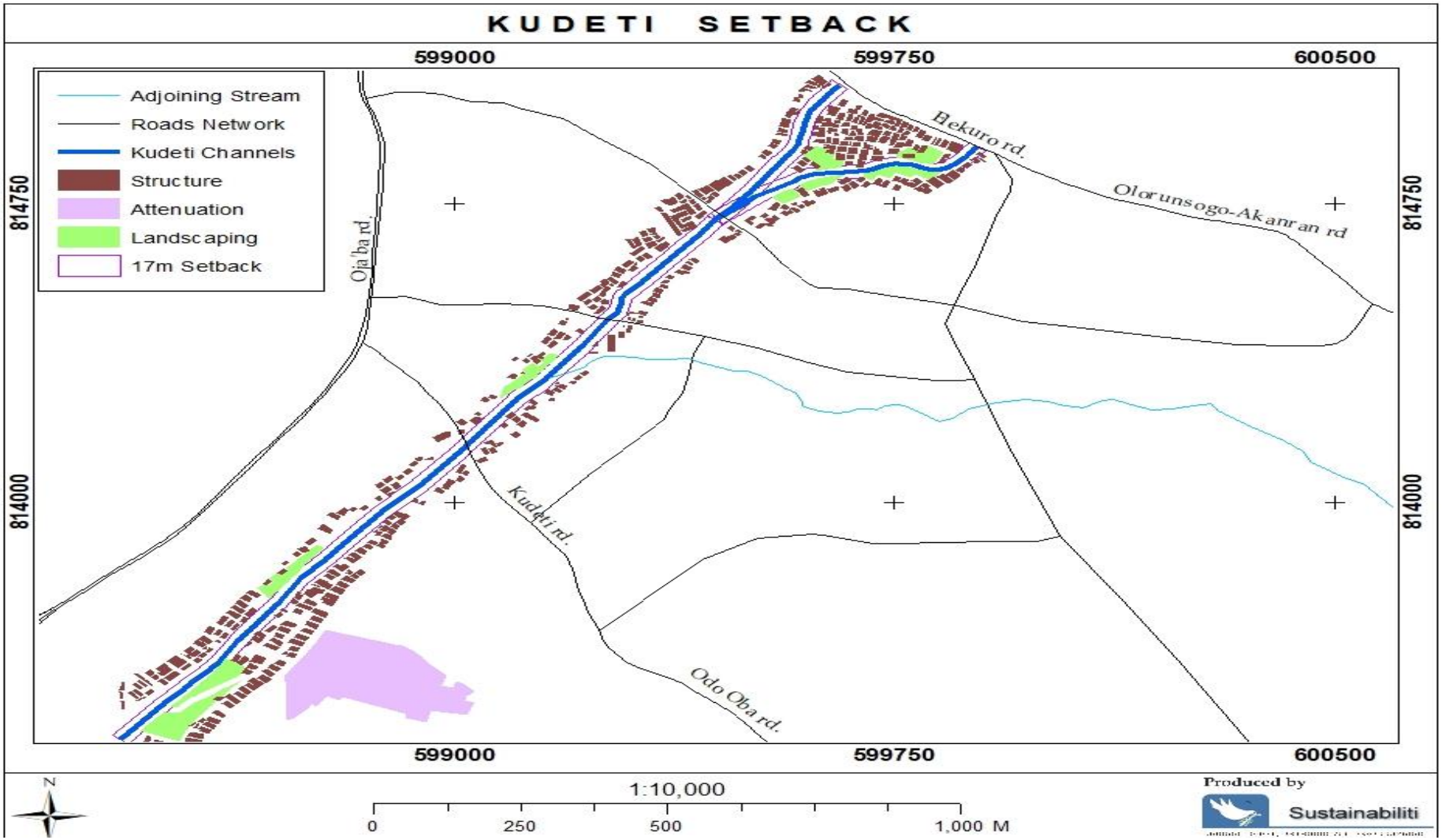
(b) Be required in any Case to lift, carry or move anything so heavy as to be likely to injure his physical development.

(2) No young person under the age of fifteen years shall be employed or work in any industrial undertaking.

(3) A young person under the age of fourteen years may be employed only on a daily wage, on a day basis and so long as he returns each night to the place of residence of his parents or guardian or a person approved by his parents or guardian.

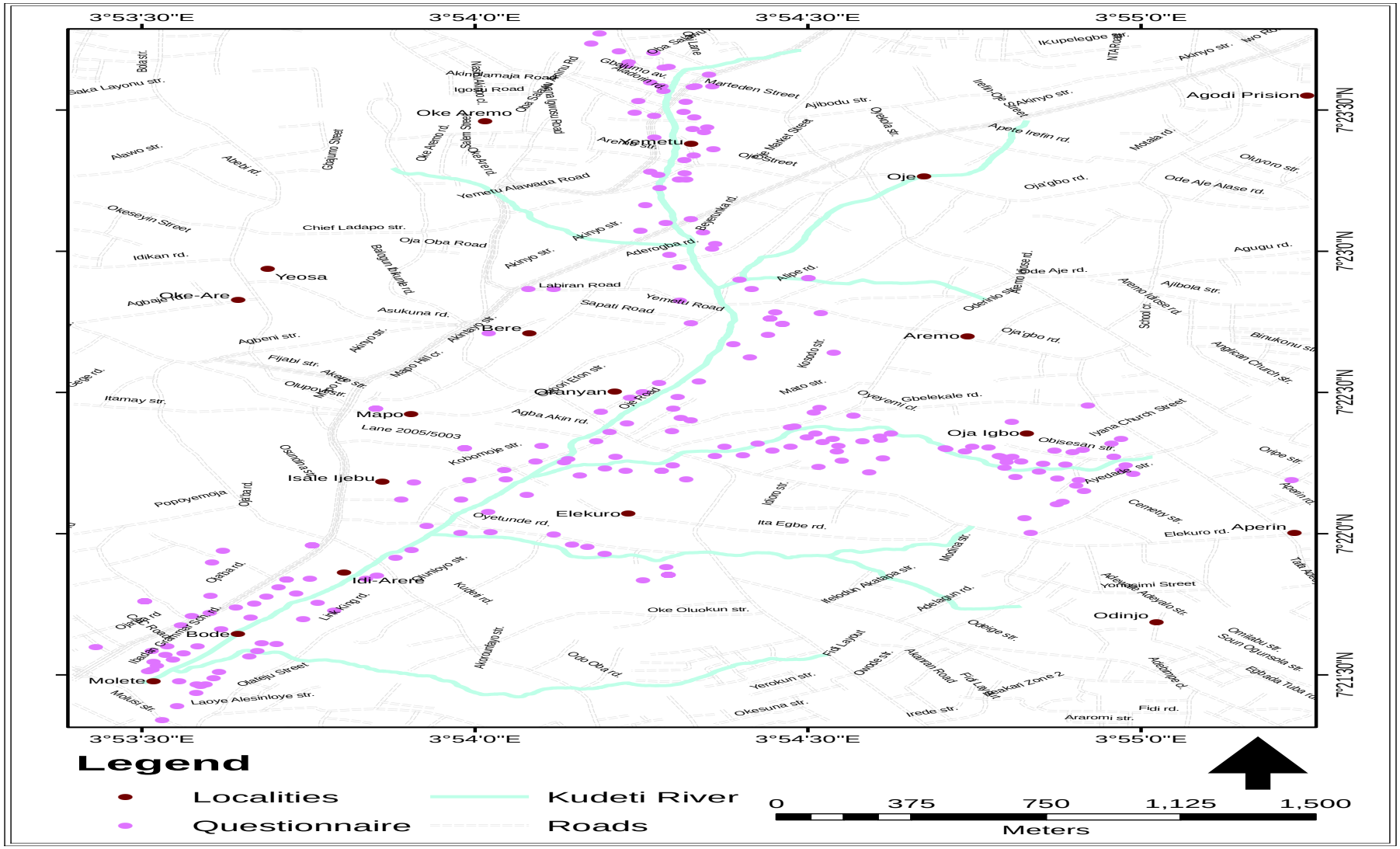
(8) No young person under the age of sixteen years shall be required to work for a longer period than four consecutive hours or permitted to work for more than eight working hours in any one day.

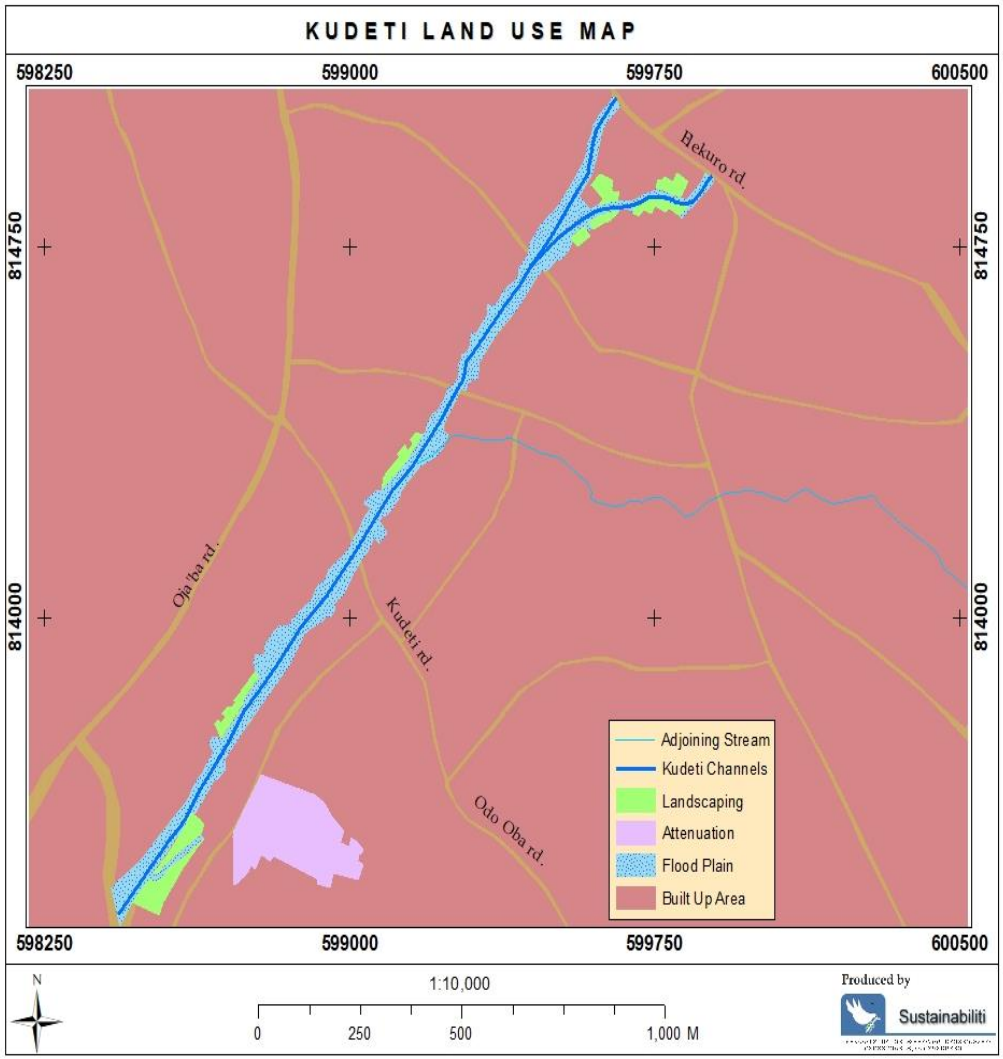
Annex 8: Maps

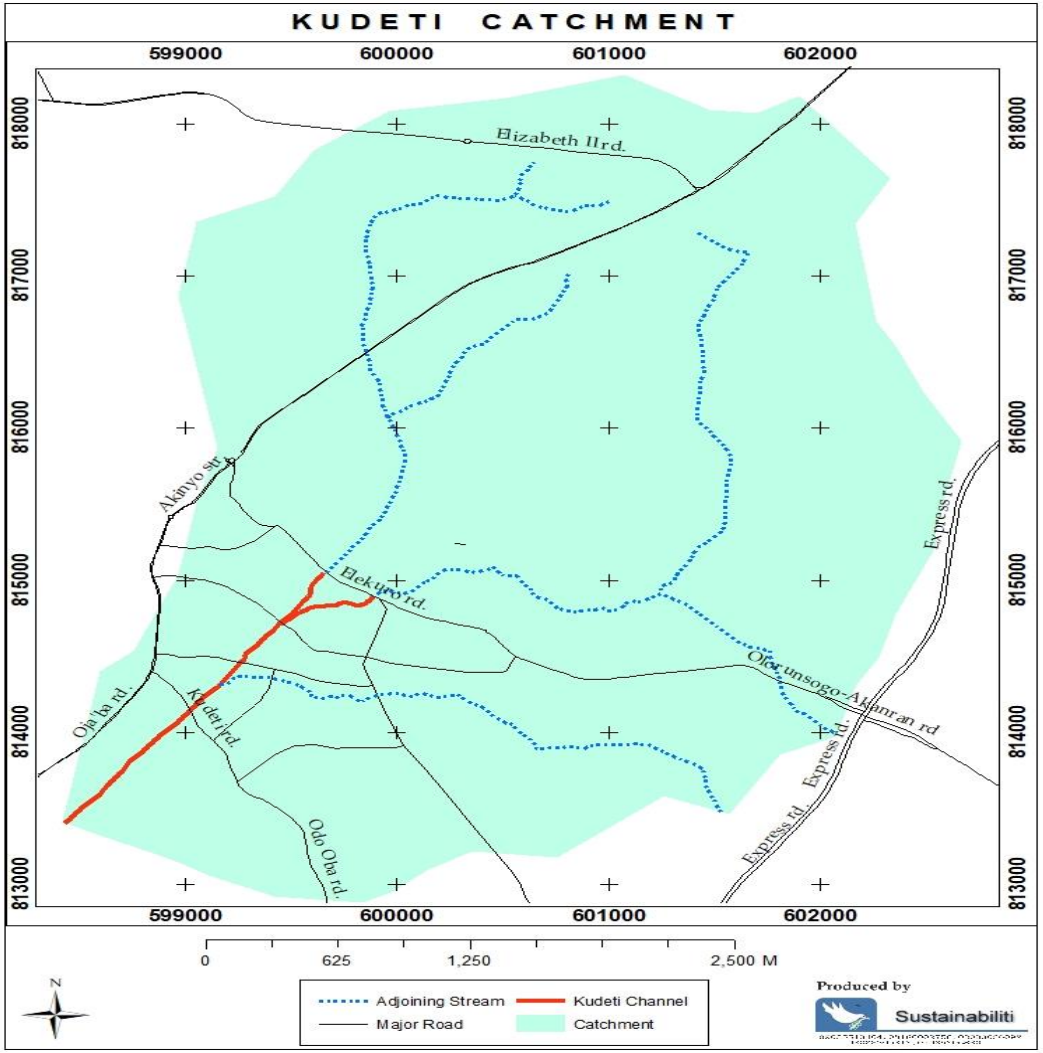


Map of Project Site showing the SetBack/ ROW

Map showing socio-economic Baseline data gathering& sampling locations







Kudeti Land use Map and Kudeti catchment map

Annex 9: Protection of Cultural Property

Purpose	The chance find procedure is a project-specific procedure that outlines actions required if previously unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. A Chance Find Procedure, as described in IFC Performance Standard 8 and law on National Commission For Museums and Monuments Act 28th September 1979 No.77 is a process that prevents chance finds from being disturbed until an assessment by a competent specialist is made and actions consistent with the requirements are implemented.
Scope	This procedure is applicable to all activities conducted by the personnel, including contractors, that have the potential to uncover a heritage item/site. The procedure details the actions to be taken when a previously unidentified and potential heritage item/site is found during construction activities. Procedure outlines the roles and responsibilities and the response times required from both project staff, and any relevant heritage authority.

Chance Find Procedural Requirements

Induction/ Training	**Procedural Steps**	**Management Options for Archaeological Site**	**Management of Replicable and Non-Replicable Heritage**	**Human Remains Management Options**	**Emergency Contact**
All personnel, especially those working on earth movements and excavations, are to be inducted on: **1.** the identification of potential heritage items/sites; and **2.** the relevant actions for them with regards to this procedure during the Project induction and regular toolbox talks.	If any person discovers a physical cultural resource, such as (but not limited to) archaeological sites, historical sites, remains and objects, or a cemetery and/or individual graves during excavation or construction, the following steps shall be taken: **1. Stop all works in the vicinity of the find**, until a solution is found for the preservation of these artefacts, or advice from the relevant authorities and/ or the Bureau of Art and Culture is obtained; **2. Immediately notify a foreman.** The foreman will then notify the Construction Manager and the Environment Officer (EO)/Environmental Manager (EM); **3. Record details** in Incident Report and take photos of the find; **4. Delineate the discovered site** or area; secure the site to prevent any damage or loss of removable objects. In cases of removable antiquities or sensitive remains, a night guard shall be arranged until the responsible local authorities take over; **5.Preliminary evaluation** of the findings by archaeologists. The archaeologist must make a rapid assessment of the site or find to determine its	**1.Site avoidance.** If the boundaries of the site have been delineated attempt must be made to redesign the proposed development to avoid the site. (The fastest and most cost-effective management option) **2.Mitigation.** If it is not feasible to avoid the site through redesign, it will be necessary to sample it using data collection program prior to its loss. This could include surface collection and/or excavation. (The most expensive and time-consuming management option.) **3. Site Protection.** It may be possible to protect the site through the installation of barriers during the time of the development and/or possibly for a longer term. This could include the erection of high visibility fencing around the site or	**Replicable Heritage**: Where tangible cultural heritage that is replicable and not critical is encountered, mitigation measures will be applied. **The mitigation hierarchy is as follows**: **1. Avoidance**; **2. Minimization** of adverse impacts and implementation of restoration measures, in situ; **3. Restoration** of the functionality of the cultural heritage, in a different location; **4.Permanent removal** of historical and archaeological artefacts and structures ; **5.Compensation** of loss - where minimization of adverse impacts and restoration not feasible. Non-replicable heritage Most cultural heritage is best protected by in situ preservation, since removal is likely to result in irreparable	The handling of human remains believed to be archaeological in nature requires communication according to the same procedure described above. There are two possible courses of action: **1. Avoid.** The development project is redesigned to completely avoid the found remains. An assessment should be made as to whether the remains may be affected by residual or accumulative impacts associated with the development, and properly addressed by a comprehensive management plan. **2. Exhumate**. Exhumation of the remains in a manner considered appropriate by decision makers. This will involve the predetermination of a site suitable for the reburial of the remains. Certain ceremonies or procedures may need	Ministry of Information, Culture and Tourism And Bureau of Art and Culture.

	importance. Based on this assessment the appropriate strategy can be implemented. The significance and importance of the findings should be assessed according to the various criteria relevant to cultural heritage such as aesthetic, historic, scientific or research, social and economic values of the find; **6. Sites of minor significance** (such as isolated or unclear features, and isolated finds) should be recorded immediately by the archaeologist, thus causing a minimum disruption to the work schedule of the Contractor. The results of all archaeological work must be reported to the Ministry/Agency, once completed. 7. In case of significant find the Agency/Ministry (Agency for Protection of National Heritage or Archaeological Research Centre, hereinafter referred to as Heritage team) should be informed immediately and in writing within 7 days from the find (ref. law on National Commission For Museums and Monuments Act 28th September 1979, No 77. **8. The onsite archaeologist** provides the Heritage team with photos, other information as relevant for identification and assessment of the significance of heritage items. **9. The Ministry must investigate** the fact within 2 weeks from the date of notification and provide response in writing. **10. Decisions on how to handle the finding** shall be taken by the responsible authorities. This could include changes in the layout (such as when finding an irremovable remain of cultural or archaeological importance) conservation, preservation, restoration and salvage;	covering the site area with a geotextile and then capping it with fill. The exact prescription would be site- specific.	damage or even destruction of the cultural heritage. **Nonreplicable cultural heritage** must not be removed unless all of the following conditions are met: **1.There are no technically or financially feasible alternatives** to removal; **2. The overall benefits of the project conclusively** outweigh the anticipated cultural heritage loss from removal; and Any removal of cultural heritage must be conducted using the best available technique advised by relevant authority and supervised by archaeologist.	to be followed before development activities can recommence in the area of the discovery	

	11. Construction works could resume only after permission is granted from the responsible authorities. 1**2. In case no response received within the 2 weeks period mentioned above, this is considered as authorisation to proceed with suspended construction works**. **One of the main requirements of the procedure is record keeping. All finds must be registered. Photolog, copies of communication with decision making authorities, conclusions and recommendations/guidance, implementation reports kept**.				

These procedures must be referred to as standard provisions in construction contracts, when applicable, during project supervision, the Site Engineer shall monitor the above regulations relating to the treatment of any chance find encountered are observed.

Relevant findings will be recorded in World Bank Project Supervision Reports (PSRs), and Implementation Completion Reports (ICRs) will assess the overall effectiveness of the project's cultural property mitigation, management, and activities, as appropriate.

Activity	**Impact**	**Mitigation**	**Responsibility for Mitigation**	**Mitigation Cost**	**Responsibility for Monitoring**	**Monitoring Cost**
Before the commencement of project, monitored biannually	Physical Cultural Resources (PCR)	-Consultation with chief priests or communities -Modify the project design to avoid PCRs -Stop construction activities in the area in case of chance finds until a solution is proffered; -Delineate the discovered site or area See details in the table above (Annex 9)	Contractor, Social Safeguard specialist,	150,000	PIU-Social safeguard, Oyo state council for Arts and Culture	30,000

Annex 10: Fauna and Flora Species in the area

A Comprehensive list of the historical fauna species in the study area

	Family/ Order	Botanical Names	Common Names	Habitat	Abundance	IUCN Status
Avi Fauna Species						
1	**Accipitridae**	*Milvus migrans*	Back kite	Arborea		LC
2		*Necrosyrtes monachus*	Hooded vulture	Arborea	1	CR
3		*Polyboroides typus*	*African harrier hawk		*	LC
4	**Rallidae**	*Rallus caerulescens*	African rail	Arborea	2	LC
5	**Apodidae:**	*Cypsiurus parvus*	*African palm swift	Arborea	*	LC
6		*Apus affinis*	Little swift	Arborea	1	LC
7	**Muscicapidae: flycatchers**	*Muscicapa cassini*	*Cassins flycatcher	Arborea	*	LC
8		*Muscicapa* ruficauda	*Rusty-tailed Flycatcher	Arborea	*	LC
9	**Columbidae:**	*Streptopelia semitorquata*	Red eyed dove	Arborea	4	LC
10		*Turtur brehmeri*	Blue headed wood dove	Arborea	3	LC
11		*Treron calvus*	African green fruit pigeo	Arborea	1	LC
12	**Numididae**	*Numida meleagris*	Guinea fowl	Forest ground and trees	6	LC
13	**Anatidae**	*Nettapus auritus*	Bush duck fowl	Aquatic savanna swamp	2	LC
14		*Anas sparsa*	African black duck	Aquatic savanna swamp	3	LC
Reptilian Fauna Species						
1	Agamidae	Agama agama	Common rainbow lizard	Forest, farmlands and arboreal	Abundant	LC
2	Boidae	Boa constrictor	Boa	Forest, farmlands and arboreal	1	LC
3	Scinidae	Mabuya cochonaev	Skink	Forest, farmlands and arboreal	2	LC
4		Osteolaemus tetraspis	*West African dwarf crocodile	Forest, farmlands and arboreal	*	Vu
5		Python bivittatus	*Rock python	Forest, farmlands and arboreal	*	Vu
6		Naja pallid	*Spitting cobra	Forest, farmlands and arboreal	*	LC
7		Varanus niloticus	*Nile monitor	Forest, farmlands and arboreal	*	LC
Mammalia Fauna						
1	**Rodentia**	Heliosciurus rufobrachium	Red-legged sun squirrel	Forest groound	2	LC
2		Myosciurus pumilio	*Pygmy striped squirrel	Forest ground and farmland		LC
3		Hystrix cristata	*Crested porcupine	Forests ground and farmland	*	LC
4		Thryonomys swinderianus	Grass-cutter	Forest ground, soil burrows	3	LC
5		Cricetomys gambianus	Giant rat	Forests ground and farmlands	2	LC
6		Atherurus africanus	*African Brush-tailed Porcupine	Forest ground, soil burrows	*	LC
7		Paraxerus poensis	Green Bush Squirrel	Arborea	1	LC
8	**Primata**	Cercocebus chrysogaster	*Golden-bellied mangabey	Forest, farmlands and arboreal	*	DD
9		Cercopithecus mitis	*Blue monkey	Arborea	*	LC
10		Gorilla beringei	*Eastern Gorilla	Arborea	*	EN
11	**Carnivora**	Civettictis civetta	*African civet	Forest, farmlands and arboreal	*	LC
12		Genetta tigrina	*Blotched genet	Forest, farmlands and arboreal	*	LC
13		Nandinia binotata	*African palm civet	Forest, farmlands and arboreal	*	LC

14		Aonyx capensis	*Cape clawless otter	Forest, farmlands and arboreal	*	NT
15	**Artiodactyla**	Potamochoerus porcus	*Bush pig	Forest, farmlands and arboreal	*	LC
16		Tragelaphus spekii	Sitatunga or marshbuck	Forest, farmlands and arboreal	1	LC
17		Hyemoschus aquaticus	*Water chevrotain	Aquatic	*	LC
18		Cephalophus monticola	*Blue duiker	Forest, farmlands and arboreal	*	LC
19		Cephalophus rufilatus	*Red-flanked duiker	Forest, farmlands and arboreal	*	LC
20		Tragelaphus scriptus	*Bush buck	Forest, farmlands and arboreal	*	LC

Asterisk (*) indicate species sighted indirectly, **LC**=Least Concern, **Vu**=Vulnerable, **CR**= Critically Endangered

Table showing plant species & their indigenous uses in the study area

S/N	**SPECIES**	**Indigenous Uses**	**No of uses**
1	*Elaeis guineensis*	Medicinal, Fruit &Nuts, Fodder, fibres, Fence, Wattle, Roof trusses and Frames	8
2	*Adansonia digitate*	Medicinal, fruit	2
3	*Borassus aethiopum*	Thatching, Medicinal, fruit	3
4	*Dalbergia boehimi*	Medicinal, charcoal, firewood, fencing, food, fodder, furniture	7
5	*Daniellia oliveria*	Medicinal, perfume, gum, furniture	4
6	*Ceiba pentandra*	Soup thickeners, timber, medicinal	3
7	*Delonix regia*	Medicinal, beautification	2
8	*Erythrina senegalensis*	Fence, erosion prevention	2
9	*Gmelinia arborea*	Medicinal, Timber	2
10	*Holarhena floribunda*	Fence	1
11	*Khaya ivorensis*	Fuelwood, Medicinal, erosion prevention, timber	4
12	*Kigelia Africana*	Medicinal, soup thickener	2
13	*Parkia biglobosa*	Fruit, charcoal	2
14	*Phyllanthus muelleranus*	Medicinal	1
15	*Vitex doniana*	Fuelwood, timber, Medicinal and soup thickeners.	4
16	*Sarcocephalus latifolius*	Medicinal, chew stick	2
17	*Spondias monbin*	Medicinal, Fruit/nut, poles and fence	4
18	*Trema orientalis*	Charcoal, paper, pulp, rope, medicinal	4
19	*Terminalia bucidoides*	Fuelwood, timber, charcoal, fruits and nuts	5
20	*Raphia sudanica*	Medicinal, textile, hats, rope, baskets, placemats, shoe, food	8
21	*Sarcocephalus latifolius*	Medicinal, chew stick	2
22	*Euphorbia heterophylla*	Medicinal	1
24	*Keeti venosa*	Food, medicinal	2
25	*Ziziphus spinachristi*	Fruit, medicina;	

Annex 11: General Environmental Management Conditions for Construction Contracts

General

1 In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

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

a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.
f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and 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 worker camps.
j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

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

4 The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan /strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5 Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Worksite/Campsite Waste Management

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

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

8 Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
9 Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.
10 Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.
11 If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

12 The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.
13 The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.
14 New extraction sites:
    a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 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 Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.
18 Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19 To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
20 Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
21 Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
22 Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
23 Locate stockpiles where they will not be disturbed by future construction activities.
24 To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
25 Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
26 Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
27 Ensure reshaped land is formed to be inherently stable, adequately drained and suitable for the desired long-term land use and allow natural regeneration of vegetation.
28 Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
29 Minimize erosion by wind and water both during and after the process of reinstatement.
30 Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
31 Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

32 The Contractor shall at all costs avoid conflicting with water demands of local communities.
33 Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
34 Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35 Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream and maintains the ecological balance of the river system.
36 No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
37 Wash water from washing out of equipment shall not be discharged into water courses or road drains.
38 Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

Disposal of Unusable Elements

Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.

AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

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

Health and Safety

In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

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

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

Repair of Private Property

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

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

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

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

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

HSE Reporting

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

   - HSE management actions/measures taken, including approvals sought from local or national authorities;
   - Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);

- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and
- Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.

45 It is advisable that reporting of significant HSE incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE's reports to the Client.

Training of Contractor's Personnel

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

HSE in general (working procedures);

emergency procedures; and

social and cultural aspects (awareness raising on social issues).

Cost of Compliance

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

Annex 12: Template for Occupation Health and Safety Management Plan

PURPOSE	The purpose of this document is to describe the Project Occupational Health and Safety (OHS) plan for the proposed project and the specific management controls, risk control systems and workplace and safeguards required to ensure compliance with Occupational Health and Safety Laws and Standards.
SCOPE	The Project Occupational Health and Safety (OHS) plan covers the scope of works defined in the contract. This includes Preconstruction, Construction, Operation & Maintenance and Decommissioning phases.
OBJECTIVES OF THE PLAN	• Adopt a positive Health & Safety Culture. • Adopt the principles of prevention to avoid risk. Complete the project without incident (Zero fatalities, Zero Lost Time Injury (LTI) or occupational illness).
OBLIGATIONS	• Participation of all personnel and the management in executing, maintaining and continually improving OHS processes is vital to the successful completion and achievement of quality objectives set by the management. • All project personnel shall therefore be required to be familiar with the content of the OHS plan and shall participate in implementing, maintaining and improving the management system • It is the responsibility of the project manager and all key personnel to ensure that the requirements for quality are fulfilled for works under their responsibility. All new staff and staff who are given new responsibilities are to be inducted into the requirements set out in the plan in general and into their function and responsibilities in particular
POLICIES	• Workplace Health and Safety: all worker shall adhere to all workplace health and safety rules and the management will ensure the safety of the workers on site. • Rehabilitation Policy • Drug and Alcohol Policy: Prohibiting the consumption or possession of narcotics, drugs, alcohol and other banned substances
DUTIES AND RESPONSIBILITIES	**Safety Officer Responsibilities include:** • Main communication link between their department and Site superintendent and Project Manager. • Facilitate daily toolbox meetings • Review daily work to be assigned to workers to ensure full Job Hazard Analysis requirements • Review all worker completed Job Hazard Analysis (JHA) prior to work being started • Develop SOP from completed and approved JHA when required. • Inspect all work areas on a daily basis. . • Respond immediately to all unsafe conditions. • Control of and distribution of all worker personal protective equipment. • Ensure deficiencies are corrected and reported to site manager. • Complete all incident/Non-conformance reports as required • Complete all orientation of all new or transferred employees. • Ensure that all required training is given or made available to all employees **Workers roles and responsibilities for Health and Safety** • Carry out their work in a manner that will not create a hazard to the health and safety of self or other employees. • Have the right to refuse unsafe work and report all job specific hazards to their supervisor. • Take care, an active role in the elimination and control of work place hazards. • Assist site supervisors in reducing and controlling accident producing conditions and unsafe acts on the work sites. • Report any accidents/incidents, near misses and/or injuries immediately to the supervisor. • Report any anticipated loss of work time to the supervisor as soon as possible after being treated by a physician following injury. • Attend morning toolbox meetings and playing an active role in the meeting in discussing possible job site hazards. • Providing suggestions to improve the overall health and safety program. • Using all safe guards and safety equipment provided. • Participating as required, in accident/incident investigations and assisting in the completing of the accident/incident forms. • Ensure co- workers are advised of unsafe conditions or acts that may cause injury or illness. • Demonstrate a professional attitude towards all projects HS&E efforts.
COMMUNICATION RESOURCES	This may include: project management meetings; inductions; training; and outcomes from inspections
Rules for Safety Outline the rules	**BEHAVIOR:** Every worker shall keep his/her work area neat, clean and orderly, Consuming or being in possession of or under the influence of alcohol or illegal drugs on project site and environs premises, is prohibited and disciplinary action will be taken. Fighting, horseplay, practical jokes or otherwise

relating to workplace safety.	interfering with other workers is prohibited and disciplinary action will be taken. Theft, vandalism or any other abuse or misuse of equipment is prohibited and may be cause for immediate dismissal. Smoking is permitted only in designated areas. "Strike Anywhere" matches are prohibited. Running is not permitted anywhere, except in the case of extreme emergency. Riding on any hook, hoist or other material handling equipment which is used strictly for handling material and not specifically designated to carry riders is prohibited **First Aid and Injury Management** **Emergency Procedures** i. Render first aid immediately, first aid kits should be made available in all vehicles and job shacks. All serious first aid injuries should be attended to by a trained first aid attendant only. ii. For all serious injuries, these general directions should be followed: • If you do not have first aid training send or locate a trained first aid attendant immediately • Apply artificial respiration if the patient is not breathing (by trained first aid attendants only) • Stop any severe bleeding, by applying pressure to the immediate wound area • Send someone for a doctor • Keep victim lying down: never move injured personnel unless the potential for further injury is immediately present iii. Stay calm. If the patient is breathing and no artery is spurting blood, giving first aid is usually unnecessary, and is often harmful iv. Do not attempt to remove foreign objects from eyes or any other part of the body or allow anyone else to do so, except a first aid attendant or a doctor v. Call for assistance; be ready to give the following information: • Accurate directions to the location of the injured person. • Nature of the injury. • Any assistance that may be required. • Give information slowly and clearly. • Report back to the scene of the accident; report to the superintendent or first aid attendant that help is on the way. If no one can be contacted at the office call/Inform operator which of the following is required: a. Ambulance. b. Police. c. Fire Department. d. Electrical Power Company. e. Gas utility company. f. Hospital. • Restrict the immediate area of the accident, check if further danger exists; Clear the area Maintenance, Layout, Storage areas, Manual handling Use of workplace equipment Evacuation procedures Fire alarm response: A fire safety plan shall be in place in the site. A fire risk assessment shall be developed and recorded. Security
Training of Contractor's Personnel	The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project ESMP, and his own HSES-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 HSES-MP.
General topics should be: HSES in general (working procedures), emergency procedures, and social and cultural aspects (awareness raising on social issues).	
Cost for Mitigation for Occupational Health and Safety (Throughout project lifecycle)	1,050,000.00
Cost for Monitoring for Occupational Health and Safety (Throughout project lifecycle)	120,000.00

SAMPLE OF HSE REPORTING FORM

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

Example Format: HSE 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 (only factual)
Immediate Action:
Immediate remedial action and actions taken to prevent reoccurrence or escalation
Signature (Name, Title, Date):
Contractor Representative

Annex 13: Emergency Preparedness Plan

EMERGENCY ACTION PLAN for Project Name: _____Project Location: _____
DATE PREPARED: ___/_____/_____

EMERGENCY PERSONNEL NAMES AND PHONE NUMBERS

DESIGNATED RESPONSIBLE OFFICER (Contractor/Project Manager _____or HSE Officer _____,

Name:_____ Phone: (_____)

EMERGENCY COORDINATOR: Name:_____Phone: (_____)

ASSISTANTS TO PHYSICALLY CHALLENGED (If applicable): Name:_____Phone: (_____)
Name:_____Phone:(_____)

EVACUATION ROUTES

Evacuation route maps have been posted in each work area. The following information is marked on evacuation maps:

1. Emergency exits
2. Primary and secondary evacuation routes
3. Locations of fire extinguishers
4. Fire alarm pull stations' location
5. Assembly points

Site personnel should know at least two evacuation routes.

EMERGENCY PHONE NUMBERS

FIRE DEPARTMENT: _____PARAMEDICS:_____AMBULANCE: _____
POLICE: _____FEDERAL PROTECTIVE SERVICE:_____SECURITY (If applicable): _____

UTILITY COMPANY EMERGENCY CONTACTS

(Specify name of the company, phone number and point of contact)

ELECTRIC: _____**WATER**: _____**GAS (if applicable):** _____
TELEPHONE COMPANY: _____ Date: ___/____/_____

EMERGENCY REPORTING AND EVACUATION PROCEDURES

Types of emergencies to be reported by site personnel are:
Medical, Fire, Severe Weather, Bomb Threat, Chemical Spill, Structure Climbing/Descending, Extended Power Loss, Other (Specify)_____(E.G., Terrorist Attack/Hostage Taking)

MEDICAL EMERGENCY

Call medical emergency phone number (check applicable):

- ☐ Paramedics
- ☐ Ambulance
- ☐ Fire Department
- ☐ Other

Provide the following information:
a. Nature of medical emergency (b) Location of the emergency (address, building, room number (c) Your name and phone number from which you are calling.

- Do not move victim unless absolutely necessary.
- Call the following personnel trained in CPR and First Aid to provide the required assistance prior to the arrival of the professional medical help: Name(1): _____ Phone:_____ Name(2): _____Phone_____
- If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:
  - Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
  - Clear the air passages using the Heimlich Maneuver in case of choking.
- In case of rendering assistance to personnel exposed to hazardous materials, consult the Material Safety Data Sheet (MSDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if

trained and qualified.

Date___/___/___

FIRE EMERGENCY

When fire is discovered:

- Activate the nearest fire alarm (if installed)
- Notify the local Fire Department by calling _____.
- If the fire alarm is not available, notify the site personnel about the fire emergency by the following means (check applicable):

  - ☐ Voice Communication
  - ☐ Phone Paging
  - ☐ Radio
  - ☐ Other (specify)

Fight the fire ONLY if:

- The Fire Department has been notified.
- The fire is small and is not spreading to other areas.
- Escaping the area is possible by backing up to the nearest exit.
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the building using the designated escape routes.
- Assemble in the designated area (specify location):
- Remain outside until the competent authority (Designated Official or designee) announces that it is safe to reenter.

Designated Official, Emergency Coordinator or supervisors must (underline one):

- Disconnect utilities and equipment unless doing so jeopardizes his/her safety.
- Coordinate an orderly evacuation of personnel.
- Perform an accurate head count of personnel reported to the designated area.
- Determine a rescue method to locate missing personnel.
- Provide the Fire Department personnel with the necessary information about the facility.
- Perform assessment and coordinate weather forecast office emergency closing procedures

Area/Floor Monitors must:

- Ensure that all employees have evacuated the area/floor.
- Report any problems to the Emergency Coordinator at the assembly area.

Assistants to Physically Challenged should:

- Assist all physically challenged employees in emergency evacuation.

Date___/___/___

EXTENDED POWER LOSS

In the event of extended power loss to the site or neighboring communities in the project area as a result of accidental disruption of utility facilities during excavation/construction works, certain precautionary measures should be taken depending on the geographical location and environment of the facility:

- Unnecessary electrical equipment and appliances should be turned off in the event that power restoration would surge causing damage to electronics and effecting sensitive equipment.
- Facilities with freezing temperatures should turn off and drain the following lines in the event of a long term power loss.
  - Fire sprinkler system
  - Standpipes
  - Potable water lines
  - Toilets
- Add propylene-glycol to drains to prevent traps from freezing
- Equipment that contain fluids that may freeze due to long term exposure to freezing temperatures should be moved to heated areas, drained of liquids, or provided with auxiliary heat sources.

  <u>Upon Restoration of heat and power</u>:
- Electronic equipment should be brought up to ambient temperatures before energizing to prevent condensate from forming on circuitry.
- Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

CHEMICAL SPILL

The following are the locations of:

Spill Containment and Security Equipment: _____Personal Protective Equipment (PPE):_____ MSDS:_____

When a Large Chemical Spill has occurred:

- Immediately notify the designated official and Emergency Coordinator.
- Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.).
- Secure the area and alert other site personnel.
- Do not attempt to clean the spill unless trained to do so.
- Attend to injured personnel and call the medical emergency number, if required.
- Call a local spill cleanup company or the Fire Department (if arrangement has been made) to perform a large chemical (e.g., mercury) spill cleanup.
- Evacuate building as necessary

Name of Spill Cleanup Company: _____Phone Number: _____

When a Small Chemical Spill has occurred:

- Notify the Emergency Coordinator and/or supervisor (select one).
- If toxic fumes are present, secure the area (with caution tapes or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the MSDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.
- Review the general spill cleanup procedures.

Date___/___/___

STRUCTURE CLIMBING/DESCENDING EMERGENCIES

List structures maintained by site personnel (tower, river gauge, etc.):

No.	Structure Type	Location (address, if applicable)	Emergency Response Organization* (if available within 30-minute response time)

Emergency Response Organization(s): Name _____ Phone Number_____Name _____ Phone Number_____

(Attach Emergency Response Agreement if available)

* - N/A. If no Emergency Response Organization available within 30-minute response time additional personnel trained in rescue operations and equipped with rescue kit must accompany the climber(s).

TELEPHONE BOMB THREAT CHECKLIST

INSTRUCTIONS: BE CALM, BE COURTEOUS. LISTEN. DO NOT INTERRUPT THE CALLER.
YOUR NAME: _____ TIME: _____ DATE: _____
CALLER'S IDENTITY SEX: Male _____ Female ____ Adult ____ Juvenile ____ APPROXIMATE AGE: _____
ORIGIN OF CALL: Local _____ Long Distance _____ Telephone Booth _____

VOICE CHARACTERISTICS		SPEECH		LANGUAGE	
___ Loud ___ High Pitch ___ Raspy ___ Intoxicated	___ Soft ___ Deep ___ Pleasant _____ Other	___ Fast ___ Distinct ___ Stutter ___ Slurred	___ Slow ___ Distorted ___ Nasal _____ Other	___ Excellent ___ Fair ___ Foul	___ Good ___ Poor _____ Other
ACCENT		**MANNER**		**BACKGROUND NOISES**	
___ Local ___ Foreign ___ Race	___ Not Local ___ Region	___ Calm ___ Rational ___ Coherent ___ Deliberate ___ Righteous	___ Angry ___ Irrational ___ Incoherent ___ Emotional ___ Laughing	___ Factory ___ Machines ___ Music ___ Office ___ Machines ___ Street ___ Traffic	___ Trains ___ Animals ___ Quiet ___ Voices ___ Airplanes ___ Party ___ Atmosphere

BOMB FACTS

PRETEND DIFFICULTY HEARING - KEEP CALLER TALKING - IF CALLER SEEMS AGREEABLE TO FURTHER CONVERSATION, ASK QUESTIONS LIKE:
When will it go off? Certain Hour ____ Time Remaining_____
Where is it located? Building _____ Area
What kind of bomb? _____What kind of package? _____
How do you know so much about the bomb? _____
If building is occupied, inform caller that detonation could cause injury or death.

Activate malicious call trace: Hang up phone and do not answer another line. Choose same line and dial *57 (if your phone system has this capability). Listen for the confirmation announcement and hang up.
Call Security at _____ and relay information about call.

Did the caller appear familiar with plant or building (by his/her description of the bomb location)? Write out the message in its entirety and any other comments on a separate sheet of paper and attach to this checklist.
Notify your supervisor immediately.

FLOOD

Flood:

If indoors:

- Be ready to evacuate as directed by the Emergency Coordinator and/or the designated official.
- Follow the recommended primary or secondary evacuation routes.

If outdoors:

- Climb to high ground and stay there.
- Avoid walking or driving through flood water.
- If car stalls, abandon it immediately and climb to a higher ground.

CRITICAL OPERATIONS

During some emergency situations, it will be necessary for some specially assigned personnel to remain at the work areas to perform critical operations.
Assignments:

Work Area	Name	Job Title	Description of Assignment

- Personnel involved in critical operations may remain on the site upon the permission of the site designated official or Emergency Coordinator.
- In case emergency situation will not permit any of the personnel to remain at the facility, the designated official or other assigned personnel shall notify the appropriate _____ offices to initiate backups. This information can be obtained from the Emergency Evacuation Procedures included in the _____ Manual.

The following offices should be contacted:
Name/Location: _____ Telephone Number:_____
Name/Location: _____ Telephone Number:_____
Name/Location: _____ Telephone Number:_____

TRAINING

The following personnel have been trained to ensure a safe and orderly emergency evacuation of other employees:

Facility:

Name	Title	Responsibility	Date

Annex 14: Sample of Journey Management Plan

-This plan is required where the journey exceeds a timeframe of more than 4 hours on a public sealed road or two hours on an unsealed road/ track or where work is being conducted remotely.
-Any vehicle travelling Off Lease must be registered

Driver	**Passenger/s**
Divers License	**Vehicle Make**
Reg/Vehicle No	**First Aid Equipment Yes or No**

Journey Date		**Departure from**		**Company**	
Departure time		**Destination**		**ETA**	
Sat Phone		**Radio Frequency**		**Mobile**	

Reason for Journey/ Travel

Planned Route

Communication and Supervision Requirements

Contact Details of Site Person	

It is mandatory that communication is made on:

- *Departure from location*
- *Arrival at destination*
- *Unscheduled stops/ breakdowns*
- *Route deviations*
- *Any change in required activities*

Emergency Response/ Rescue Triggers

A satellite phone, first aid kit and plenty of water **MUST** be carried for travel to/in isolated locations and for all off-road travel on infrequently used tracks. The designated driver is responsible for making contact with their site contact person and Site Security to advise of arrival at destination. If a driver fails to make contact/arrive within *15 minutes* of a scheduled arrival, the nominated contact person will attempt to contact the worker. Where that contact fails the contact person will continue to attempt to make contact every *15 minutes* up to one hour past the scheduled contact time. After one hour of no contact the emergency response/ rescue plan is to be initiated.

Conditions *(These must be observed)*	**Yes**	**No**	**N/A**	Provision/ Vehicle Requirements ***(1-6 required)***	**Yes**	**No**	**N/A**
1. Appropriate license	☐	☐	☐	**1. Fire Extinguisher *(dry powder)***	☐	☐	☐
2. Vehicle registered	☐	☐	☐	**2. First Aid Kit**	☐	☐	☐
3. Vehicle inspections conducted	☐	☐	☐	**3. Radio**	☐	☐	☐
4. Driver experienced	☐	☐	☐	**4. Water container *(5 litres minimum)***	☐	☐	☐
5. Driver Fatigued	☐	☐	☐	**5. PPE *(hat, sunscreen etc)***	☐	☐	☐
5. Road conditions good	☐	☐	☐	**6. Adequate Fuel *(extra is recommended)***	☐	☐	☐

6. Weather conditions good	☐	☐	☐	7. Spare Wheels	☐	☐	☐
Weather potential issue to be evaluated on morning of travel				8. Shovel *(unsealed roads/ tracks)*	☐	☐	☐
				9. GPS *(where possible)*	☐	☐	☐
				10. Topographical Map *(where required)*	☐	☐	☐
				11. Hi visibility Flag/ dune poles	☐	☐	☐
Supervisor Signature:				Personnel Signature:			

Will combined working and driving time exceed 12 hrs? (Y/N)____

If yes, then alternative travel arrangements are required or an overnight rest location must be identified.

Will the journey involve travelling through areas where there are significant security risks, where medical emergency response services are not readily available or similar factors need to be given special consideration? (Y/N) _____

If the response to this question is yes, the section on the second page of this form, 'Additional Risk Reduction Measures', must be completed.

Primary Route/s	**Rest Stops**
Locations to be avoided or where extra precautions are to be taken (e.g. road works or known locations with high accident rates)	
Additional Risk Reduction Measures ***(Examples: Call-in frequency, travelling in convoy, travelling in daylight hours only)***	

Supervisor authorisation: _____or email acknowledgment – YES

To be signed by the driver's supervisor delegate or acknowledged by email

Journey completed:_____

To be signed by the driver

Is update of JMP required? YES / NO

A copy of this plan must be kept with personnel in the vehicle and a copy emailed to Site Security at least 24 hours prior to planned departure. If applicable, please attach a Map outlined planned route.

Annex 15: Needs Assessment

Safeguard Instruments Training Needs Analysis for Projects Implementation Teams on the IUFMP

Introduction

For training to be effective, it should be designed to meet

- *the requirements for improving Safeguard instruments being e.g ESMP practice on the project; and*
- *the specific needs of the people who attend the training session or course.*

The success of the safeguard training also depends upon the skills of those designing and presenting the courses. They need to be knowledgeable about the country's safeguard processes and experience, and have an understanding of their relationship to key characteristics of the societal setting.

The training needs analysis in this section is intended to assist the trainer/course designer in compiling the information that is required to design an effective safeguards training strategy, one that will build institutional and human capacity. Even if specific safeguard training needs have been already identified undertaking all or part of this analysis will still be useful. Current or recent safeguard instruments training and capacity building activities should be reviewed. This will help to determine the feasibility of any proposed safeguard training; for example by identifying priorities and demands for which there is no, or insufficient, provision. Specifically, the training needs analysis establishes:

- the purpose and scope of safeguard instruments training;
- the groups who require training; and
- the type and level of training that should be provided for each group.

The training needs analysis also examines the influence of the broader setting (including political, institutional, social, and environmental conditions) on the feasibility of and options for Safeguard Instruments training. Some of these conditions may constrain the introduction and/or implementation of the Safeguard Instruments process or elements such as public consultation. Others may provide opportunities for the use or strengthening of Safeguard Instruments, for example, to address pressing issues of sustainable development or to meet international lending or aid requirements. This information indicates how the design and delivery of Safeguard Instruments training are related.

Who needs to be trained?

Anyone with an involvement, or an interest, in the Safeguard Instruments process can benefit from training. However, experience indicates that the demand for training is more frequent from those stakeholders who have key roles in the Safeguard Instruments process. They also require more intensive training and stand to gain the most benefit from this.

Key target groups for Safeguard Instruments training include:

- practitioners — Safeguard Instruments project managers and environmental specialists who undertake the impact studies and analyses;
- Contractors — who handle specific projects for which a safeguard instruments have been developed;
- administrators — who manage the implementation of the Safeguard Instruments process, or ensure quality control of key aspects, such as public consultation, review of Safeguard Instruments reports; and
- decision-makers — who approve (or modify) proposals subject to Safeguard Instruments, and often need to be sensitized to the benefits of the Safeguard Instruments process.

Other participants in the Safeguard Instruments process, such as development planners and proponents, those involved in specialist areas such as social impact analysis and economic appraisal, local administrators and public, community and environmental interest groups may also require and benefit from training, but usually not in as much detail as the above groups.

Approach to training needs analysis

The approach to the analysis of training needs on this project requires a minimum of expertise on the part of the trainer/course designer. The training needs analysis is best carried out as a group process, most of the activities listed in this section can be undertaken directly by the trainer/course designer using telephone, mail and/or personal contacts.

The training needs analysis package provides guidance on the collection of background information and materials on Safeguard Instruments trends and experience on the project and the project area of influence. Resource aids and materials for undertaking and documenting the training needs analysis are provided at the end of this section.

Gathering information about the Safeguard Instruments system and experience

This part of the training needs analysis contains a checklist of information to collect and questions to be answered, and a table which, when completed, will give a sample of typical Safeguard Instruments. Some of this information may be known already by the trainer; the rest can be sought from government officials, practitioners, NGOs, academics, professional societies, published literature etc.

Overview of the Safeguard Instruments system and experience

Use the following points as a checklist of information to obtain an overview of the Safeguard Instruments system. The extent and comprehensiveness of this profile will depend upon the record of Safeguard Instruments experience to date on the project or state concerned.

Obtain key Safeguard Instruments documentation such as:

- copies of current Safeguard Instruments legislation, guidelines or policies; and
- a flowchart of the Safeguard Instruments process that identifies the key components and relationships

Summarize the history and evolution of Safeguard Instruments by reference to:

- important factors in the introduction (or non-introduction) of Safeguard Instruments;
- key dates and stages of Safeguard Instruments process development, including the introduction/revision of legislation, guidelines, policies etc.;
- the roles and relationships of key agencies in the Safeguard Instruments process, including those primarily responsible for the preparation of Safeguard Instruments reports;
- the number and type of Safeguard Instruments which have been undertaken, with a breakdown by development sector;
- examples of Safeguard Instruments application and their main features and results; and
- whether Safeguard Instruments is mandatory or discretionary, and under what circumstances it is applied (or not applied).

Characterize the Safeguard Instruments process by:

- summarizing the main principles of any Safeguard Instruments legislation, guidelines or policies;
- outlining the main features/provisions/requirements of Safeguard Instruments procedure;
- identifying any administrative arrangements/procedures for coordinating Safeguard Instruments within or between jurisdictions (e.g. within a federal state);
- noting other policies or strategies (such as a national or state sustainable development strategy) that are relevant to the application of Safeguard Instruments; and
- considering new or proposed directions in Safeguard Instruments process development.

Outline the lessons learned from SAFEGUARD INSTRUMENTS practice by:

- evaluating the quality of Safeguard Instruments reports in terms of their strengths and weaknesses;
- finding out whether Safeguard Instruments commences early or late in the design of the proposed projects and actions;
- noting the usage of Safeguard Instruments methods, such as checklists, matrices etc.;
- describing the nature and types of public participation;
- comparing the benefits and costs of public participation;
- determining the level of acceptance/recognition of the value of Safeguard Instruments by decision-makers;
- noting the use of mitigation measures for impact avoidance, minimisation, compensation and project modification and redesign;
- checking on the level of Safeguard Instruments follow up, including monitoring and management;
- establishing the degree of inter-agency cooperation and communication on Safeguard Instruments; and
- considering the strengths and weaknesses of legal or administrative bases of Safeguard Instruments.

Note: The following review is applicable primarily to situations where SAFEGUARD INSTRUMENTS practice is relatively well established. It can be undertaken directly by the trainer/course designer or provide the basis for a group exercise as part of the training needs analysis.

Evaluate the effectiveness of the Safeguard Instruments system by briefly answering the following questions:

- Is the Safeguard Instruments system based on clear and specific legal provisions?
- Is Safeguard Instruments applied to all proposed actions that are likely to have significant environmental and social impacts?
- Is the proponent required to consider the environmental and social impacts of reasonable alternatives to the proposed action?
- Does the Safeguard Instruments process require the following steps and actions and are they carried out satisfactorily?
    - screening to determine the proposed actions that are subjected to Safeguard Instruments;
    - scoping to identify the environmental and social issues and impacts of proposed actions and to establish terms of reference;
    - mitigation to reduce or offset impacts;
    - preparation of Safeguard Instruments report to meet prescribed information;
    - review of the quality of Safeguard Instruments report prior to its submission;
    - public review of and comment on Safeguard Instruments report prior to its submission;
    - response by the proponent to the results of public consultation and their inclusion in Safeguard Instruments report;

- final decision making on the proposed action takes account of the findings of Safeguard Instruments report; and
- terms and conditions established for project implementation and Safeguard Instruments follow up, including, as necessary, requirements for mitigation, monitoring, etc.

- Does the Safeguard Instruments process result in discernible environmental and social benefits?
- Are the financial costs and time requirements of the Safeguard Instruments system reasonable and acceptable to those involved?
- On balance, do the benefits of undertaking Safeguard Instruments outweigh the costs?
- Are programmes, plans and/or policies (as well as projects) covered by the Safeguard Instruments system or by a separate or equivalent process (usually called strategic environmental assessment)?

Review of Major Safeguard Instruments in the project area of influence

When completed, the table below will assist in building a systematic overview of Safeguard Instruments practice in the project area of influence and will help to identify case materials for training.

Review of major Safeguard Instruments in the IUFMP Project area of influence

Project Description and Setting	The IUFMP project is the first of its kind in Ibadan and includes flood control works and activities that are structural and non- structural across various communities in Ibadan.
Responsible Authorities	IUFMP Project Implementation Unit, Relevant Ministry and Departments and Agencies of Oyo State Government
Date Safeguard Instruments started & completed	Since commencement of the Project in 2015
Major Issues/Impacts reviewed	Environmental and social impacts associated with construction works in linear and nonlinear corridor
Safeguard Instruments Studies undertaken	The project has undertaken safeguard instruments on specific site projects and are in the process of translating the Environmental and social management plans into work order for compliance monitoring.
Type of Public Consultation	Focus group discussion, town hall meetings, and public hearing.
Quality and Content of Safeguard Instruments Report	The project has received safeguard reports adjudged as high quality.
Final Decision and Implementation	Need for improving the basic knowledge on safeguard instruments application particularly with respect to contractors and relevant MDAs to assure sustainability of projects outcomes.

Annex 16: Borrow Pit Remediation Plan

The use of geophysical method such as Vertical Electrical Sounding (VES) in the investigation of borrow pit site will minimize the trial pit methods that have left behind abandoned pits.
The presence of such small trial pits often has led to several pits littering the construction project area. Although the area disturbed by a single excavation operation generally at the time done might be small, the combined acreage in the area is substantial.
Some abandoned borrow pits are threats to public safety due to their dangerous vertical walls that are prone to landslides after heavy rains that enhance saturation and liquefaction. In some cases, abandoned burrow pit become filled with run off water from adjoining lands to become ponds as swimming pools, and many drown in the process.
Borrow pits containing stagnant water also become breeding ground for vectors like mosquitoes and tsetse flies borrow pits not containing water serve as dump sites of "end of live" vehicles. They can also be used for illegal dumping of urban wastes, and hide-out for criminal activities. When these situations arise close to residential areas, more socio - environmental problems confront residents.
The Contractor and /or the Client (PIU) should obtain a borrow pit license from the government.

According to NESREA regulations on construction, National Environmental (**Construction Sector)** Regulations, S. I. No. 19 of 2011; Locating a borrow pit close (200m) from the edge to an existing or a proposed highway is not permissible. Borrow pit sites are preferred on an escarpment with relatively higher elevation to the surroundings e.g (Figure 1).

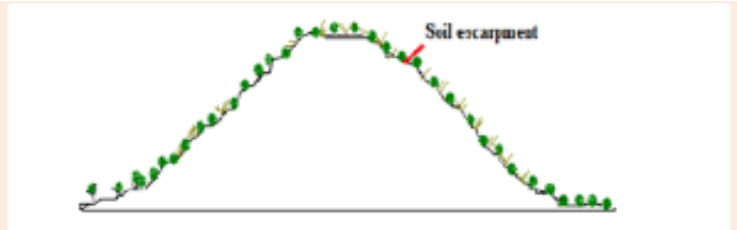


Figure 1: Preferred Burrow pit site on an escarpment

Both active and non-active borrow pits should have proper health, safety and environmental policies properly spelt out. Thus, borrow pit operators are expected to sign an agreement of total
reclamation or recovery of the land immediately after use, and provision of safety measures while operating the pit.
Standard excavators must be used to remove the dark topsoil and expose the red earth borrow material. Usually the excavated topsoil is dumped at the side of the planned pit as spoil heap. Area of topsoil removal and arrangement of spoil heap will depend on design of the borrow pit (Figure 2).

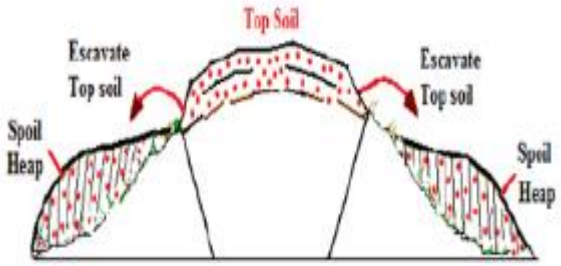


Figure 2: Cross- section of a new Burrow Pit site for excavation

Bench height, width, slope and total depth of pit must be properly designed following information obtained from the preliminary site investigation. Borrow pits shall not be opened without investigation, pit design, approved excavation plan with slope stability requirement nor opened and controlled by excavator operators without supervision. As soon as the burrow pit operation at a site for which the borrow pit was opened is concluded (Figure 3--4),

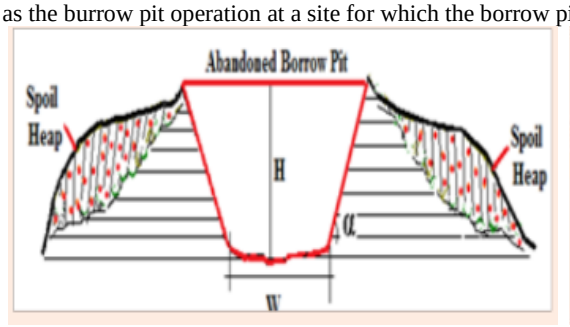


Figure 3: Mining completed

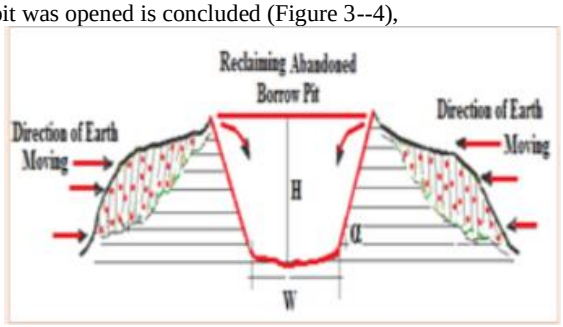


Figure 4: reclamation of abandoned pit with

with abandoned burrow pit excavated spoils
Legend: **H**= Depth of the slope, **W**= Width of the pit and **α** angle of the slope

Reclamation is commenced by moving the spoil heap back to the pit, followed by moving adjoining topsoil to fill the pit. There is no importation of fill material required. This operation goes with the compaction of the fill material using roller and testing the compacted earth to achieve the original soil characteristics and ground conditions and finally accomplished by turning the reclaimed site green.
The reclaimed site is completed by the planting trees, flowers, to improve the natural look of a reclaimed site and improve ecosystem services. Reclaimed site can be used for structural development such as recreational activities, holiday resort and community gardens depending on the land size.
The borrow pit active or reclaimed site safety measures and pit control should be in place. Borrow pits active or abandoned should be provided some safety measures to reduce accidents and risks. There should be perimeter fencing of the pit area (Figure 8), to prevent accident to human beings and other roaming animals into the pits. There should be only one gate for both entry and exit into the pit.
The pit area and the gate can be guarded 24 hours daily by vigilante and security personnel to avert trespassing. Warning signs are necessary at strategic locations to inform passersby of the understandable to all, including cattle grazers traversing the area.

Figures 5 - 8, represents a step by step field operation and completion of a borrow pit reclamation program

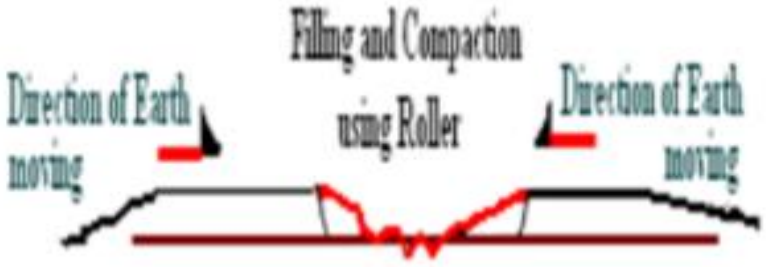


Figure 5: Testing Geotechnical Parameters

Figure 6: Reclamation Field Techniques

Figure 7: Reclaimed Borrow Pit Site turned Green; to Conform with Previous records Recreation Park,

Figure 8: Perimeter fence with safety warning sign.

Annex 17 Terms of Reference

1.0 Background

The World Bank is supporting the Oyo State Government to implement the Ibadan Urban Flood Management project (IUFMP) that aims at developing a long-term flood risk management framework by initiating risk assessment, community awareness, and providing enough flexibility in the project design to make changes based on learning. The project also supports capacity building for flood risk management in the city of Ibadan. It reinforces Oyo State government's early warning and response capabilities and leverages existing World Bank projects in Oyo State in support of the IUFMP.

Specifically, the Bank's support will finance some priority investments related to improving the infrastructure of Ibadan City, especially those destroyed by August 26, 2011 floods. The Bank's support will help Ibadan reduce flood risks, improve waste collection and treatment, while developing and improving the quality of existing infrastructural assets.

The project has been designed to keep a good balance between urgent post disaster needs (dredging, reconstruction of bridges, roads, etc.) and medium-to-long term needs (institutional support, upgrading existing and building new infrastructure to upgrade services and mitigate future risks). Selected sub - projects should comply with regional and local government plans, address critical issues described above to integrate planning and operational aspects that maximize the benefits of infrastructure investments to the beneficiary communities in the long run.

The Project Development Objective (PDO) is to "improve the capacity of Oyo State to manage flood risk and to respond effectively and promptly to flooding in the city of Ibadan".

2.0 GOAL OF THE CONSULTANCY SERVICE

The purpose of the ESIA is to identify potential and significant adverse environmental and social impacts and to propose means of mitigating them to acceptable levels. The ESIA will also consider the capacity of existing institutions to manage the predicted environmental and social issues and implement an Environmental and Social Management Plan (ESMP) for this purpose.
The aim of the study is to achieve the following objectives:

- To identify and assess potential environmental and social impacts of the project, particularly all potential significant adverse environmental and social impacts, of the projects and recommend measures for mitigation.
- Assess the alternatives to the proposed project from the point of view of environmental and social impacts and associated risks.
- Identify the potential cumulative impacts that the operation of Kudeti Channelization and the rehabilitation of the associated structures will entail.
- To develop an Environmental and Social Management Plan (ESMP).
- To prepare an Environmental and Social Impact Assessment report in compliance with the relevant and applicable mandatory requirements and procedures.

3.0 SPECIFIC OBJECTIVES:

The specific objective is for the Consultant to assist Oyo State to undertake studies and prepare Environmental and Social Impact Assessment (ESIA) for the Kudeti Channel and associated structure in the first pool of priority works for the Flood Risk Management & Drainage Master Plan (FRM&DM) for Ibadan City. The Environmental and Social Impact Assessment (ESIA) should be in compliance with the World Bank environmental, social safeguards policies and procedures, the Oyo State Ministry of Environment and Water Resources and the Federal Ministry of Environment guidelines and procedures. The Terms of Reference (TOR) define the scope of work and core tasks to be undertaken by the Consultant. The Consultant is expected to make reference to the feasibility study report and the engineering designs of the proposed interventions.

The proposed studies are as follows:

- To conduct an Environmental and Social Impact Assessment of the planned developments in order to identify and assess their potential environmental and social impacts;
- To carry out consultations with relevant stakeholders, including potential project-affected persons, to obtain their views and suggestions regarding the environmental and social impacts of the proposed channelization of the Kudeti River and rehabilitation of the associate structures. The outcome of the consultations will be reflected in the ESIA report and incorporated into the project design as appropriate;
- To develop a spatial analysis of the area of influence of the project and prepare a base map with appropriate overlays using GIS and image treatment software (e.g. Arc View).
- To assess the capacity of existing agencies and institutions to monitor and manage the ESMP.
- To prepare and cost an Environmental and Social Management Plan (ESMP) detailing mitigation measures as well as institutional roles and responsibilities in the operation of the ESMP;
- Establish and benchmark the existing state of the environment and identify sensitive components of the existing environment within the project area and area of influence.

- Assist project design and planning by identifying those aspects of location, construction and operations, which may cause adverse environmental, social, health and economic effects, including strong focus on land issues - ownership, tenure, conflict and gender inequality /vulnerability trend;
- Recommend measures during construction, commissioning and operation to avoid and mitigate these adverse effects and to enhance beneficial impacts that will be part of the ESMP;
- Identify existing and expected environmental regulations that will affect the development and advise on standards and targets;
- Identify any future environmental issues and concerns which may affect the development of the project, including cumulative and induced impacts;
- Recommend an environmental management program for the channelization including compliance, monitoring, auditing and contingency planning;
- Provide the basis for co-operation and consultation with regulatory and non-regulatory authorities and the public.

4.0 RATIONALE FOR THE ESIA

The site visits undertaken by the DMP & SESA Consultants, PIU & relevant Government MDAs lead to the documented Inception Reports from both consultants (and Screening Report by the SESA Consultant) which had been reviewed by the Client (PIU and MDAs). These reports revealed the existing and potential flood hazard to the affected locations and confirmed the rationale for the ESIA at the Kudeti River Channel.

Kudeti stream is one of the tributaries of Ogunpa channel. It is proposed to channelize this stream by lining the side slopes for a length of **2100m** length starting north east from Orita Aperin Bere Road and near the United Missionary Church of Africa starting from the Location Id no. 271 and ending south west at the confluence with Ogunpa Channel at the location Id no. 363, refer to Figure 1 below.

The proposed channel crosses 5 roads. It crosses Orita Aperin Bere main road with a bridge that appears with good condition. Then, it passes by 4 secondary roads (Omiyale road, Asanke road and Yejide Avenue) with 3 bridges and 1 multi-cell Culvert.

This channel includes six structures with the Id numbers**:** 270, 271, 272, 367, 393 and 363, of which only Location Id 367 at Agbongbon area of Kudeti was found to be inadequate. . (Details of these structures are sorted from the Progress Report II of the First pool of Priority investment by Dar Al Handasah.) .

The main challenge at the Kudeti channel is the lack of appropriate waste disposal system that results in Hydraulic structures clogging leading to flooding and various environmental problems that constitutes most of the health challenges in the area. The ESIA is envisage to address or give a proviso to mitigate or prevent recurrence of channel blocking by wastes also at project operational stage.

Table 1 below indicates some characteristics of the channel, Environmental and Social categorization and the World Bank safeguard Policy triggered, using the previously prepared and updated checklist in the Project's ESMF & previous ESSC undertaken.

Table 1: Proposed Dimension of Channels

River Name (ID)	Channel Length (m)	Channel Bed Width (m)	Channel Depth (m)	Side slope Lined (m/m) H:V	Top Width (m)	Lining Material	Safeguards Instruments	Applicable World Bank Safeguards Policies triggered
Kudeti (C55)	2077	25	3	2	37	Concrete	ESIA	OP 4.01

Source: Extracted from first pools of sites - progress report II (July 2017)

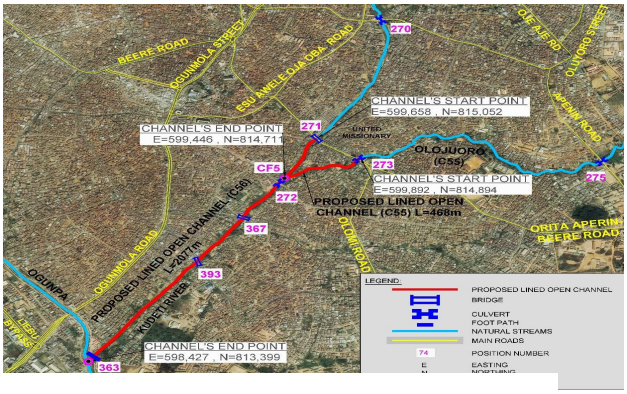


Figure 1: Kudeti Proposed Channel Location Id No. 367

Based on the site visit, it was agreed with the Client to rehabilitate one of the structures on Kudeti stream. The location Id of this structure is no. **270**, refer to Figure 2.15. Integrated Flood Risk Management and Drainage Masterplan for Ibadan City First Pool of Priority Investments Progress Report II

5.0 Proposed Civil Works

Designing the return period of a potential crossing structure (bridge, culvert and Irish crossings) depends mainly on the degree of the road which crosses the stream. The road degree (Expressway, Highway, Secondary or Local Road) indicates the importance of the road and the risk of crossing structure's deterioration, damage or submergence.
Culverts under expressways shall be designed for a 100 year return period while main roads for 50 years return period and secondary and local roads for 25 years return period. However, it is necessary to ensure that the storm water doesn't overtop the road during the 100 years return period storm for all cases. It is important to note that proposed culverts along proposed open channel shall be designed for return periods equal to that of its associative open channel. On the other hand, bridges are mainly used in expressways and highways. These highly important structures usually cross main Rivers. In this respect, all bridges shall be designed for a 100 year return period. In addition, a bridge must be able to pass a 100-year flow with an adequate freeboard (75cm to 100cm). The FRM&DM recommends the design return periods presented in Table 2 for Ibadan City.

Table 2: The design for return period for structures in Ibadan

Element	Design Return Period (years)
Culverts	
Expressways	100
Main Roads	50
Secondary & Local Roads	25
Bridges	100
Detention Ponds	
Watershed area < 1 km²	10
Water shed area 1 – 5 km2	25
Water shed area 5 – 100 km2	50
Watershed ≥ 100 km²	100
Levees and Dams	100

Source: Extracted from first pools of sites - progress report II (July 2017)

5. I.0 Drainage Infrastructure Items

The drainage infrastructure items include the following works:

- Excavation/Earthworks

- Concrete and Steelwork
- Structures (Culverts/Bridges)
- Channels (Lined/Earth)

5.1.1 Excavation/Earthworks

This item covers earthworks for earth or concrete channels and conduits. Earth work is expected to be mechanized, in different sections of the project area.

5.1.2 Concrete and Steelwork

The concrete and steel works to be encountered in the proposed systems has been divided into the following categories:
• Concrete Lining (22 -25MPA), 15 cm thickness

 Concrete for Culverts (30 to 35MPA), 40 cm thickness

• Reinforcement: High tensile steel reinforcement of all diameters

5.1.3 Structures (Culverts/Bridges)

Culvert's barrel length varies from 10 to 60m according to the type of crossing with different kinds of roads, while bridge widths vary from 20m to 30m. For both structures, there are necessary accessories such as culvert inlets, outlets, fences and guardrails. See table 2.

5.1.4 Channels

As shown in Table 1, the earth channels or channels to be provided with river training are mainly based on excavation works, while the lined channels is based on both excavation and lining. The concrete lining of the side slopes with a thickness of 15cm and providing a key to the lining section with an initial dimension of 30cm x 2m. The proposed section is presented in Figure 10

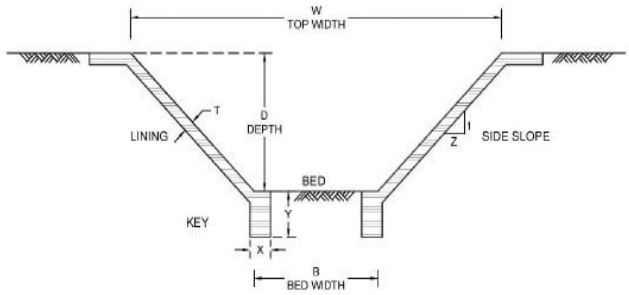


Figure 10: Typical Cross-Section for a Lined Channel

6.0 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)

A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. Environmental Assessment for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance.

The ESIA for the Kudeti Channel shall identify and evaluate potential environmental and social impacts that sub-projects activities may pose which shall be done in consultation with stakeholders, including PAPs. Public consultations are critical in preparing proposals for sub-project activities likely to have impacts on the environment and populations within the project site. The public consultations should identify key issues and determine how concerns of all stakeholders will be addressed in the ESIA.

7.0 SCOPE OF WORK FOR SITES WITH ESIAs AND ESMPs.

The consultant is expected to work in close collaboration with the FRM&DM consultants and Project Implementation Unit (PIU) environmental and social safeguard team, and with other relevant MDAs and consultants as directed by the PIU. The prospective consultancy firm will assess the environmental and social impact of the proposed works, and develop an action plan to mitigate the negative impacts. The consultant will equally consider the capacity of existing institutions to manage the expected environmental and social concern presented in the Environmental and Social Management Plan.

The consultant will have to receive the draft technical studies in order to take into account the technical variants of the proposed activities and also in return, inform the technical design consultants of any major constraint that may arise due to the social and environmental situation on the ground. The consultant will visit the entire project area as delimited in the given detailed design. The consultant will take into account the proposed civil engineering designs, vegetative land management measures and other activities aimed at reducing or managing runoff that would be carried out within the sub-watershed. The consultant will assess natural resources and infrastructure potentially affected during project implementation and operation and select the management strategies needed to ensure that environmental and social risks are appropriately mitigated.

The ESIA report shall be presented in a concise format containing all studies, processes, analyses, tests and recommendations for the proposed intervention. The report shall focus on the findings, conclusions and any recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. It should provide a description of the specialist studies undertaken and the report should include a bibliography, maps, photographs, diagrams and any other diagrammatic representation needed to facilitate understanding of the main text, detailed data should be presented in annexes or a separate volume. Unpublished documents used in the assessment should also be included or referenced in an appendix and the location of the originals of such documents indicated.

7.1.0 THE CORE TASKS FOR THE CONSULTANT

These shall include:

- Reviewing existing documentation of the IUFMP such as the ESMF and the PAD;
- Reviewing the Environmental Assessment procedures of the World Bank safeguards policies especially Environmental Assessment (OP 4.01);
- Describing the proposed project by providing a synthetic description of the project relevant components and presenting plans, maps, figures and tables;
- Identifying the policy, legal and administrative framework relevant to the project.
- Defining and justifying the project study area for the assessment of environmental and social impacts;
- Describing and analysing the physical, biological and human environment conditions in the study area before project implementation. This analysis shall include the interrelations between environmental and social components and the importance that the society and local populations attach to these components, in order to identify the environmental and social components of high value or presenting a particular interest;
- Identify the range of potential project affected persons / communities in the catchment area, the socio economic activities and the impact on these activities and also profer appropriate mitigation measures as required.
- Presenting and analysing alternatives to the proposed project, including the "without project" option, by identifying and comparing the alternatives on the basis of technical, economic, environmental and social criteria;
- For the selected alternative, identifying and assessing potential importance of beneficial and adverse environmental and social, direct and indirect, short and long-term, temporary and permanent impacts, on the basis of a rigorous method;
- Defining appropriate mitigation/enhancement measures to prevent, minimise, mitigate, or compensate for adverse impacts or to enhance the project environmental and social benefits, including responsibilities and associated costs;
- Addressing potential cumulative effects taking into account other initiatives planned in the study area and its impacts on adjoining communities and infrastructures;;
- Developing an environmental and social monitoring program, including indicators, institutional responsibilities and associated costs;
- As appropriate, preparing an 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;
- Identifying institutional responsibilities and needs for capacity building if necessary to implement the recommendations of the environmental and social assessment;
- Carrying out consultations with primary and secondary stakeholders in order to obtain their views and preoccupations about the project. These consultations shall occur during the preparation of the ESIA/ESMP reports to identify key environmental and social issues and impacts, and after completion of the draft reports to obtain comments from stakeholders on the proposed mitigation/enhancement measures;
- Consultations with stakeholders shall preferably as units as may be deemed appropriate for meaningful and unbiased discussions; on the objective of the project and applicable consequences or impacts and mitigation measures, and document clearly the discussions, concerns, input, questions and how each question or concerns were addressed;
- Collate data on the size and social structure of the local population, and assessment of the groups expected to be impacted directly or indirectly by the project: their needs, their demands, their ability to deal with change, the existing human capital in the form of education and skills and the potential for improving that, gender issues, and vulnerable groups, and the need for measures of mitigation;
- Develop an appropriate, all inclusive (women, youth, aged and all other vulnerable groups) stakeholders engagement plan, grievance redress mechanism and communication strategy
- Gain a good understanding of the communities likely to be affected by the project by preparing a Community Profile which includes: (a) a thorough stakeholder analysis; (b) a discussion of the socio-political setting; (c) an assessment of the differing needs, interests, values and aspirations of the various subgroups of the affected communities including a gender analysis; (d) an assessment of their impact history, i.e. their experience of past projects and other historical events; (e) a discussion of trends happening in those communities; (f) a discussion of the assets, strengths and weaknesses of the communities; and (g) optionally the results of an opinion survey. This task is typically called profiling.
- Fully inform community members about: (a) the project; (b) similar projects elsewhere to give them a sense of how they are likely to be affected; (c) how they can be involved in the ESIA; (d) their procedural rights in the regulatory and social performance framework for the project; and (e) their access to grievance and

feedback mechanisms.

- Devise inclusive participatory processes and deliberative spaces to help community members: (a) understand how they will be impacted; (b) determine the acceptability of likely impacts and proposed benefits; (c) make informed decisions about the project; (d) facilitate community visioning about desired futures; (e) contribute to mitigation and monitoring plans; and (f) prepare for change.
- Preparing the ESIA Reports according to the generic contents presented in Part A hereafter.

7.1.1 The following socio-economic issues shall be addressed in the ESIA Reports:

- Establish social baseline for pre project intervention
- Determine the project's social impacts on health and social well-being ; quality of the living environment; economic material well-being ;Family and community ; and gender relations
- Present a summary of the impacted communities for the project: location, access, population (number, demographic and social characteristics); economy (employment rate, income distribution); services (types, capacity, and adequacy) and housing. Concern is the ability to provide work force, service new development and absorb and adjust to growth (worker/family). . The report should identify and assess the social impacts identified during the public consultation process and those that, based on consultant's experience, are also likely to occur. In some instances the affected communities may not be aware of or be in a position to identify all the social impacts that may occur. However, this does not mean that they will not occur. In such cases the consultant should use his/her experience to identify additional social impacts that have not been raised by the public. A summary of the views of the population should include vulnerable groups, determined through thoroughly documented discussions with local communities. These meetings and discussions must be documented and should show how issues and problems raised are or will be resolved
- Pay particular attention to the impacts of the project on vulnerable and marginalized individuals and groups (including but not limited to mobility impaired individuals and groups and People Living with Disability)
- Detail measures that will need to be taken to mitigate the negative social impacts identified and the procedures for their implementation;
- Identify key uncertainties and risks**:** Identify and communicate any key uncertainties and risks associated with the accuracy of the findings of the social assessment, as well as of the proposed project. Some sources of uncertainty and risk commonly associated with projects are linked to: (a) Lack of adequate information at the community level; (b) Creation of employment and business opportunities for members from the local, historically disadvantaged communities; (c) The influx of job seekers and construction workers to the area and the impact on services; etc.
- Assess the impact of the construction on individuals and groups whose livelihoods are tied to the route/road (motor cycle taxi and tricycle operators etc.). As part of consultations, the ESIA/ESMP should identify the potential negative impact on the livelihoods of these individuals and groups and propose appropriate mitigation measures
- Assess potential impact of the project on property access and suggest measures to minimize the effects on property access
- Information will be gathered from field surveys and secondary data sources (interviews, structured questionnaires, in-depth interviews and focus group discussions).

The contents of the ESMPs and ESIAs are found in Annexes 2 and 3 respectively.

8.0 STAFF REQUIREMENTS

8.1 Qualifications and team composition: The Consultancy Firm should mobilize a team of key experts as follows: It is highly desirable that the consultant have experience with working with international development institutions like the World Bank, and on infrastructure related projects.

8.1.1 Key expert 1: Team Leader;

- Team Leader, with a strong background in Environmental Management and proven experience in preparation of Environmental and Social Impact Assessments (ESIAs)/Environmental and Social Management Plan (ESMPs).
- Must hold a Master Degree in Environmental related courses;
- Must have at least 15 years of general professional experience in practical safeguards, social and environmental management with demonstrated proficiency in the preparation, review, and approval of EAs/ESIAs/ESMPs to meet World Bank standards.
- Familiarity with the community and environment slated for intervention will be an added advantage.
- Experience with, and a professional/technical background appropriate for understanding both the environmental and social management implications of flood risk intervention projects, especially in urban areas, including their design, construction, operation and monitoring.
- Excellent analytical, communication and writing skills.

8.1.2 Key expert 2: Hydrologist

- Relevant university degree in Civil/ Hydraulic Engineering and preferably a postgraduate degree
- At least 10 years' experience in similar types of assignments for Bank supported projects
- Track record of experience on review and analysis of structural designs as well as hydrological, geotechnical and hydro mechanical impacts;
- Ability to review and incorporate the impacts in the draft designs and construction plans /schedule of the

reconstruction / rehabilitation works.

8.1.3 Key expert 3: Social Specialist;

- Relevant university Specialist degree in social sciences with at least 8 years of experience
- Relevant experience development of social management plans, stakeholder engagement and community development projects, preferably with public sector projects.
- The specialist will have substantial international experience with socio-economic assessments, preferably in the context of social assessments in infrastructure project
- Expertise in areas related to community mobilization, participatory tools and consultation with stakeholders
- Expertise in preparing and testing surveying tools and Household Surveys

Lead the socio economic survey

8.1.4 Key expert 4: Biologist/biodiversity specialist;

- A biologist/biodiversity specialist with at least 8 years of experience and degree in Biology or related university degree.
- Extensive knowledge of local species of fauna and flora and previous work experience in the community area will be an advantage.

8.2.0 Other Experts; other experts will be needed to support the work of the key experts, experts in the field of air quality and noise modeling etc. The consultants are free to develop a complete staffing for their proposal and working plan.

9.0 WORKING ARRANGEMENTS

The Team Leader of the firm will report directly to the Project Coordinator of the PIU (IUFMP) Oyo State, Nigeria.

9.1 Deliverables and timing:

- **Inception Report:** An ESIA inception report for the specific intervention will be submitted for discussion and comments in **2 weeks** from the date of signing of contract.
- **Draft report:** A draft ESIA Reports for the specific intervention will be submitted for comments in **12 weeks** from the date of signing the contract. It will identify all the areas, the mitigation measures, and the environmental and social issues associated with the site intervention sub-projects, as well as the adequacy of the monitoring and institutional arrangements in the intervention site.
- **Draft Final Reports:** The draft final ESIA Reports for the specific site will take into account all comments from the client and World Bank, and will be submitted to the PIU at the end of **14 weeks** after commencement of contract.
- **Final Reports:** The Final ESIA reports will be submitted after the successful disclosure of the draft final reports, **16 weeks** after the commencement of the contract.
- The consultant will submit twelve (12) hard copies and a soft copy of the respective reports at each stage of the report for the specific interventions. Also, all raw data related to the work which are not included in the reports will be submitted to the client in CDs.

.Table 3: Deliverables and Timing

Activities	**Week 1**	**Week 2**	**Week 12**	**Week 14**	**Week 16**
Contract Signing	X				
Submission of Inception Reports		X			
Submission of Draft Reports			X		
Submission of Draft Final Reports				X	
Submission of Final Reports					X

10.0 Responsibilities of IUFMP

- The Consultant shall report to the Project Coordinator of the Project Implementation Unit (PIU) of IUFMP.
- The Consultant would especially carry the PIU along in the Stakeholders consultative forum.
- The Consultant may seek Technical assistance from the PIU Specialists, especially the Environmental and Social Safeguards Specialists of the PIU.
- The Draft Reports and Draft Final Reports would be reviewed by the PIU, relevant MDAs & World Bank.
- In addition to the supervision and other responsibilities contained in the contract for this consultancy, the IUFMP shall provide the consultant with the following:
    - All relevant project Documents & Reports;
    - Intervention design ;
    - Access to relevant officials, groups and communities

10.1 Payment Schedule

10 % of Contract sum on submission of Inception Report

30 % of Contract sum on submission of Draft Report

40% of Contract sum on submission of Draft Final Report

20% of Contract sum of submission and Acceptance of Final Report

PART A: CONTENTS OF AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT

The typical contents of an ESIA Report are presented hereafter. It shall be noted that the presentation of the Report may be adapted pending on the nature and specific requirements of the Channel and structure.

1.0 Executive Summary

This section shall present in a non-technical language a concise summary of the ESIA Report with a particular attention on the processes and procedures used; baseline conditions; the alternatives considered; mitigation/enhancement measures; monitoring program; consultations with stakeholders; capabilities of environmental and social units and actions to strengthen those capacities; and cost implications. This Executive Summary shall be written in English and a local language, if necessary for public consultations.

1.1 Introduction

The Introduction shall indicate the purpose of the ESIA, present an overview of the proposed project to be assessed, as well as the project's purpose and needs. This section identifies the project sponsor and the consultant assigned to carry out the ESIA. It shall also briefly mention the contents of the ESIA Report and the methods adopted to complete the assessment.

1.2 Policy, Legal and Administrative Framework

This chapter concerns the policy, legal and administrative framework within which the ESIA is carried out. It presents the relevant environmental and social policies of the Bank and borrowing country, as well as the national legal requirements and related constraints (e.g. practices that may discriminate or exclude any stakeholder group) relevant to the project. It provides information on the environmental requirements of any co-financiers, and identifies relevant international environmental/social agreements to which the country is a signatory.

1.3 Project Description and Justification

The first part of this chapter shall describe the proposed project and its geographic, ecological, social, economic and temporal context: project location, various project components, capacity, construction activities, facilities, staffing, working conditions, availability and source of raw materials, production methods, products, schedule of works, land tenure, land use system, potential beneficiaries, affected groups (directly and indirectly), and offsite investments that may be required.

This section shall determine and characterise the anticipated liquid, solid and gaseous discharges from the processes, as well as the sources of nuisance such as noise, odours, visual nuisances, etc. It shall indicate the need for any resettlement plan or vulnerable group's development plan. It shall at least include a map showing the project location and area of influence.

The project justification should be based on combined economic, environmental and social assessments. To this end, this chapter shall describe the current situation in the sector, explain the problems or the needs to be satisfied by the project and present the constraints associated with the project implementation.

Overall the description and justification of the project shall cover at least the following elements:

- Spatial requirements (sites required for works).
- Project layout characteristics (including site location map).
- Socio-cultural factors or constraints, such as customs and beliefs.
- Natural and human resources requirements.
- Temporary (during construction) and permanent infrastructures.
- Existing and proposed location of human settlements and public services such as health centres and accident and emergency units.
- Construction activities (land clearing, burning, excavation, blasting, extracting, filling, compacting, waterways crossing, use of heavy machinery, etc.).
- Anticipated liquid, solid (including waste) and gaseous emissions, and sources of nuisances (at construction and operation stages).
- Construction schedules and costs.
- Maintenance works and associated costs.
- Consultation approaches and participation mechanisms.

1.4 Description of the Project Environment

This chapter shall first determine the limits of the study area that shall be defined in order to encompass all project direct and indirect impacts. The description and analysis of the physical, biological and human conditions shall address

relevant environmental and social issues within this area, including any changes anticipated before project implementation.

Within the human environment, key issues that shall be considered include population characteristics and trends, revenue disparities, gender differences, health problems, natural resource access and ownership, land use patterns and civil society organisation level.

It shall also address the interrelations between the environmental and social components and the importance (value) that the society and local populations attach to these components, in order to identify the environmental and social components of high value or presenting a particular interest. A particular attention shall be given to the rare, threatened, sensitive or valorised environmental and social components.

The information presented shall be relevant to decisions about project location, design, operations as well as environmental and social management. Maps, figures and tables shall be included in this chapter to better illustrate the various environmental and social components.

1.5 Project Alternatives

This part of the ESIA Report consists in analysing the various feasible alternatives of the project, including the "without project" option. It normally comprises two sections. The first section identifies and describes the potential feasible alternatives that would allow reaching the project objectives. The second section presents a comparison of the potential alternatives on the basis of technical, economic, environmental and social criteria, as well as of public views and concerns.

The alternative comparison shall address the proposed project site, technology, design, and operation, in terms of their potential environmental and social impacts and the feasibility of mitigating these impacts. For each of the alternatives, the environmental and social impacts shall be quantified as possible, including their economic values where feasible. The selected alternative shall be the most environmentally and socially sustainable, taking into account the technical and economic feasibility.

1.6 Potential Environmental and Social Impacts and Mitigation/Enhancement Measures

This chapter presents a detailed analysis of beneficial and adverse impacts of various components of the selected project alternative on the physical, biological and human (social, cultural and economic) environments. The methodology of assessment, based on a rigorous scientific method, shall be first presented. Then all environmental and social, direct and indirect, short and long-term, temporary and permanent impacts shall be described and assessed, indicating their importance level and their probability of occurrence. The importance level may be assessed on the basis of the nature, extent, intensity and duration of the impact, as well as on the sensitivity of the concerned environmental and social components and perceptions of the public. Irreversible or unavoidable impacts shall be clearly identified. Cumulative effects shall also be addressed taking into account other projects or actions planned in the study area.

Appropriate mitigation measures shall be identified to prevent, minimise, mitigate or compensate for adverse environmental and/or social impacts. Moreover, enhancement measures shall be developed in order to improve project environmental and social performance. Roles and responsibilities to implement measures shall be clearly defined. The cost of the measures shall be estimated, including the cost for environmental and social capacity building and gender mainstreaming, if necessary. Residual impacts shall be presented.

1.7 Environmental Hazard Management

Whenever relevant, this chapter shall describe the security measures and propose a preliminary contingency plan for the construction and operation phases of the project (possible contingency situations, major actions to properly react to accidents, responsibilities and means of communications).

For projects that may cause major technological accidents whose consequences may exceed the project site, the ESIA shall include an analysis of the technological accident risk: identification of hazard and potential consequences, estimation of the consequences' magnitude and frequency, and risk estimation and evaluation.

1.8 Environmental and Social Monitoring Program

The first section of this chapter shall describe the surveillance measures aiming at ensuring that the proposed mitigation and enhancement measures are effectively implemented during the implementation phase. The second section concerns the environmental and social monitoring activities designed to measure and evaluate the project impacts on some key environmental and social components of concern and to implement remedial measures, if necessary. Indicators, roles and responsibilities shall be clearly defined. The cost of the program shall be estimated, including the cost for environmental and social capacity building if necessary.

1.9 Public Consultations

This chapter shall summarise the actions undertaken to consult the groups affected by the project, as well as other concerned key stakeholders including Civil Society Organisations. The detailed record of the consultation meetings shall be presented in annex to the ESIA Report.

1.10 Summary and Recommendations

The summary and recommendations shall specify the environmental and social acceptability of the project, taking into account the impacts and measures identified during the assessment process. It shall also identify any other condition or external requirement for ensuring the success of the project.

2.0 Annexes

- Summary of World Bank Safeguard Policies
- List of the professionals and organisations having contributed to the preparation of the ESIA Report.
- List of consulted documents, including project-related reports.
- Baseline data referred to in the Report.
- Record of consultation meetings with primary and secondary stakeholders.
- General Environmental Management Conditions for Constructions/Civil Works.
- References

Annex 18: **OUTLINE OF LABOUR MANAGEMENT PROCEDURES (LMP)**

Section 1: OVERVIEW OF LABOUR USE ON THE PROJECT: This section describes the following, based on available information:

- ***Number of Project Workers***: The total number of workers to be employed on the project, and the different types of workers: direct workers, contracted workers and community workers. Where numbers are not yet firm, an estimate should be provided.
- ***Characteristics of Project Workers***: To the extent possible, a broad description and an indication of the likely characteristics of the project workers e.g. local workers, national or international migrants, female workers, workers between the minimum age and 18.
- ***Timing of Labor Requirements***: The timing and sequencing of labor requirements in terms of numbers, locations, types of jobs and skills required.
- ***Contracted Workers***: The anticipated or known contracting structure for the project, with numbers and types of contractors/subcontractors and the likely number of project workers to be employed or engaged by each contractor/subcontractor. If it is likely that project workers will be engaged through brokers, intermediaries or agents, this should be noted together with an estimate how many workers are expected to be recruited in this way.
- ***Migrant Workers***: If it is likely that migrant workers (either domestic or international) are expected to work on the project, this should be noted and details provided. A labour in-migration plan will be included in this LMP if there is going to be substantial population of migrant workers as a result of the project.

Section 2: ASSESSMENT OF KEY POTENTIAL LABOR RISKS: This section describes the following, based on available information:

Project activities: The type and location of the project, and the different activities the project workers will carry out.

Key Labor Risks: The key labor risks which may be associated with the project (see, for example,

- The conduct of hazardous work, such as working at heights or in confined spaces, use of heavy machinery, or use of hazardous materials
- Likely incidents of child labor or forced labor, with reference to the sector or locality
- Likely presence of migrants or seasonal workers
- Risks of labor influx or gender based violence
- Possible accidents or emergencies, with reference to the sector or locality
- General understanding and implementation of occupational health and safety requirements

Section 3: BRIEF OVERVIEW OF LABOR LEGISLATION: TERMS AND CONDITIONS

This section sets out the ***key aspects*** of national and local labor legislation with regards to term and conditions of work (e.g national minimum wage law, local content laws etc) , and how such legislation applies to different categories of workers identified in Section 1. The overview focuses on legislation which relates to the items set out in ESS2, paragraph 11 (i.e. wages, deductions and benefits).

Section 4: BRIEF OVERVIEW OF LABOR LEGISLATION: OCCUPATIONAL HEALTH AND SAFETY

This section sets out the ***key aspects*** of the national labor legislation with regards to occupational health and safety, and how national legislation applies to the different categories of workers identified in Section 1.

Section 5: **RESPONSIBLE STAFF**

This section identifies the functions and/or individuals within the project responsible for (as relevant):

- engagement and management of project workers
- engagement and management of contractors/subcontractors
- occupational health and safety (OHS)
- training of workers
- addressing worker grievances

In some cases, this section will identify functions and/or individuals from contractors or subcontractors, particularly in projects where project workers are employed by third parties.

Section 5: POLICIES AND PROCEDURES

This section sets out information on OHS, reporting and monitoring and other general project policies. Where relevant, it identifies applicable national legislation.

Where significant safety risks have been identified as part of Section 2, this section outlines how these will be addressed. Where the risk of forced labor has been identified, this section outlines how these will be addressed Where risks of child labor have been identified, these are addressed in Section 7.Where the Borrower has stand-alone policies or procedures, these can be referenced or annexed to the LMP, together with any other supporting documentation.

Section 6: AGE OF EMPLOYMENT

This section sets out details regarding:

- The minimum age for employment on the project
- The process that will be followed to verify the age of project workers
- The procedure that will be followed if underage workers are found working on the project
- The procedure for conducting risk assessments for workers aged between the minimum age and 18

Section 7: TERMS AND CONDITIONS

This section sets out details regarding:

- Specific wages, hours and other provisions that apply to the project
- Maximum number of hours that can be worked on the project
- Any collective agreements that apply to the project. When relevant, provide a list of agreements and describe key features and provisions
- Other specific terms and conditions

Section 8: GRIEVANCE MECHANISM

This section sets out details of the grievance mechanism that will be provided for direct and contracted workers, and describes the way in which these workers will be made aware of the mechanism. Where community workers are engaged in the project, details of the grievance mechanism for these workers is set out in Section 11.

Section 9: CONTRACTOR MANAGEMENT

This section sets out details regarding:

- The selection process for contractors (or sub-contractors)
- The contractual provisions that will put in place relating to contractors for the management of labor issues, including occupational health and safety.
- The procedure for managing and monitoring the performance of contractors.

Section 10: COMMUNITY WORKERS

Where community workers will be involved in the project, this section sets out details of the terms and conditions of work, and identifies measures to check that community labor is provided on a voluntary basis. It also provides details of the type of agreements that are required and how they will be documented. This section sets out details of the grievance mechanism for community workers and the roles and responsibilities for monitoring such workers.

Section 11: PRIMARY SUPPLY WORKERS

Where a significant risk of child or forced labor or serious safety issues in relation to primary suppliers has been identified, this section sets out the procedure for monitoring and reporting on primary supply workers.